# Appendix B: Appended Tables

Table B1: Potential PFAS Source Areas

Table B2: Soil Analytical Results

Table B3: Sediment Analytical Results

Table B4: Soil and Sediment Leachability Analytical Results

Table B5: Surface Water Soil Analytical Results

Table B6: Bore, Tap and Tank Water Analytical Results

Table B7: Grass Analytical Results

Table B8: Egg Results

Table B9: Other Biota Analytical Results

**Table B1 - Potential and Confirmed PFAS Source Areas**
Detailed Site Investigation
Norfolk Island Airport
17776

| PFAS Source Area Number | Name of Area | Surface Water Catchment | Confirmed or Potential PFAS Source Area | Source Type | Time of Use (re: Legacy AFFF) | Description of Activity | Description of Area / Infrastructure | Volumes of AFFF used/ stored/ lost | Regularity of Use / activity / testing | State of AFFF Product (Concentrate, Foam, Waste Water) | Approximate Size of Source Area | Number of Soil/Sediment Samples | Average of Concentrations of PFOS+PFHxS (mg/kg) | Photographic Reference | Additional information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GROUP 1 SOURCE AREAS** | | | | | | | | | | | | | | | |
| **1** | Former Fire Station and Foam Shed | Mission Creek | Confirmed | Primary | Up until approximately 2009. | The former fire station was located adjacent to the airport terminal and was the main fire station for the entire Island. The station was used to house fire trucks and fire fighting gear. A small wooden shed to the west of the station was used to store AFFF concentrate. | A number of small wooden buildings are still present near council facility. A portion of the freight storage facility. Buildings are still present and contain concrete hardstand both inside and surrounding the buildings. | Unknown | Daily | Concentrate, foam, waste water | | | | | |
| **2** | Former Flushing Out Area | Mission Creek | Confirmed | Primary | Up until approximately 2009. | Large area where fire trucks were washed out after each training session. Area was unsealed and runoff into a low point where infiltration into aquifer may have occurred. | Area to the south west of the former fire station. Unsealed, small concrete drain. | Unknown | Daily | Foam, waste water | | | | | The topography of the ground surface in these areas would allow drainage of any surface water run-off towards Mission Creek. |
| **3** | Former Drill Ground | Mission Creek | Confirmed | Primary | Unknown - mid-1990s. | Practice using AFFF to put out fires, mostly on cars that were used for 4 - 5 events then sent to tip (most often off the edge). | Former Drill Ground / Current Waste Management Centre | Unknown | Weekly | Foam, waste water | | | | | |
| **4** | Current Drill Ground | Mission Creek | Confirmed | Primary | Mid-1990's to current. | Training area for fire fighting. Anecdotal evidence that PCB oils and heavy metals were present and potentially pushed into the gully. | Fire Training area that is currently being used for the resurfacing of the airport. | 220 KL of foam used (Mainly on Drill Ground) from 1997 to 2015 | Weekly | Foam, waste water | | | | | |
| **5** | Maintenance Sheds | Mission Creek | Confirmed | Primary | Not confirmed. | Flushing out during maintenance of fire trucks. | L Shaped Building near runway. | Unknown | Weekly | Foam, waste water | | | | | Surface water run-off could potentially drain towards Watermill Creek. |
| **6** | Current Fire Station | Town / Watermill Creek | Confirmed | Primary | Approx. 10 years | Storage and use of AFFF. Flushing out all around the station on unsealed ground. | Approximately 10 year old facility. | Unknown | Daily | Concentrate, foam, waste water | | | | | |
| **GROUP 2 SOURCE AREAS** | | | | | | | | | | | | | | | |
| **7** | The Common Oval | Town / Watermill Creek | Potential | Primary | Not confirmed. | Area on Quality Row that was used to create snow at Christmas time. | Oval - unsealed. | Unknown | Historically done annually. | Unknown | | | | | Anedotal information suggests that AFFF may not have been used, potential for this to have occurred during Protein Foam use. |
| **8** | St Barnabus Chapel Paddock | Mission Creek | Potential | Primary | Annual training. Specific times are unknown. | Aerodrome Emergency Plan (AEP Annual Training) - West of St Barnabus Chapel. | Unsealed cattle paddock to the west of the chapel. The area is steeply sloped from the chapel down to Mission Creek. | Unknown | Annual | Unknown | | | | | Anedotal information suggests that AFFF was used in this area to create slippery slides down the hill towards Mission Creek. |
| **9** | Works depot / Former fire truck storage | Broken Bridge / Cas | Confirmed | Secondary | Not confirmed. | Drains into Cascade Creek. New Cascade Road | | Unknown | Unknown | Unknown | | | | | |
| **10** | Ball Bay Refuelling Area | Cascade / Stockyard Creek | Potential | Primary | Not confirmed. | Council managed facility adjacent to Mobil. | | Unknown | Unknown | Unknown | | | | | |
| **11** | Wastewater Treatment Plant / Stormwater Drains | Mission Creek | Confirmed | Secondary | Not confirmed. | Wastewate treatment plant and stormwater drains likely to be have PFAS impacted water present. | Sewerage Treatment Plant is located on the airport land. Stormwater drains are located on and off the airport. | Unknown | NA | Waste water | | | | | Further information required. |
| **GROUP 3 SOURCE AREAS** | | | | | | | | | | | | | | | |
| **12** | Private residence - Webb Adams Road | Cascade / Stockyard Creek | Potential | Primary | Not confirmed. | AFFF used in backyard 3 times per year - (anacdotal report) | | Unknown | Annual | Unknown | | | | | |
| **13** | Paradise hotel previous Norfolk/colonial other | Town / Watermill Creek | Potential | Primary | Not confirmed. | Burnt down, 20 - 30 years ago unsure if foam was used | | Unknown | Once | Unknown | | | | | |
| **14** | Perfumery | Town / Watermill Creek | Potential | Primary | Not confirmed. | Stored duty free goods (alcohol, perfume etc.) Burnt down 15 years ago and AFFF may have been used to fight the fire due to flammable goods / explosions. | | Unknown | Once | Unknown | | | | | |
| **15** | Headstone Burning area | Headstone Creek | Potential | Primary | Not confirmed. | Burning of waste products containing PFAS likely to have occurred and left residue at this location. No known use of legacy AFFF at this location. | | Unknown | Once | Unknown | | | | | |
| **GROUP 4 SOURCE AREAS** | | | | | | | | | | | | | | | |
| **16** | Public toilets filled by airport bore | Headstone Creek & Town / Watermill Creek | Potential | Secondary | | Public toilets filled with airport bore water via truck. Potential PFAS contamination entering the septic tanks and associated flow fields. | | | | | | | | | |
| **17** | Hospital tank directly filled by Airport Bore | Town / Watermill Creek | Potential | Secondary | | Hospital tank was filled by the airport bore. At times the hose was connected and left to overfill causing overflow into Broken Bridge Creek. | | | | | | | | | |

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SB01 | A_SB01 | A_SB01 | A_SB02 | A_SB02 | A_SB02 | A_SB03 | A_SB03 | A_SB04 | A_SB04 | A_SB04 | A_SB05 | A_SB05 | A_SB05 | A_SB06 | A_SB06 |
| | | | | | | | **Field ID** | A_SB01_0.1 | A_SB01_0.5 | A_SB01_1.0 | A_SB02_0.1 | A_SB02_0.5 | A_SB02_1.5 | A_SB03_0.1 | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB04_1.0 | A_SB05_0.1 | A_SB05_0.4 | A_SB05_1.0 | A_SB06_0.1 | A_SB06_0.5 |
| | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | **Depth** | 0.1 | 0.5 | 1 | 0.1 | 0.5 | 1.5 | 0.1 | 0.4 | 0.1 | 0.5 | 1 | 0.1 | 0.4 | 1 | 0.1 | 0.5 |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS01 | PS01 | PS01 | PS01 | PS01 | PS01 | PS01 | PS01 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 |
| | | | | | | | **Lab Report No.** | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | 0.0043 | 0.0162 | 0.0019 | <0.0005 | <0.0005 | <0.0005 | 0.132 | 0.201 | <0.0005 | 0.0011 | 0.0064 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | 0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.011 | 0.0092 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0014 | 0.0011 | 0.0012 | 0.002 | 0.0008 | 0.0004 | 0.0016 | 0.001 | 0.0024 | 0.0004 | 0.0014 | 0.0013 | 0.0002 | 0.0002 | 0.0008 | 0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0055 | 0.0005 | 0.0003 | 0.0012 | <0.0002 | <0.0002 | 0.0133 | 0.012 | 0.0024 | 0.0003 | <0.0002 | 0.001 | <0.0002 | <0.0002 | 0.0005 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0028 | 0.0034 | 0.0014 | 0.0015 | 0.0004 | <0.0002 | 0.0032 | 0.0019 | 0.0011 | <0.0002 | 0.0018 | 0.003 | 0.0008 | 0.001 | 0.001 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0017 | 0.0009 | 0.001 | 0.002 | 0.0009 | 0.0003 | 0.0015 | 0.0009 | 0.0039 | 0.0004 | 0.0013 | 0.0028 | 0.0005 | 0.0005 | 0.0009 | 0.0004 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0029 | 0.0015 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0014 | 0.0016 | 0.0012 | 0.001 | 0.0003 | 0.0002 | 0.0024 | 0.0015 | 0.001 | 0.0003 | 0.001 | 0.001 | 0.0002 | 0.0002 | 0.0008 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.002 | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 | <0.001 | <0.001 | 0.004 | <0.001 | 0.002 | 0.003 | <0.001 | <0.001 | 0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | 0.0047 | 0.0042 | 0.0014 | 0.0007 | <0.0002 | <0.0002 | 0.0416 | 0.026 | 0.0011 | 0.0008 | 0.0025 | 0.0023 | <0.0002 | <0.0002 | 0.0007 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | 0.0018 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0023 | 0.0017 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | 0.0051 | 0.0008 | 0.0004 | 0.001 | <0.0002 | <0.0002 | 0.0217 | 0.0176 | 0.0018 | <0.0002 | 0.0003 | 0.0012 | <0.0002 | <0.0002 | 0.0004 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0043 | 0.008 | 0.004 | 0.0023 | 0.0016 | 0.001 | 0.0034 | 0.002 | 0.0041 | 0.001 | 0.0031 | 0.0024 | 0.0005 | 0.0005 | 0.0014 | 0.0006 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.277 | 3.28 | 0.843 | 0.0827 | 0.506 | 0.611 | 0.789 | 0.846 | 0.348 | 0.506 | 1.58 | 0.14 | 0.139 | 0.227 | 0.0683 | 0.161 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0008 | 0.0004 | 0.0005 | 0.0004 | <0.0002 | <0.0002 | 0.0005 | 0.0004 | 0.001 | <0.0002 | 0.0005 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0135 | 0.0121 | 0.0075 | 0.008 | 0.0055 | 0.0044 | 0.0061 | 0.0041 | 0.0158 | 0.0019 | 0.0065 | 0.0046 | 0.0006 | 0.0009 | 0.0015 | 0.0006 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0024 | 0.0056 | 0.0016 | 0.0007 | 0.0013 | 0.0014 | 0.0011 | 0.0008 | 0.0019 | 0.0008 | 0.0022 | 0.0006 | <0.0002 | 0.0004 | 0.0002 | 0.0003 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.224 | 0.0493 | 0.0216 | 0.0307 | 0.005 | 0.0016 | 0.0833 | 0.0987 | 0.146 | 0.0347 | 0.0675 | 0.0323 | 0.014 | 0.0117 | 0.0328 | 0.0049 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | 0.0005 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | 0.0004 | 0.0007 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.29** | **3.29** | **0.85** | **0.0907** | **0.512** | **0.615** | **0.795** | **0.85** | **0.364** | **0.508** | ***1.59*** | **0.145** | **0.14** | **0.228** | **0.0698** | **0.162** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | 0.0014 | 0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0014 | 0.0018 | 0.0017 | <0.0005 | <0.0005 | 0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0173 | 0.0219 | 0.0066 | 0.0018 | 0.0022 | 0.0002 | 0.0205 | 0.0389 | 0.061 | 0.0111 | 0.0128 | 0.0042 | 0.0012 | 0.0008 | 0.0011 | 0.0046 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.573 | 3.41 | 0.894 | 0.138 | 0.524 | 0.62 | 1.14 | 1.27 | 0.598 | 0.559 | 1.69 | 0.201 | 0.157 | 0.243 | 0.111 | 0.173 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | A_SB06 | A_SB07 | A_SB07 | A_SB07 | A_SB08 | A_SB08 | A_SB08 | A_SB08 | A_SB08 | A_SB09 | A_SB09 | A_SB09 | A_SB10 | A_SB10 | A_SB10 | A_SB10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | A_SB06_1.5 | A_SB07_0.1 | A_SB07_0.4 | A_SB07_1.5 | A_SB08_0.1 | A_SB08_0.4 | A_SB08_1.0 | QC04 | QC05 | A_SB09_0.1 | A_SB09_0.5 | A_SB09_1.5 | A_SB10_0.1 | A_SB10_0.5 | A_SB10_1.5 | QC08 |
| | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | **Depth** | 1.5 | 0.1 | 0.4 | 1.5 | 0.1 | 0.4 | 1 | 0.1 | 0.1 | 0.1 | 0.5 | 1.5 | 0.1 | 0.5 | 1.5 | 0.1 |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 |
| | | | | | | | **Lab Report No.** | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | 265850 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0014 | 0.0005 | <0.0005 | 0.0022 | 0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0008 | 0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0002 | 0.0007 | <0.0002 | 0.0004 | 0.0006 | 0.0003 | <0.0002 | 0.0007 | 0.0005 | 0.0004 | 0.0002 | 0.0003 | 0.0032 | 0.0003 | 0.0002 | 0.0027 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0007 | <0.0002 | <0.0002 | 0.0034 | 0.0004 | 0.0002 | 0.004 | 0.003 | 0.0006 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0012 | 0.0006 | 0.0008 | 0.0008 | 0.0006 | 0.0006 | 0.0012 | 0.0007 | 0.0005 | 0.0006 | 0.0004 | 0.0007 | <0.0002 | <0.0002 | 0.0009 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0003 | 0.0007 | 0.0003 | 0.0006 | 0.0007 | 0.0004 | <0.0002 | 0.0007 | 0.0008 | 0.0003 | 0.0003 | 0.0005 | 0.0012 | <0.0002 | <0.0002 | 0.0009 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0006 | <0.0002 | 0.0003 | 0.0006 | 0.0003 | <0.0002 | 0.0006 | 0.0006 | 0.0003 | <0.0002 | <0.0002 | 0.0007 | <0.0002 | <0.0002 | 0.0005 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0004 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0014 | 0.0002 | <0.0002 | 0.0031 | 0.0026 | 0.0014 | 0.0035 | 0.003 | 0.0008 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | 0.0007 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.001 | <0.0002 | <0.0002 | 0.0045 | 0.0004 | 0.0004 | 0.0059 | 0.004 | 0.0005 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0006 | 0.0011 | 0.0004 | 0.0011 | 0.001 | 0.0006 | 0.0003 | 0.0015 | 0.0011 | 0.0005 | 0.0005 | 0.0006 | 0.0026 | 0.0004 | 0.0003 | 0.003 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.269 | 0.0774 | 0.0813 | 0.34 | 0.047 | 0.0622 | 0.122 | 0.0804 | 0.046 | 0.0472 | 0.234 | 0.245 | 0.132 | 0.282 | 0.249 | 0.168 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0007 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.001 | 0.0027 | 0.0006 | 0.0013 | 0.0035 | 0.0013 | 0.001 | 0.0062 | 0.0046 | 0.0014 | 0.0012 | 0.0011 | 0.0073 | 0.0033 | 0.0028 | 0.0071 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0009 | 0.0003 | <0.0002 | 0.0006 | 0.0004 | <0.0002 | 0.0003 | 0.0006 | 0.0004 | 0.0002 | 0.0002 | 0.0004 | 0.0008 | 0.0006 | 0.0005 | 0.0008 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0081 | 0.0248 | 0.0054 | 0.0044 | 0.0332 | 0.0343 | 0.0238 | 0.029 | 0.036 | 0.0356 | 0.0102 | 0.0185 | 0.0209 | 0.0003 | 0.0008 | 0.0174 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0005 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.27** | **0.0801** | **0.0819** | **0.341** | **0.0505** | **0.0635** | **0.123** | **0.0866** | **0.051** | **0.0486** | **0.235** | **0.246** | **0.139** | **0.285** | **0.252** | **0.175** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0009 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0027 | 0.0017 | 0.0005 | 0.0005 | 0.003 | 0.0086 | 0.0058 | 0.0034 | 0.003 | 0.0019 | 0.0039 | 0.0032 | 0.0028 | <0.0002 | <0.0002 | 0.0022 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | 0.047 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.283 | 0.114 | 0.0893 | 0.35 | 0.104 | 0.112 | 0.156 | 0.144 | 0.11 | 0.0902 | 0.251 | 0.27 | 0.173 | 0.287 | 0.254 | 0.204 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SB10 | A_SB11 | A_SB11 | A_SB11 | A_SB11 | A_SB11 | A_SB12 | A_SB12 | A_SB12 | A_SB13 | A_SB13 | A_SB13 | A_SB13 | A_SB14 | A_SB14 | A_SB15 |
| | | | | | | | **Field ID** | QC09 | A_SB11_0.1 | A_SB11_0.5 | A_SB11_1.1 | QC11 | QC12 | A_SB12_0.1 | A_SB12_0.5 | A_SB12_1.0 | A_SB13_0.1 | A_SB13_0.5 | QC15 | QC16 | A_SB14_0.1 | A_SB14_0.5 | A_SB15_0.1 |
| | | | | | | | **Date** | 9/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| | | | | | | | **Depth** | 0.1 | 0.1 | 0.5 | 1.1 | 0.1 | 0.1 | 0.1 | 0.5 | 1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.1 | 0.5 | 0.1 |
| | | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 |
| | | | | | | | **Lab Report No.** | 265850 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | 265850 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2111279 | 265850 | ES2111279 | ES2111279 | ES2111279 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0295 | <0.0005 | <0.0005 | 0.0185 | 0.012 | 0.003 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0008 | <0.0005 | <0.0005 | 0.0008 | 0.0004 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0021 | 0.0034 | 0.001 | 0.0005 | 0.0027 | 0.0017 | 0.0004 | 0.0003 | 0.0003 | 0.0002 | <0.0002 | 0.0005 | <0.0001 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0037 | <0.0002 | <0.0002 | 0.0018 | 0.002 | 0.0017 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0005 | 0.0207 | 0.0007 | 0.0005 | 0.0127 | 0.0073 | 0.0054 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.001 | 0.0077 | 0.0023 | 0.001 | 0.0069 | 0.0064 | 0.0008 | 0.0005 | 0.0007 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.005 | 0.0007 | <0.0005 | <0.0005 | 0.0005 | <0.005 | 0.0011 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0005 | 0.0035 | 0.0017 | 0.0009 | 0.0029 | 0.0025 | 0.001 | 0.0003 | 0.0004 | 0.0002 | <0.0002 | 0.0004 | 0.0001 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.0007 | 0.006 | <0.001 | <0.001 | 0.004 | 0.0035 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0002 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0075 | 0.0002 | <0.0002 | 0.0041 | 0.002 | 0.002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0007 | <0.0002 | <0.0002 | 0.0004 | <0.0005 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0038 | <0.0002 | <0.0002 | 0.0018 | 0.001 | 0.0012 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.002 | 0.0245 | 0.0043 | 0.0017 | 0.0189 | 0.011 | 0.0041 | 0.0012 | 0.0006 | 0.0005 | <0.0002 | 0.0004 | 0.0002 | 0.0002 | <0.0002 | 0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.09 | 0.339 | 0.16 | 0.0807 | 0.347 | 0.19 | 0.0249 | 0.0006 | 0.0008 | 0.0037 | <0.0002 | 0.0022 | 0.0034 | 0.0026 | <0.0002 | 0.0021 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0006 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0073 | 0.0126 | 0.0044 | 0.0016 | 0.0115 | 0.01 | 0.0003 | 0.0003 | 0.0004 | 0.0003 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | <0.0002 | 0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0006 | 0.0027 | 0.0011 | 0.0006 | 0.0025 | 0.0018 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.018 | 0.0374 | 0.0036 | 0.0124 | 0.0184 | 0.042 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | 0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.097** | **0.352** | **0.164** | **0.0823** | **0.358** | **0.2** | **0.0252** | 0.0009 | 0.0012 | 0.004 | <0.0002 | 0.0026 | 0.0036 | 0.0026 | <0.0002 | 0.0023 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | 0.0023 | <0.0005 | <0.0005 | 0.0015 | 0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.002 | 0.008 | 0.0016 | 0.0178 | 0.0052 | 0.004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.001 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | 0.092 | - | - | - | - | 0.2 | - | - | - | - | - | - | 0.0036 | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.13 | 0.516 | 0.181 | 0.118 | 0.463 | 0.3 | 0.0467 | 0.0032 | 0.0032 | 0.0051 | <0.0002 | 0.0042 | 0.0042 | 0.0028 | <0.0002 | 0.0027 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | A_SB15 | A_SB15 | A_SB16 | A_SB16 | A_SB16 | A_SB17 | A_SB17 | A_SB17 | A_SB18 | A_SB18 | A_SB18 | A_SB19 | A_SB19 | A_SB19 | A_SB20 | A_SB21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | A_SB15_0.5 | A_SB15_1.0 | A_SB16_0.1 | A_SB16_0.5 | A_SB16_1.0 | A_SB17_0.1 | A_SB17_0.5 | A_SB17_1.5 | A_SB18_0.1 | A_SB18_0.5 | A_SB18_1.5 | A_SB19_0.1 | A_SB19_0.5 | A_SB19_1.0 | A_SB20_0.1 | A_SB21_0.1 |
| | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 9/03/2021 |
| | | | | | | | **Depth** | 0.5 | 1 | 0.1 | 0.5 | 1 | 0.1 | 0.5 | 1.5 | 0.1 | 0.5 | 1.5 | 0.1 | 0.5 | 1 | 0.1 | 0.1 |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 |
| | | | | | | | **Lab Report No.** | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | ES2111279 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0014 | <0.0005 | 0.0072 | 0.0022 | <0.0005 | 0.0125 | <0.0005 | <0.0005 | 0.0103 | 0.0601 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0059 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0008 | 0.0045 | 0.0332 | 0.0336 | 0.0035 | 0.0393 | 0.026 | <0.0005 | 0.0017 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 | 0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0005 | 0.008 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0015 | 0.0002 | 0.0025 | 0.0004 | <0.0002 | 0.0055 | 0.0017 | 0.0009 | 0.001 | 0.007 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | 0.0013 | 0.0013 | 0.0012 | 0.0072 | 0.0074 | 0.0016 | 0.0072 | 0.0052 | <0.0005 | 0.001 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0012 | 0.0038 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 | 0.0009 | 0.0014 | 0.0022 | 0.0202 | 0.0003 | 0.0045 | 0.0066 | <0.0005 | 0.0021 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.003 | 0.005 | <0.001 | 0.004 | 0.003 | <0.002 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.001 | 0.0002 | 0.0016 | 0.0003 | <0.0002 | 0.0014 | <0.0002 | <0.0002 | <0.0005 | 0.022 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | 0.0019 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0005 | 0.0096 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0002 | 0.0018 | 0.0005 | 0.018 | **0.117** | 0.0042 | 0.0035 | 0.0513 | 0.0546 | <0.0005 | 0.0052 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0007 | <0.0002 | 0.0032 | 0.0012 | 0.0002 | 0.0025 | 0.0104 | 0.0022 | 0.642 | 0.142 | 0.007 | 1.35 | 2.85 | 2.89 | 0.0191 | 0.195 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0021 | 0.0073 | 0.0273 | 0.0004 | 0.0158 | 0.0099 | <0.0005 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0003 | <0.0002 | 0.0006 | 0.0005 | <0.0002 | <0.0002 | 0.0003 | 0.0006 | 0.0619 | 0.321 | 0.841 | 0.0067 | 0.195 | 0.152 | <0.0005 | 0.0071 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0302 | 0.2 | 0.0068 | 0.0018 | 0.0213 | 0.0583 | <0.0005 | 0.003 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0024 | 0.0004 | <0.0002 | 0.0122 | <0.0002 | <0.0002 | <0.0005 | 0.0031 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.001 | 0.0043 | 0.009 | 0.0011 | 0.011 | 0.0077 | <0.0005 | 0.0003 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.001 | <0.0002 | 0.0038 | 0.0017 | 0.0002 | 0.0025 | **0.0107** | 0.0028 | **0.704** | **0.463** | **0.848** | ***1.36*** | ***3.04*** | ***3.04*** | **0.0191** | **0.202** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | 0.0014 | <0.0002 | <0.0002 | <0.0005 | 0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.001 | <0.0002 | 0.0044 | 0.0017 | 0.0002 | 0.0031 | 0.0204 | 0.0069 | 0.778 | 0.84 | 0.962 | 1.4 | 3.2 | 3.21 | 0.0304 | 0.337 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SB21 | A_SB21 | A_SB22 | A_SB22 | A_SB22 | A_SB22 | A_SB22 | A_SB23 | A_SB23 | A_SB23 | A_SB23 | A_SB24 | A_SB25 | A_SB25 | A_SB25 | A_SB25 |
| | | | | | | | **Field ID** | A_SB21_0.5 | A_SB21_1.0 | A_SB22_0.1 | A_SB22_0.5 | A_SB22_1.5 | QC21 | QC22 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB23_1.5 | A_SB24_0.1 | A_SB25_0.1 | A_SB25_0.5 | A_SB25_1.0 | QC48 |
| | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 |
| | | | | | | | **Depth** | 0.5 | 1 | 0.1 | 0.5 | 1.5 | 0.1 | 0.1 | 0.1 | 0.5 | 1 | 1.5 | 0.1 | 0.1 | 0.5 | 1 | 0.5 |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 |
| | | | | | | | **Lab Report No.** | ES2111279 | ES2115092 | ES2111279 | ES2111279 | ES2115092 | ES2111279 | 265850 | ES2111280 | ES2111280 | ES2111280 | ES2115092 | ES2111280 | ES2111280 | ES2111280 | ES2115092 | ES2111280 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | 0.0086 | 0.0062 | <0.0005 | 0.0063 | 0.0049 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0013 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.003 | 0.0009 | 0.0016 | 0.0011 | 0.005 | 0.0014 | 0.0009 | <0.0002 | 0.0004 | 0.0006 | 0.0007 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | 0.0004 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0009 | 0.0011 | <0.0002 | 0.0002 | 0.0004 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0046 | 0.0026 | 0.0005 | 0.002 | 0.0024 | 0.0005 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0011 | 0.0005 | 0.0026 | 0.0028 | 0.0081 | 0.0019 | 0.002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0017 | 0.0009 | 0.0012 | 0.0015 | 0.0096 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | 0.002 | <0.001 | 0.002 | 0.003 | 0.0034 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | 0.0041 | 0.0034 | 0.0002 | 0.0008 | 0.0015 | 0.0004 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | 0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | 0.0012 | 0.0015 | <0.0002 | 0.0002 | 0.0004 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.005 | 0.002 | 0.0021 | 0.0033 | 0.0121 | 0.0006 | 0.0004 | <0.0002 | 0.0005 | 0.0038 | 0.0045 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.514 | 0.207 | 0.0154 | 0.13 | 0.0411 | 0.0183 | 0.023 | 0.0456 | 0.443 | 0.215 | 0.177 | 0.0866 | 0.0384 | 0.0019 | 0.0011 | 0.0015 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0017 | 0.0007 | 0.0002 | <0.0002 | 0.0009 | <0.0002 | 0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0275 | 0.0163 | 0.0052 | 0.0025 | 0.0151 | 0.0018 | 0.0019 | 0.0016 | 0.0019 | 0.0071 | 0.0103 | 0.0008 | 0.0007 | 0.0032 | 0.0013 | 0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.004 | 0.0019 | 0.0005 | 0.0012 | 0.0006 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0035 | 0.0011 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0159 | 0.0039 | <0.0002 | 0.0007 | 0.0008 | 0.0002 | 0.0002 | 0.0076 | <0.0002 | <0.0002 | <0.0002 | 0.0039 | 0.0006 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | 0.0011 | 0.0006 | <0.0002 | 0.0002 | 0.0006 | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.542** | **0.223** | **0.0206** | **0.132** | **0.0562** | **0.0201** | **0.025** | **0.0472** | **0.445** | **0.222** | **0.187** | **0.0874** | **0.0391** | 0.0051 | 0.0024 | 0.0052 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0019 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.001 | 0.0046 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | 0.023 | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.596 | 0.252 | 0.0315 | 0.153 | 0.106 | 0.0288 | 0.033 | 0.0594 | 0.446 | 0.23 | 0.194 | 0.0918 | 0.0397 | 0.0055 | 0.0024 | 0.0058 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SB25 | A_SB26 | A_SB26 | A_SB26 | A_SS01 | A_SS02 | A_SS03 | A_SS03 | A_SS03 | A_SS04 | A_SS05 | A_SS06 | A_SS07 | A_SS08 | A_SS09 | A_SS10 |
| | | | | | | | **Field ID** | QC49 | A_SB26_0.1 | A_SB26_0.3 | A_SB26_0.5 | A_SS01 | A_SS02 | A_SS03 | QC108 | QC208 | A_SS04 | A_SS05 | A_SS06 | A_SS07 | A_SS08 | A_SS09 | A_SS10 |
| | | | | | | | **Date** | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 20/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 |
| | | | | | | | **Depth** | 0.5 | 0.1 | 0.3 | 0.5 | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 | PS03 |
| | | | | | | | **Lab Report No.** | 265849 | ES2111280 | ES2111280 | ES2115092 | ES2002806 | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0006 | <0.0002 | 0.0003 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.005 | <0.0002 | 0.0003 | 0.0003 | <0.0002 | 0.0002 | 0.0008 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.002 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0001 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0016 | 0.0156 | 0.0118 | 0.0127 | 0.004 | 0.0092 | 0.0068 | 0.0068 | <0.005 | 0.0002 | 0.016 | 0.0295 | 0.0063 | 0.0108 | 0.0123 | 0.0028 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0031 | 0.0005 | 0.0003 | 0.0012 | 0.0002 | 0.0028 | 0.0004 | 0.0003 | <0.005 | <0.0002 | 0.0015 | 0.0009 | 0.0003 | 0.0004 | 0.0021 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | 0.0002 | <0.005 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.0047 | **0.0161** | **0.0121** | **0.0139** | 0.0042 | **0.012** | 0.0072 | 0.0071 | <0.005 | 0.0002 | **0.0175** | **0.0304** | 0.0066 | **0.0112** | **0.0144** | 0.0028 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | 0.0016 | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0056 | 0.018 | 0.0121 | 0.0142 | 0.0042 | 0.0126 | 0.0075 | 0.0073 | <0.05 | 0.0002 | 0.018 | 0.0319 | 0.0066 | 0.0114 | 0.0177 | 0.0028 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS11 | A_SS12 | A_SS13 | A_SS14 | A_SS15 | A_SS16 | A_SS17 | A_SS18 | A_SS19 | A_SS20 | A_SS20 | A_SS20 | A_SS21 | A_SS22 | A_SS23 | A_SS24 |
| | | | | | | | **Field ID** | A_SS11 | A_SS12 | A_SS13 | A_SS14 | A_SS15 | A_SS16 | A_SS17 | A_SS18 | A_SS19 | A_SS20 | QC111 | QC211 | A_SS21 | A_SS22 | A_SS23 | A_SS24 |
| | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS04 | PS01 | PS01 | PS01 | PS01 | PS01 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS01 | PS01 |
| | | | | | | | **Lab Report No.** | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 | ES2002806 | ES2002806 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0022 | <0.0005 | <0.0005 | <0.01 | <0.0005 | 0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0018 | 0.0039 | 0.106 | 0.0016 | 0.0017 | <0.005 | 0.0024 | 0.0228 | 0.0104 | 0.0191 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006 | 0.0196 | <0.0005 | <0.0005 | <0.005 | <0.0005 | 0.0027 | 0.0008 | 0.0051 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0016 | 0.0008 | 0.0022 | <0.0002 | 0.0004 | 0.0026 | 0.0027 | 0.0033 | 0.0068 | 0.0028 | 0.0032 | <0.005 | 0.0032 | 0.0024 | 0.0094 | 0.0064 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0011 | 0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0008 | 0.0036 | 0.0051 | 0.0364 | 0.0024 | 0.0023 | <0.005 | 0.0014 | 0.0156 | 0.0128 | 0.0207 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0007 | 0.0006 | <0.0002 | <0.0002 | 0.0002 | 0.0012 | 0.0019 | 0.0058 | 0.0016 | 0.0015 | <0.005 | 0.0023 | 0.0017 | 0.0031 | 0.0022 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0011 | 0.0008 | 0.0058 | <0.0002 | 0.0004 | 0.0016 | 0.003 | 0.0049 | 0.0033 | 0.0033 | 0.0021 | <0.005 | 0.0076 | 0.0032 | 0.0041 | 0.0033 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | 0.0009 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 | 0.0021 | 0.0021 | 0.0067 | 0.0015 | <0.0005 | <0.005 | <0.0005 | 0.0037 | 0.0015 | 0.0062 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0005 | 0.0008 | <0.0002 | <0.0002 | 0.0004 | 0.0009 | 0.0015 | 0.0024 | 0.0013 | 0.001 | <0.005 | 0.0014 | 0.0011 | 0.0019 | 0.0018 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.001 | 0.001 | 0.013 | <0.001 | <0.001 | 0.003 | 0.004 | 0.005 | 0.003 | 0.004 | 0.002 | <0.005 | 0.007 | 0.003 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | 0.0005 | 0.0003 | 0.0003 | <0.0002 | <0.0002 | 0.0004 | 0.0022 | 0.0045 | 0.0431 | 0.0026 | 0.0023 | <0.005 | 0.0044 | 0.0056 | 0.0074 | 0.0033 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | 0.0008 | 0.0055 | 0.0003 | 0.0004 | <0.005 | 0.0002 | 0.0023 | 0.0023 | 0.0049 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0008 | 0.0005 | <0.0002 | <0.0002 | 0.0007 | 0.008 | 0.008 | 0.0487 | 0.0067 | 0.0032 | <0.005 | 0.0049 | 0.0521 | 0.0165 | 0.0243 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0005 | 0.0009 | 0.0008 | <0.0002 | 0.0002 | 0.0006 | 0.0027 | 0.0024 | 0.0064 | 0.0029 | 0.0029 | <0.005 | 0.0026 | 0.0024 | 0.006 | 0.0043 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0.0086 | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0274 | 0.0423 | 0.0391 | 0.0067 | 0.0228 | 0.0219 | 0.0383 | 0.0392 | 0.571 | 0.0338 | 0.0548 | 0.055 | 0.057 | 0.0985 | 0.986 | 0.246 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0019 | <0.0002 | 0.0012 | <0.0002 | <0.0002 | 0.0013 | 0.0011 | 0.0015 | 0.0019 | 0.0008 | 0.0006 | <0.005 | 0.0007 | 0.001 | 0.0048 | 0.0037 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0254 | 0.0012 | 0.0121 | 0.0002 | 0.001 | 0.0186 | 0.013 | 0.0154 | 0.0204 | 0.0097 | 0.0091 | <0.005 | 0.0088 | 0.0117 | 0.0533 | 0.0296 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0012 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | 0.0007 | 0.001 | 0.0018 | 0.0006 | 0.0005 | <0.005 | 0.0006 | 0.0009 | 0.0047 | 0.002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0025 | 0.0042 | 0.0082 | 0.0004 | 0.0025 | 0.0028 | 0.0404 | 0.0405 | 0.0626 | 0.0277 | 0.021 | 0.023 | 0.0313 | 0.0519 | 0.0433 | 0.0206 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | 0.0012 | <0.0002 | 0.0011 | <0.0002 | <0.0002 | 0.0008 | 0.0007 | 0.0012 | 0.0018 | 0.0006 | 0.0007 | <0.005 | 0.0007 | 0.0009 | 0.0036 | 0.0035 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0528** | **0.0435** | **0.0512** | 0.0069 | **0.0238** | **0.0405** | **0.0513** | **0.0546** | **0.591** | **0.0435** | **0.0639** | **0.055** | **0.0658** | **0.11** | ***1.04*** | **0.276** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0005 | <0.0005 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | 0.0031 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0011 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | 0.0009 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 | <0.0005 | <0.0005 | <0.005 | <0.0005 | 0.0006 | <0.0012 | <0.0012 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | 0.0014 | 0.0013 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0031 | 0.0002 | 0.0006 | <0.0002 | 0.0003 | 0.0018 | 0.0032 | 0.0039 | 0.0318 | 0.0025 | 0.0021 | <0.005 | 0.0016 | 0.0105 | 0.0144 | 0.0114 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0.055 | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0.055 | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0728 | 0.0539 | 0.0867 | 0.0073 | 0.0276 | 0.0601 | 0.13 | 0.147 | 0.989 | 0.107 | 0.111 | 0.0866 | 0.138 | 0.295 | 1.19 | 0.42 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS25 | A_SS26 | A_SS27 | A_SS28 | A_SS29 | A_SS30 | A_SS30 | A_SS30 | A_SS31 | A_SS32 | A_SS33 | A_SS34 | A_SS35 | A_SS36 | A_SS37 | A_SS38 |
| | | | | | | | **Field ID** | A_SS25 | A_SS26 | A_SS27 | A_SS28 | A_SS29 | A_SS30 | QC112 | QC212 | A_SS31 | A_SS32 | A_SS33 | A_SS34 | A_SS35 | A_SS36 | A_SS37 | A_SS38 |
| | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS01 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 |
| | | | | | | | **Lab Report No.** | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0117 | 0.013 | 0.012 | 0.0032 | 0.0025 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0023 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006 | 0.0009 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0006 | 0.0007 | 0.0004 | 0.0043 | 0.0008 | 0.0048 | 0.0049 | <0.005 | 0.0022 | 0.0005 | <0.0002 | 0.001 | 0.0003 | 0.0005 | 0.0008 | 0.0055 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0015 | <0.0002 | <0.0002 | 0.001 | <0.0002 | 0.0056 | 0.0051 | <0.005 | 0.0063 | 0.0029 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0021 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0005 | 0.0003 | <0.0002 | 0.0002 | <0.0002 | 0.0153 | 0.0179 | 0.021 | 0.002 | 0.0003 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0037 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0006 | 0.0005 | 0.0005 | 0.0047 | 0.0005 | 0.0088 | 0.0058 | 0.0053 | 0.0053 | 0.0006 | 0.0002 | 0.001 | 0.0008 | 0.0003 | 0.0008 | 0.0123 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 | 0.0006 | <0.005 | 0.0009 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0005 | 0.0003 | <0.0002 | 0.0004 | <0.0002 | 0.0029 | 0.003 | <0.005 | 0.001 | 0.0003 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | 0.0002 | 0.0024 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | 0.006 | 0.001 | 0.01 | 0.006 | <0.005 | 0.005 | <0.001 | <0.001 | 0.004 | <0.001 | <0.001 | <0.001 | 0.014 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0075 | 0.007 | 0.0099 | 0.0024 | 0.0013 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0018 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0012 | 0.0014 | <0.005 | 0.0012 | 0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | 0.0021 | 0.0004 | <0.0002 | 0.0009 | <0.0002 | 0.0081 | 0.0044 | 0.0053 | 0.0078 | 0.0043 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0011 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0005 | 0.0006 | <0.0002 | 0.0013 | 0.0002 | 0.017 | 0.0198 | 0.025 | 0.0017 | 0.0007 | <0.0002 | 0.0004 | 0.0002 | 0.0007 | 0.0004 | 0.0056 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0277 | 0.0109 | 0.0069 | 0.0453 | 0.0159 | 0.137 | 0.124 | 0.16 | 0.0449 | 0.0451 | 0.0024 | 0.0249 | 0.0124 | 0.0228 | 0.0177 | 0.205 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | 0.0014 | 0.001 | <0.005 | 0.001 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0017 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0031 | 0.001 | <0.0002 | 0.0136 | 0.0005 | 0.019 | 0.0214 | 0.01 | 0.0102 | 0.002 | <0.0002 | 0.0037 | <0.0002 | 0.0023 | 0.0008 | 0.0336 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | 0.0015 | 0.0015 | <0.005 | 0.0007 | 0.0004 | <0.0002 | 0.0003 | <0.0002 | 0.0003 | <0.0002 | 0.0029 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0008 | 0.0018 | <0.0002 | 0.0301 | <0.0002 | 0.0103 | 0.0145 | 0.014 | 0.0084 | 0.0077 | <0.0002 | 0.0028 | 0.0003 | 0.001 | 0.0004 | 0.0115 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | 0.0009 | 0.0011 | <0.005 | 0.0009 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0012 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0308** | **0.0119** | 0.0069 | **0.0589** | **0.0164** | **0.156** | **0.145** | **0.17** | **0.0551** | **0.0471** | 0.0024 | **0.0286** | **0.0124** | **0.0251** | **0.0185** | **0.239** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0012 | 0.0014 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | 0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0007 | 0.0004 | <0.0002 | 0.0045 | <0.0002 | 0.0075 | 0.0063 | 0.0053 | 0.0075 | 0.0026 | <0.0002 | 0.0012 | <0.0002 | 0.0003 | <0.0002 | 0.0047 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | 0.195 | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | 0.185 | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0371 | 0.0169 | 0.0078 | 0.114 | 0.0189 | 0.273 | 0.261 | 0.2678 | 0.113 | 0.0727 | 0.0026 | 0.04 | 0.0144 | 0.0282 | 0.0217 | 0.312 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS39 | A_SS40 | A_SS40 | A_SS40 | A_SS41 | A_SS42 | A_SS43 | A_SS44 | A_SS45 | A_SS46 | A_SS47 | A_SS48 | A_SS49 | A_SS50 | A_SS50 | A_SS50 |
| | | | | | | | **Field ID** | A_SS39 | A_SS40 | QC113 | QC213 | A_SS41 | A_SS42 | A_SS43 | A_SS44 | A_SS45 | A_SS46 | A_SS47 | A_SS48 | A_SS49 | A_SS50 | QC114 | QC214 |
| | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS02 | PS02 | PS02 | PS02 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 | PS06 |
| | | | | | | | **Lab Report No.** | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002803 | 699303 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.01 | 0.0008 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | 0.323 | <0.0005 | <0.0005 | 0.0046 | 0.0106 | <0.0005 | 0.0007 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | 0.0098 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0006 | 0.0008 | 0.0006 | <0.005 | 0.004 | <0.0002 | 0.0004 | 0.0005 | 0.0018 | <0.0002 | 0.0009 | 0.0003 | 0.0003 | 0.0004 | 0.0004 | <0.005 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0305 | <0.0002 | <0.0002 | 0.0006 | 0.003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0095 | <0.0002 | 0.0003 | 0.0019 | 0.0037 | 0.0004 | 0.0048 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0008 | 0.001 | 0.0006 | <0.005 | 0.0037 | <0.0002 | <0.0002 | 0.0007 | 0.0027 | <0.0002 | 0.001 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | 0.0057 | <0.0005 | <0.0005 | <0.0005 | 0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0049 | <0.0002 | 0.0003 | 0.0004 | 0.0013 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | 0.001 | 0.001 | <0.005 | 0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.005 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0347 | <0.0002 | <0.0002 | 0.0012 | 0.0055 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0069 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0175 | <0.0002 | <0.0002 | 0.0007 | 0.0024 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0002 | 0.0004 | 0.0004 | <0.005 | 0.0182 | <0.0002 | 0.0005 | 0.0009 | 0.0048 | <0.0002 | 0.0012 | 0.0002 | <0.0002 | 0.0004 | 0.0004 | <0.005 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - | <0.005 |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.004 | 0.0313 | 0.0311 | 0.028 | 0.119 | 0.001 | 0.007 | 0.0213 | 0.048 | 0.0242 | 0.0086 | 0.0073 | 0.0042 | 0.0222 | 0.0102 | 0.018 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | 0.0002 | <0.005 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0018 | 0.0007 | 0.0006 | <0.005 | 0.001 | <0.0002 | 0.0004 | 0.0004 | 0.0033 | <0.0002 | 0.001 | 0.0008 | <0.0002 | 0.0028 | 0.0038 | <0.005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0005 | 0.0003 | <0.005 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0003 | 0.0015 | 0.0016 | <0.005 | 0.0017 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.005 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - | <0.005 |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.0058 | **0.032** | **0.0317** | **0.028** | **0.12** | 0.001 | 0.0074 | **0.0217** | **0.0513** | **0.0242** | 0.0096 | 0.0081 | 0.0042 | **0.025** | **0.014** | **0.018** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.005 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | 0.028 | - | - | - | - | - | - | - | - | - | - | - | 0.018 |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | 0.028 | - | - | - | - | - | - | - | - | - | - | - | 0.018 |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0075 | 0.0367 | 0.0359 | <0.05 | 0.593 | 0.001 | 0.0089 | 0.0332 | 0.0898 | 0.0246 | 0.0193 | 0.0089 | 0.0045 | 0.0265 | 0.0156 | <0.05 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | A_SS51 | A_SS52 | A_SS52 | A_SS52 | A_SS53 | A_SS54 | A_SS55 | A_SS56 | A_SS57 | A_SS58 | A_SS59 | A_SS60 | A_SS60 | A_SS60 | A_SS61 | A_SS62 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | A_SS51 | A_SS52 | QC115 | QC215 | A_SS53 | A_SS54 | A_SS55 | A_SS56 | A_SS57 | A_SS58 | A_SS59 | A_SS60 | QC116 | QC216 | A_SS61 | A_SS62 |
| | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 23/01/2020 | 23/01/2020 | 23/01/2020 | 23/01/2020 | 22/01/2020 | 23/01/2020 | 23/01/2020 | 23/01/2020 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS06 | PS05 | PS05 | PS05 | PS05 | PS05 | PS05 | PS05 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 |
| | | | | | | | **Lab Report No.** | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002803 | 699303 | ES2002806 | ES2002806 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0006 | 0.001 | 0.0011 | <0.005 | 0.0007 | 0.0131 | 0.0007 | <0.0005 | 0.0005 | 0.0008 | 0.0008 | 0.0007 | 0.0007 | <0.005 | 0.0016 | 0.0022 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | 0.0004 | <0.005 | 0.0003 | 0.0004 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0005 | 0.0005 | <0.005 | 0.0004 | 0.0002 | 0.0007 | <0.0005 | <0.0002 | 0.0002 | 0.0005 | 0.0002 | 0.0004 | <0.005 | 0.0005 | 0.0004 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | 0.0003 | <0.005 | 0.0002 | 0.0013 | <0.0005 | <0.0005 | 0.0003 | 0.0004 | 0.0006 | 0.0009 | 0.0006 | <0.005 | 0.0013 | 0.0015 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0012 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0005 | 0.0004 | <0.005 | 0.0003 | 0.0016 | <0.0005 | <0.0005 | 0.0002 | 0.0003 | 0.0006 | 0.0004 | 0.0004 | <0.005 | 0.001 | 0.0008 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | 0.003 | <0.005 | 0.001 | 0.001 | <0.001 | <0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.001 | <0.005 | 0.002 | 0.002 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | 0.0005 | <0.005 | <0.0002 | <0.0002 | 0.0011 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | 0.0004 | <0.005 | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0004 | <0.0005 | 0.0004 | <0.005 | 0.0008 | 0.0037 | <0.0005 | <0.0005 | 0.0004 | 0.0004 | 0.0008 | 0.0005 | 0.0006 | <0.005 | 0.0017 | 0.0014 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0386 | 0.0492 | 0.0515 | 0.037 | 0.0285 | 0.0194 | 0.0853 | 0.0231 | 0.0146 | 0.0214 | 0.025 | 0.0274 | 0.0299 | 0.031 | 0.0335 | 0.0373 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0003 | <0.0005 | 0.0005 | <0.005 | <0.0002 | 0.0076 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0039 | 0.0029 | 0.0056 | <0.005 | 0.001 | 0.0746 | 0.0042 | 0.0034 | 0.0004 | 0.0008 | 0.0007 | 0.0008 | 0.0011 | <0.005 | 0.001 | 0.001 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0006 | <0.0005 | 0.0005 | <0.005 | <0.0002 | 0.005 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0078 | 0.0092 | <0.005 | 0.0096 | 0.0003 | 0.006 | <0.0005 | <0.0002 | 0.0004 | 0.0007 | 0.0004 | 0.0007 | <0.005 | 0.0006 | 0.0003 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0005 | 0.0004 | <0.005 | <0.0002 | 0.0018 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0425** | **0.0521** | **0.0571** | **0.037** | **0.0295** | **0.094** | **0.0895** | **0.0265** | **0.015** | **0.0222** | **0.0257** | **0.0282** | **0.031** | **0.031** | **0.0345** | **0.0383** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0012 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0012 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0012 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0012 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0012 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | 0.0004 | <0.005 | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | 0.037 | - | - | - | - | - | - | - | - | - | 0.031 | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | 0.037 | - | - | - | - | - | - | - | - | - | 0.031 | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0444 | 0.0609 | 0.0751 | <0.05 | 0.0428 | 0.13 | 0.098 | 0.0265 | 0.0174 | 0.0267 | 0.0317 | 0.0333 | 0.0354 | <0.05 | 0.0432 | 0.0469 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS63 | A_SS64 | A_SS65 | A_SS66 | A_SS67 | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 | A_SS78 |
| | | | | | | | **Field ID** | A_SS63 | A_SS64 | A_SS65 | A_SS66 | A_SS67 | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 | A_SS78 |
| | | | | | | | **Date** | 23/01/2020 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS04 | PS01 | PS01 | PS01 | PS01 | PS02 | PS02 | PS02 | PS05 | PS05 | PS05 | PS05 | PS05 | PS05 | PS05 | PS04 |
| | | | | | | | **Lab Report No.** | ES2002806 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0014 | <0.0002 | <0.0002 | 0.0005 | 0.0016 | <0.0002 | 0.0004 | 0.0013 | 0.0006 | 0.0007 | 0.0004 | 0.0005 | 0.0009 | 0.0002 | <0.0002 | 0.0006 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.001 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0004 | <0.0002 | <0.0002 | 0.0002 | 0.0016 | <0.0002 | <0.0002 | 0.0005 | 0.0005 | <0.0002 | 0.0006 | <0.0002 | 0.001 | <0.0002 | <0.0002 | 0.0003 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.003 | <0.0002 | <0.0002 | 0.0003 | 0.0009 | <0.0002 | <0.0002 | 0.0006 | 0.0004 | 0.0002 | 0.0003 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0008 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | 0.0006 | 0.0005 | 0.0003 | 0.0003 | <0.0002 | 0.0008 | 0.0003 | <0.0002 | 0.0003 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.003 | <0.001 | <0.001 | 0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0011 | <0.0002 | <0.0002 | 0.0003 | 0.0002 | <0.0002 | 0.0007 | <0.0002 | 0.0004 | 0.0006 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0011 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.001 | <0.0002 | <0.0002 | 0.0003 | 0.0015 | <0.0002 | 0.0003 | 0.0011 | 0.0008 | 0.0004 | 0.0006 | 0.0004 | 0.0017 | 0.0006 | 0.0004 | 0.0006 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0301 | 0.0027 | 0.0085 | 0.0092 | 0.0269 | 0.0012 | 0.0099 | 0.0248 | 0.0192 | 0.0138 | 0.0536 | 0.0168 | 0.044 | 0.0032 | 0.0132 | 0.0158 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0015 | <0.0002 | 0.0003 | 0.0005 | 0.0034 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0003 | 0.0069 | 0.0004 | 0.001 | <0.0002 | <0.0002 | 0.0005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0004 | <0.0002 | 0.0009 | 0.0005 | 0.0067 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | 0.0071 | <0.0002 | 0.0029 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0316** | 0.0027 | 0.0088 | 0.0097 | **0.0303** | 0.0012 | **0.0102** | **0.0248** | **0.0192** | **0.0141** | **0.0605** | **0.0172** | **0.045** | 0.0032 | **0.0132** | **0.0163** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0416 | 0.0031 | 0.0097 | 0.0125 | 0.0466 | 0.0012 | 0.0109 | 0.0301 | 0.0222 | 0.0157 | 0.0758 | 0.0185 | 0.0533 | 0.0051 | 0.0136 | 0.0183 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | A_SS79 | A_SS80 | A_SS81 | A_SS82 | A_SS83 | A_SS83 | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | A_SS79 | A_SS80 | A_SS81 | A_SS82 | A_SS83 | QC13 | QC14 | A_SS84 | A_SS85 | A_SS86 | A_SS87 | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
| | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS04 | PS04 | PS04 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 |
| | | | | | | | **Lab Report No.** | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111279 | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0018 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0013 | 0.0016 | 0.0006 | <0.0002 | 0.0003 | 0.0004 | 0.0003 | 0.0006 | 0.0006 | 0.0004 | <0.0002 | 0.0002 | 0.0006 | 0.0004 | 0.0006 | 0.0005 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0045 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0004 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0006 | 0.0006 | <0.0002 | <0.0002 | 0.0004 | 0.0003 | 0.0003 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0004 | 0.0002 | 0.0004 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0005 | 0.0006 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0004 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | 0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0025 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0053 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0007 | 0.0012 | 0.0008 | <0.0002 | 0.0002 | 0.0003 | 0.0003 | 0.0005 | 0.0004 | 0.0005 | <0.0002 | <0.0002 | 0.0011 | 0.0004 | 0.0003 | 0.0006 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0157 | 0.022 | 0.0151 | 0.0042 | 0.0084 | 0.0129 | 0.0083 | 0.0119 | 0.0231 | 0.0201 | 0.0029 | 0.0037 | 0.0427 | 0.0169 | 0.0107 | 0.075 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0003 | <0.0002 | 0.0003 | 0.001 | 0.0012 | 0.0009 | 0.0007 | 0.0006 | 0.0006 | <0.0002 | 0.0002 | 0.0009 | 0.0003 | 0.0006 | 0.005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | 0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0062 | 0.0006 | 0.0004 | 0.0142 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0161** | **0.0223** | **0.0151** | 0.0045 | 0.0094 | **0.0141** | 0.0092 | **0.0126** | **0.0237** | **0.0207** | 0.0029 | 0.0039 | **0.0436** | **0.0172** | **0.0113** | **0.08** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0018 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | 0.0085 | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0195 | 0.0269 | 0.0172 | 0.0047 | 0.0103 | 0.0151 | 0.01 | 0.0145 | 0.0252 | 0.0216 | 0.0029 | 0.0041 | 0.0557 | 0.02 | 0.0128 | 0.114 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | A_SS92 | A_SS92 | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 | A_SS97 | A_SS97 | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 | A_SS103 | A_SS103 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | QC02 | QC03 | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 | QC17 | QC18 | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 | A_SS103 | QC19 |
| | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS02 | PS02 | PS02 | PS02 | PS02 | PS02 | PS05 | PS05 | PS05 | PS05 | PS05 | PS05 | PS04 | PS04 | PS04 | PS04 |
| | | | | | | | **Lab Report No.** | ES2111279 | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111279 | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | 0.0014 | 0.0009 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0026 | 0.003 | 0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0304 | 0.0444 | 0.0432 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | 0.0003 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0012 | 0.0013 | 0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0017 | 0.0015 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0022 | 0.002 | 0.0013 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | 0.0009 | 0.0005 | 0.0004 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0025 | 0.003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0086 | 0.0065 | 0.0062 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0017 | 0.0097 | 0.0089 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0094 | 0.0122 | 0.0057 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0026 | 0.0166 | 0.014 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0003 | 0.0003 | <0.0002 | 0.0004 | 0.0003 | <0.0002 | 0.0016 | 0.0013 | 0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | 0.001 | 0.0009 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0017 | 0.0021 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0017 | 0.0014 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0035 | 0.0028 | 0.0026 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0011 | 0.0005 | 0.0004 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | 0.0009 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | 0.0016 | 0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0121 | 0.014 | 0.0075 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.006 | 0.0504 | 0.0474 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | 0.0004 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0017 | 0.0014 | 0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | 0.0017 | 0.0015 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | 0.0033 | 0.002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0102 | 0.0095 | 0.0061 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0031 | 0.0114 | 0.0107 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0006 | 0.0004 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | 0.0064 | 0.0077 | 0.0042 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0024 | 0.003 | 0.0022 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0678 | 0.035 | 0.004 | 0.0031 | 0.0276 | 0.0026 | 0.183 | 0.219 | 0.14 | 0.0056 | 0.0021 | 0.0004 | 0.0126 | 0.717 | 0.946 | 0.726 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | 0.0002 | 0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0042 | 0.0037 | 0.0003 | 0.0005 | 0.0003 | 0.0005 | 0.0037 | 0.0037 | 0.0023 | 0.0002 | <0.0002 | <0.0002 | 0.0011 | 0.0042 | 0.0019 | 0.0016 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0005 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0013 | 0.0016 | 0.0014 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0102 | 0.0075 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | 0.0162 | 0.0174 | 0.01 | <0.0002 | 0.0047 | <0.0002 | 0.0002 | 0.0095 | 0.0041 | 0.0038 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.072** | **0.039** | 0.0043 | 0.0036 | **0.0279** | 0.0031 | **0.187** | **0.223** | **0.14** | 0.0058 | 0.0021 | 0.0004 | **0.0137** | **0.721** | **0.948** | **0.728** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | 0.0044 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | 0.0012 | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | 0.0008 | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0016 | 0.001 | 0.0009 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | 0.035 | - | - | - | - | - | - | 0.14 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0994 | 0.056 | 0.0043 | 0.004 | 0.0288 | 0.0031 | 0.267 | 0.305 | 0.19 | 0.0058 | 0.0068 | 0.0004 | 0.0141 | 0.782 | 1.1 | 0.866 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 | A_SS108 | A_SS108 | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 | A_SS113 | A_SS114 | A_SS115 | A_SS121 |
| | | | | | | | **Field ID** | QC20 | A_SS104 | A_SS105 | A_SS106 | A_SS107 | A_SS108 | QC23 | QC24 | A_SS109 | A_SS110 | A_SS111 | A_SS112 | A_SS113 | A_SS114 | A_SS115 | QC46 |
| | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 15/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS04 | PS03 |
| | | | | | | | **Lab Report No.** | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111279 | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111280 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0001 | 0.0016 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | 0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | 0.032 | 0.0512 | 0.0209 | <0.0005 | <0.0005 | 0.0414 | 0.0318 | 0.019 | 0.0011 | 0.0346 | 0.0008 | 0.003 | 0.0016 | 0.0063 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | 0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0018 | 0.0017 | 0.002 | <0.0005 | 0.0009 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0035 | <0.0002 | <0.0002 | 0.0009 | 0.0018 | 0.0012 | 0.0009 | 0.0416 | 0.0191 | 0.017 | 0.0132 | 0.0005 | 0.0005 | 0.0011 | 0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | 0.0079 | 0.001 | 0.0004 | <0.0002 | <0.0002 | 0.0064 | 0.0026 | 0.004 | <0.0005 | 0.0031 | <0.0002 | 0.0006 | 0.0003 | 0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.011 | 0.0078 | 0.0009 | 0.0008 | <0.0002 | 0.0022 | 0.0022 | 0.0014 | 0.001 | 0.0043 | 0.0016 | 0.0065 | 0.0015 | 0.0004 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0009 | 0.0091 | <0.0002 | <0.0002 | 0.0005 | 0.001 | 0.0006 | 0.0007 | 0.0149 | 0.0145 | 0.0054 | 0.0063 | 0.0005 | 0.0003 | 0.0003 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.005 | 0.0008 | <0.0005 | <0.0005 | <0.0005 | 0.0008 | 0.0007 | <0.005 | <0.0012 | 0.0007 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | 0.0004 | 0.0031 | 0.0002 | <0.0002 | <0.0002 | 0.0012 | 0.0007 | 0.0008 | 0.0022 | 0.0014 | 0.0046 | 0.0089 | 0.0004 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.0008 | 0.006 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0005 | 0.008 | 0.008 | 0.003 | 0.004 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | 0.03 | 0.0012 | 0.0012 | <0.0002 | <0.0002 | 0.008 | 0.0057 | 0.004 | 0.0006 | 0.0073 | <0.0002 | 0.004 | 0.0012 | 0.0005 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | 0.001 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.001 | 0.0005 | 0.0007 | <0.0005 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | 0.0068 | 0.0006 | 0.0004 | <0.0002 | <0.0002 | 0.0068 | 0.0033 | 0.003 | <0.0005 | 0.0026 | <0.0002 | 0.0016 | 0.0004 | 0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0021 | 0.0235 | 0.0008 | 0.0014 | <0.0002 | 0.0038 | 0.0029 | 0.0022 | 0.0052 | 0.0038 | 0.0938 | 0.0302 | 0.0019 | 0.0009 | 0.0013 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.54 | 0.388 | 0.0416 | 0.0116 | 0.0024 | 0.354 | 0.259 | 0.2 | 9.09 | 2.14 | 1.84 | 0.572 | 0.032 | 0.0467 | 0.23 | 0.0182 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0001 | 0.0006 | <0.0002 | <0.0002 | 0.0003 | 0.0005 | 0.0004 | 0.0004 | 0.0037 | 0.0006 | 0.0156 | 0.0027 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0016 | 0.0372 | 0.0011 | <0.0002 | 0.0012 | 0.0082 | 0.0063 | 0.0047 | 0.0429 | 0.0064 | 0.872 | 0.0439 | 0.0024 | 0.001 | 0.0017 | 0.0005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | 0.0012 | 0.0024 | 0.0007 | <0.0002 | <0.0002 | 0.001 | 0.0006 | 0.0005 | 0.0108 | 0.0014 | 0.27 | 0.0092 | 0.0007 | <0.0002 | 0.0004 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | 0.0027 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0108 | 0.0072 | 0.0053 | 0.0112 | 0.0245 | 0.0018 | 0.0038 | <0.0002 | 0.0015 | 0.0031 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0001 | 0.0005 | <0.0002 | <0.0002 | 0.0005 | 0.0007 | 0.0006 | 0.0005 | 0.0079 | 0.0016 | 0.0038 | 0.003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.54** | **0.425** | **0.0427** | **0.0116** | 0.0036 | **0.362** | **0.265** | **0.21** | ***9.13*** | ***2.15*** | ***2.71*** | **0.616** | **0.0344** | **0.0477** | **0.232** | **0.0187** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0012 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.001 | 0.0011 | <0.0002 | <0.0002 | <0.0002 | 0.0025 | 0.0011 | <0.001 | 0.0342 | 0.0062 | 0.0011 | 0.0006 | <0.0002 | 0.0008 | 0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | 0.54 | - | - | - | - | - | - | 0.2 | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.64 | 0.54 | 0.0682 | 0.0138 | 0.0058 | 0.454 | 0.329 | 0.25 | 9.28 | 2.28 | 3.13 | 0.714 | 0.0434 | 0.0597 | 0.238 | 0.0189 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | A_SS121 | A_SS125 | A_SS125 | A_SS125 | A_SS133 | A_SS133 | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 | A_SS141 | A_STP_SS01 | A_STP_SS02 | A_STP_SS03 |
| | | | | | | | **Field ID** | QC47 | QC52 | QC53 | QC53 | QC54 | QC55 | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 | A_SS141 | A_STP_SS01 | A_STP_SS02 | A_STP_SS03 |
| | | | | | | | **Date** | 15/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 17/03/2021 | 17/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Interlab_D | Field_D | Interlab_D | Interlab_D | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Headstone Creek | Headstone Creek | Headstone Creek | Mission Creek | Mission Creek | Rocky Point Creek | Headstone Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | **Source Zone** | PS03 | AIRPORT | AIRPORT | AIRPORT | PS06 | PS06 | AIRPORT | AIRPORT | PS02 | PS02 | PS06 | PS06 | PS11 | PS11 | PS11 |
| | | | | | | | **Lab Report No.** | 265849 | ES2111280 | 265849 | 265849 | ES2111280 | 265849 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.002 | <0.0001 | - | <0.002 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.002 | <0.0001 | - | <0.002 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.002 | <0.0002 | - | <0.002 | 0.002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0011 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.002 | <0.0002 | - | <0.002 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0001 | <0.001 | 0.0003 | <0.001 | <0.001 | 0.0007 | <0.0002 | <0.0002 | 0.0012 | 0.0008 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | 0.0003 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.002 | <0.0005 | - | <0.002 | 0.003 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.001 | 0.0005 | <0.001 | <0.001 | 0.0015 | <0.0002 | <0.0002 | 0.0006 | 0.0005 | <0.0002 | <0.0002 | 0.001 | <0.0002 | 0.0004 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.002 | 0.0004 | <0.002 | <0.002 | 0.001 | <0.0002 | <0.0002 | 0.0011 | 0.0007 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.005 | <0.002 | <0.005 | - | <0.002 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.001 | 0.0004 | <0.001 | <0.001 | 0.001 | <0.0002 | <0.0002 | 0.0004 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.005 | 0.0005 | <0.002 | <0.005 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.001 | <0.0005 | - | <0.001 | 0.002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | 0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.002 | <0.0005 | - | <0.002 | 0.0007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.001 | <0.0005 | - | <0.001 | 0.002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0001 | <0.001 | 0.0006 | <0.001 | <0.001 | 0.0022 | <0.0002 | <0.0002 | 0.0008 | 0.0011 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | 0.0003 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.016 | <0.001 | <0.001 | 0.014 | <0.001 | 0.025 | 0.0024 | 0.0005 | 0.0303 | 0.0184 | 0.001 | 0.001 | 0.0084 | 0.0014 | 0.0047 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.001 | <0.0001 | - | <0.001 | <0.0001 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0004 | <0.001 | <0.0001 | - | <0.001 | 0.0008 | <0.0002 | <0.0002 | 0.0034 | 0.0003 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | 0.0009 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.001 | <0.0001 | - | <0.001 | 0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.002 | <0.0002 | - | <0.002 | <0.0002 | <0.0002 | <0.0002 | 0.0065 | 0.0028 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0001 | <0.001 | <0.0001 | - | <0.001 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.017** | - | <0.001 | - | - | **0.026** | 0.0024 | 0.0005 | **0.0337** | **0.0187** | 0.001 | 0.001 | 0.009 | 0.0014 | 0.0056 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.005 | <0.002 | <0.005 | - | <0.002 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.001 | <0.0002 | - | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.001 | <0.0002 | - | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.002 | <0.001 | - | <0.002 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.001 | <0.005 | <0.001 | - | <0.005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.001 | <0.002 | <0.001 | - | <0.002 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.005 | <0.001 | - | <0.005 | <0.001 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | <0.001 | - | - | <0.001 | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | <0.001 | - | - | <0.001 | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | 0.016 | - | <0.001 | - | - | 0.027 | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.017 | <0.001 | <0.001 | - | <0.001 | 0.043 | 0.0024 | 0.0005 | 0.0463 | 0.0252 | 0.001 | 0.001 | 0.0135 | 0.0014 | 0.0068 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location Code** | | | | | | | | A_STP_SS03 | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 | A_STP_SS09 | BALL_SS01 | BALL_SS02 | CHAP_SS01 | CHAP_SS01 | CHAP_SS01 | CHAP_SS02 | CHAP_SS03 |
| **Field ID** | | | | | | | | QC56 | QC57 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 | A_STP_SS09 | BALL_SS01 | BALL_SS02 | CHAP_SS01 | QC105 | QC205 | CHAP_SS02 | CHAP_SS03 |
| **Date** | | | | | | | | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 21/01/2020 | 21/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 |
| **Depth** | | | | | | | | | | | | | | | | | | | | | | |
| **Sample Type** | | | | | | | | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal |
| **Catchment Zone** | | | | | | | | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Stockyard Creek | Stockyard Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| **Source Zone** | | | | | | | | PS11 | PS11 | PS11 | PS11 | PS11 | PS11 | PS11 | PS11 | PS10 | PS10 | PS08 | | PS08 | PS08 | PS08 |
| **Lab Report No.** | | | | | | | | ES2111280 | 265849 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2002808 | ES2002808 | ES2002810 | ES2002803 | 699303 | ES2002810 | ES2002810 |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0002 | 0.0003 | 0.0005 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | 0.0007 | 0.0003 | 0.0002 | 0.0002 | <0.005 | 0.0005 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | 0.0004 | <0.0002 | 0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | 0.0014 | 0.0004 | <0.0002 | <0.0002 | <0.005 | 0.0003 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.002 | <0.001 | 0.001 | <0.001 | <0.005 | 0.002 | 0.002 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | 0.0003 | 0.0003 | 0.0004 | 0.0005 | 0.0002 | <0.0002 | 0.0009 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0049 | 0.0045 | 0.0036 | 0.0114 | 0.008 | 0.0017 | 0.0212 | 0.0045 | 0.0024 | 0.0021 | 0.0021 | 0.002 | <0.005 | 0.0039 | 0.0021 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0009 | 0.0006 | 0.0004 | 0.0016 | 0.001 | <0.0002 | 0.0007 | 0.0003 | <0.0002 | <0.0002 | 0.0003 | 0.0003 | <0.005 | 0.0007 | 0.0005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0001 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.0058 | 0.0051 | 0.004 | **0.013** | 0.009 | 0.0017 | **0.0219** | 0.0048 | 0.0024 | 0.0021 | 0.0024 | 0.0023 | <0.005 | 0.0046 | 0.0026 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | 0.0047 | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0071 | 0.0061 | 0.0049 | 0.0144 | 0.0092 | 0.0017 | 0.0247 | 0.0053 | 0.0076 | 0.0028 | 0.0036 | 0.0025 | <0.05 | 0.0074 | 0.0046 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | CHAP_SS04 | CHAP_SS05 | DEPOT_SS01 | DEPOT_SS02 | DEPOT_SS03 | DEPOT_SS04 | DEPOT_SS04 | DEPOT_SS05 | DEPOT_SS06 | DEPOT_SS07 | DEPOT_SS08 | DEPOT_SS09 |
| | | | | | | | **Field ID** | CHAP_SS04 | CHAP_SS05 | DEPOT_SS01 | DEPOT_SS02 | DEPOT_SS03 | DEPOT_SS04 | QC27 | DEPOT_SS05 | DEPOT_SS06 | DEPOT_SS07 | DEPOT_SS08 | DEPOT_SS09 |
| | | | | | | | **Date** | 20/01/2020 | 20/01/2020 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | **Source Zone** | PS08 | PS08 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 |
| | | | | | | | **Lab Report No.** | ES2002810 | ES2002810 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111279 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111278 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0028 | 0.0005 | <0.0002 | 0.0003 | 0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | 0.0021 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0002 | <0.0002 | 0.0028 | 0.0006 | <0.0002 | 0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0021 | 0.0014 | 0.155 | 0.0464 | 0.0142 | 0.0113 | 0.0137 | 0.004 | 0.0088 | 0.0084 | 0.002 | 0.0014 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0076 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0004 | <0.0002 | 0.0552 | 0.0079 | 0.0018 | 0.0009 | 0.0009 | 0.0003 | 0.0003 | 0.0009 | <0.0002 | 0.0004 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0045 | 0.0012 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | 0.0016 | 0.0004 | 0.0002 | 0.0003 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | 0.0038 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.0025 | 0.0014 | **0.21** | **0.0543** | **0.016** | **0.0122** | **0.0146** | 0.0043 | 0.0091 | 0.0093 | 0.002 | 0.0018 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0035 | 0.0014 | 0.237 | 0.0585 | 0.0164 | 0.013 | 0.0152 | 0.0043 | 0.0093 | 0.0093 | 0.0022 | 0.0028 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Location Code** | DEPOT_SS10 | DEPOT_SS11 | DEPOT_SS12 | DEPOT_SS12 | DEPOT_SS13 | DEPOT_SS14 | DEPOT_SS15 | DEPOT_SS16 | ID008_SS01 | ID008_SS02 | ID008_SS03 |
| | | | | | | | **Field ID** | DEPOT_SS10 | DEPOT_SS11 | DEPOT_SS12 | QC29 | DEPOT_SS13 | DEPOT_SS14 | DEPOT_SS15 | DEPOT_SS16 | ID008_SS01 | ID008_SS02 | ID008_SS03 |
| | | | | | | | **Date** | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 20/01/2020 | 20/01/2020 | 20/01/2020 |
| | | | | | | | **Depth** | | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | **Source Zone** | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | PS09 | | | |
| | | | | | | | **Lab Report No.** | ES2111278 | ES2111278 | ES2111278 | 265850 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2002824 | ES2002824 | ES2002824 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | **0.0003** | <0.0002 | <0.0002 | <0.0001 | <0.0002 | **0.001** | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | **0.0004** | <0.0002 | **0.0003** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0012** | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | <0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | **0.0003** | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | **0.0003** | <0.0002 | <0.0002 | <0.0001 | <0.0002 | **0.0002** | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0123 | **0.0046** | **0.0026** | **0.0025** | **0.0044** | **0.0033** | **0.0028** | **0.001** | **0.0015** | <0.0002 | **0.0003** |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | **0.0004** | <0.0002 | **0.0003** | **0.0002** | **0.0004** | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | **0.0127** | **0.0046** | **0.0029** | **0.0026** | **0.0048** | **0.0037** | **0.0028** | **0.001** | **0.0015** | <0.0002 | **0.0003** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.001 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | 0.0025 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.0136 | 0.0046 | 0.0029 | 0.0026 | 0.0048 | 0.0068 | 0.0031 | 0.0013 | 0.0017 | <0.0002 | 0.0003 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B2 - Soil Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | | **Location Code** | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 | ID013_SS06 | ID013_SS07 | TC_SS01 | TC_SS02 | TC_SS03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Field ID** | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 | ID013_SS06 | ID013_SS07 | TC_SS01 | TC_SS02 | TC_SS03 |
| | | | | | | | **Date** | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 15/03/2021 | 15/03/2021 | 13/03/2021 |
| | | | | | | | **Depth** | | | | | | | | | | |
| | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek |
| | | | | | | | **Source Zone** | | | | | | | | PS07 | PS07 | PS07 |
| | | | | | | | **Lab Report No.** | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/commercial (HIL D) | *PFAS NEPM 2.0: Health, Public open space (HIL C)* | **PFAS NEPM 2.0: Health, Residential with garden/accessible soil (HIL A)** | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | *10[#1]* | **0.1[#1]** | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | | 0.0014 | 0.0165 | 0.0035 | 0.0052 | 0.0059 | 0.0071 | 0.0022 | 0.0007 | 0.0096 | 0.001 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | | 0.0006 | 0.0006 | 0.0006 | 0.0006 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | 0.0038 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | *1[#1]* | **0.01[#1]** | 0.002 | **0.0171** | 0.0041 | 0.0058 | 0.0059 | 0.0071 | 0.0027 | 0.0007 | **0.0134** | 0.001 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | | 0.002 | 0.0179 | 0.0041 | 0.0058 | 0.0059 | 0.0071 | 0.0027 | 0.0007 | 0.0139 | 0.001 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | A_SD01 | A_SD02 | A_SD03 | A_SD04 | A_SD05 | A_SD06 | A_SD07 | A_SD08 | A_SD09 | A_SD10 | AD_SD01 | AD_SD02 | AD_SD03 | AD_SD04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | A_SD01 | A_SD02 | A_SD03 | A_SD04 | A_SD05 | A_SD06 | A_SD07 | A_SD08 | A_SD09 | A_SD10 | AD_SD01 | AD_SD02 | AD_SD03 | AD_SD04 |
| | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 |
| | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Headstone Creek | Headstone Creek | Headstone Creek | Mission Creek | Rocky Point Creek | Rocky Point Creek | Headstone Creek | Headstone Creek |
| | | | | | | **Source Zone** | PS02 | PS02 | PS02 | PS02 | PS06 | AIRPORT | AIRPORT | AIRPORT | AIRPORT | PS11 | AIRPORT | AIRPORT | AIRPORT | AIRPORT |
| | | | | | | **Lab Report No.** | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002806 | ES2002812 | ES2002812 | ES2002812 | ES2002812 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | 0.0005 | 0.0020 | <0.0005 | <0.0005 | 0.0159 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0020 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | 0.0009 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | 0.0008 | 0.0009 | <0.0002 | 0.0004 | 0.0017 | <0.0002 | 0.0011 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | 0.0022 | 0.0083 | <0.0002 | <0.0002 | 0.0035 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | 0.0004 | 0.0004 | <0.0002 | <0.0002 | 0.0030 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | 0.0003 | 0.0003 | <0.0002 | 0.0002 | 0.0027 | <0.0002 | 0.0033 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | 0.0005 | 0.0042 | <0.0005 | <0.0005 | 0.0010 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | 0.0003 | 0.0003 | <0.0002 | <0.0002 | 0.0012 | <0.0002 | 0.0008 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | 0.001 | <0.001 | 0.001 | 0.002 | 0.003 | <0.001 | 0.003 | 0.001 | 0.002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | 0.0006 | 0.0006 | <0.0002 | <0.0002 | 0.0056 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | 0.0004 | 0.0030 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | 0.0024 | 0.0025 | <0.0002 | <0.0002 | 0.0044 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | 0.0004 | 0.0008 | <0.0002 | <0.0002 | 0.0038 | <0.0002 | 0.0011 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | 0.0562 | 0.0340 | 0.0032 | 0.0030 | 0.0354 | 0.0008 | 0.0098 | 0.0038 | 0.0044 | 0.0031 | 0.0004 | 0.0010 | 0.0006 | 0.0010 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | 0.0008 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | 0.0060 | 0.0027 | 0.0002 | 0.0008 | 0.0024 | <0.0002 | 0.0015 | 0.0006 | 0.0009 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | 0.0008 | 0.0003 | <0.0002 | <0.0002 | 0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | 0.0018 | 0.0250 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | 0.0006 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | **0.0622** | **0.0367** | 0.0034 | 0.0038 | **0.0378** | 0.0008 | **0.0113** | 0.0044 | 0.0053 | 0.0033 | 0.0004 | 0.0010 | 0.0006 | 0.0010 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | 0.0002 | 0.0130 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | 0.0762 | 0.100 | 0.0044 | 0.0064 | 0.0847 | 0.0008 | 0.0210 | 0.0054 | 0.0077 | 0.0069 | 0.0004 | 0.0010 | 0.0006 | 0.0010 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | AD_SD04 | AD_SD04 | AD_SD05 | AD_SD06 | AD_SD07 | AD_SD08 | AD_SD09 | AD_SD10 | BBC_SD02 | BBC_SD03 | BBC_SD04 | BBC_SD05 | BBC_SD05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | QC107 | QC207 | AD_SD05 | AD_SD06 | AD_SD07 | AD_SD08 | AD_SD09 | AD_SD10 | BBC_SD02 | BBC_SD03 | BBC_SD04 | BBC_SD05 | QC65 |
| | | | | | | **Date** | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 14/03/2021 | 17/03/2021 | 18/03/2021 | 18/03/2021 | 18/03/2021 |
| | | | | | | **Sample Type** | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | **Catchment Zone** | Headstone Creek | Headstone Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Mission Creek | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | **Source Zone** | AIRPORT | AIRPORT | AIRPORT | AIRPORT | AIRPORT | PS05 | PS05 | PS05 | | | | | |
| | | | | | | **Lab Report No.** | ES2002803 | 699303 | ES2002812 | ES2002812 | ES2002812 | ES2002812 | ES2002812 | ES2002812 | ES2111280 | ES2111280 | ES2111268 | ES2111268 | ES2111278 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.01 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0077 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0016 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0025 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0055 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0054 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0016 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0027 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | <0.001 | <0.005 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0055 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0010 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0047 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0058 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | 0.0008 | <0.005 | 0.0020 | <0.0002 | 0.0032 | 0.0033 | 0.134 | 0.0104 | 0.0009 | 0.0005 | 0.0013 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | 0.0003 | 0.0002 | 0.0002 | 0.0070 | 0.0025 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0010 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | 0.0014 | 0.0105 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | 0.0008 | <0.005 | 0.0020 | 0.0003 | 0.0034 | 0.0035 | **0.141** | **0.0129** | 0.0009 | 0.0005 | 0.0013 | <0.0002 | <0.0002 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | 0.0008 | <0.05 | 0.0020 | 0.0003 | 0.0034 | 0.0049 | 0.199 | 0.0135 | 0.0009 | 0.0005 | 0.0013 | <0.0002 | <0.0002 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | BBC_SD05 | BBC_SD06 | ID010_SD01 | ID011_SD01 | ID011_SD02 | ID012_SD01 | ID012_SD01 | ID012_SD01 | ID012_SD02 | ID012_SD03 | ID012_SD04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | QC66 | BBC_SD06 | ID010_SD01 | ID011_SD01 | ID011_SD02 | ID012_SD01 | QC109 | QC209 | ID012_SD02 | ID012_SD03 | ID012_SD04 |
| | | | | | | **Date** | 18/03/2021 | 13/03/2021 | 20/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 18/03/2021 | 18/03/2021 |
| | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal |
| | | | | | | **Catchment Zone** | Broken Bridge Creek | Broken Bridge Creek | Rocky Point Creek | Headstone Creek | Headstone Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | **Source Zone** | | | | | | | | | | | |
| | | | | | | **Lab Report No.** | ES2111278 | ES2111268 | ES2002827 | ES2002829 | ES2002829 | ES2002830 | ES2002803 | 699303 | ES2002830 | ES2111259 | ES2111259 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** | **0.0060** | <0.0002 | <0.0002 | <0.0005 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0006 | <0.005 | <0.0006 | <0.0006 | <0.0012 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | **0.002** | <0.005 | **0.001** | <0.001 | <0.002 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | <0.005 | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | <0.0002 | **0.0024** | <0.0002 | **0.0008** | **0.0051** | 0.0167 | 0.0195 | **0.0083** | **0.0090** | **0.0073** | **0.0019** |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0024** | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | <0.0002 | **0.0002** | <0.0002 | **0.0003** | **0.0005** | **0.0041** | **0.0060** | <0.005 | **0.0020** | **0.0006** | <0.0005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0016** | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | <0.005 | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | <0.0002 | **0.0026** | <0.0002 | **0.0011** | **0.0056** | **0.0208** | **0.0255** | **0.0083** | **0.0110** | **0.0079** | **0.0019** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0006 | **0.0092** | <0.0006 | <0.0006 | <0.0012 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0005 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0006 | <0.005 | <0.0006 | <0.0006 | <0.0012 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0006 | <0.005 | <0.0006 | <0.0006 | <0.0012 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0006 | **0.0057** | <0.0006 | <0.0006 | <0.0012 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 | <0.0005 |
| **PFAS** | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | **0.0083** | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - | - | - | - | - | **0.0083** | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | <0.0002 | **0.0026** | <0.0002 | **0.0011** | **0.0056** | **0.0208** | **0.0324** | <0.05 | **0.0120** | **0.0079** | **0.0019** |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | ID025_SD01 | MC_SD01 | MC_SD02 | MC_SD03 | MC_SD04 | MC_SD04 | MC_SD05 | MC_SD06 | MC_SD07 | MC_SD07 | MC_SD08 | MC_SD08 | MC_SD08 | MC_SD09 | MC_SD10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | ID025_SD01 | MC_SD01 | MC_SD02 | MC_SD03 | MC_SD04 | MC_SD04 | MC_SD05 | MC_SD06 | MC_SD07 | MC_SD07 | MC_SD08 | QC106 | QC206 | MC_SD09 | MC_SD10 |
| | | | | | | **Date** | 18/03/2021 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 13/03/2021 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 13/03/2021 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 20/01/2020 |
| | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal |
| | | | | | | **Catchment Zone** | Broken Bridge Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | **Source Zone** | | | | | | | | | | | | | | | |
| | | | | | | **Lab Report No.** | ES2111257 | ES2002810 | ES2002810 | ES2002810 | ES2002810 | ES2111268 | ES2002810 | ES2002810 | ES2002810 | ES2111268 | ES2002810 | ES2002803 | 699303 | ES2002810 | ES2002810 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.01 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0026 | 0.0042 | 0.0028 | 0.0025 | 0.0055 | 0.0032 | 0.0010 | 0.0023 | 0.0010 | 0.0018 | 0.0016 | <0.005 | 0.0021 | 0.0015 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0003 | 0.0004 | 0.0005 | 0.0002 | 0.0003 | 0.0005 | 0.0002 | 0.0003 | 0.0002 | 0.0005 | 0.0003 | <0.005 | 0.0002 | 0.0003 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0007 | 0.0011 | 0.0008 | 0.0006 | 0.0018 | 0.0008 | 0.0002 | 0.0004 | 0.0003 | 0.0004 | 0.0004 | <0.005 | 0.0005 | 0.0003 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0006 | 0.0008 | 0.0006 | 0.0005 | 0.0012 | 0.0007 | 0.0002 | 0.0005 | 0.0003 | 0.0004 | 0.0004 | <0.005 | 0.0005 | 0.0003 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | <0.001 | 0.002 | 0.002 | 0.002 | 0.003 | <0.001 | 0.002 | 0.002 | 0.002 | <0.001 | 0.001 | <0.001 | <0.005 | <0.001 | 0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0003 | 0.0002 | 0.0004 | <0.0002 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | 0.0002 | 0.0003 | 0.0002 | <0.005 | <0.0002 | 0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0003 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | <0.0002 | 0.0018 | 0.0028 | 0.0025 | 0.0021 | 0.0027 | 0.0030 | 0.0007 | 0.0014 | 0.0011 | 0.0011 | 0.0009 | <0.005 | 0.0012 | 0.0010 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | <0.0002 | 0.283 | 0.316 | 0.418 | 0.456 | 0.288 | 0.386 | 0.152 | 0.182 | 0.145 | 0.172 | 0.174 | 0.13 | 0.148 | 0.141 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0028 | 0.0032 | 0.0041 | 0.0040 | 0.0082 | 0.0043 | 0.0012 | 0.0035 | 0.0018 | 0.0015 | 0.0011 | <0.005 | 0.0011 | 0.0025 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0466 | 0.0502 | 0.0609 | 0.0652 | 0.0924 | 0.0692 | 0.0205 | 0.0462 | 0.0249 | 0.0219 | 0.0202 | 0.014 | 0.0187 | 0.0310 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0050 | 0.0050 | 0.0068 | 0.0083 | 0.0075 | 0.0071 | 0.0022 | 0.0038 | 0.0030 | 0.0024 | 0.0016 | <0.005 | 0.0022 | 0.0026 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0021 | 0.0008 | 0.0019 | 0.0015 | 0.0020 | 0.0017 | 0.0012 | 0.0010 | 0.0013 | 0.0009 | 0.0007 | <0.005 | 0.0007 | 0.0006 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0022 | 0.0018 | 0.0032 | 0.0031 | 0.0061 | 0.0031 | 0.0010 | 0.0023 | 0.0011 | 0.0016 | 0.0013 | <0.005 | 0.0008 | 0.0021 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | <0.0002 | **0.330** | **0.366** | **0.479** | **0.521** | **0.380** | **0.455** | **0.172** | **0.228** | **0.170** | **0.194** | **0.194** | **0.144** | **0.167** | **0.172** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.01 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0003 | 0.0005 | 0.0004 | 0.0009 | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.005 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | 0.144 | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | 0.13 | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | <0.0002 | 0.351 | 0.389 | 0.505 | 0.548 | 0.416 | 0.482 | 0.182 | 0.246 | 0.180 | 0.206 | 0.203 | 0.144 | 0.176 | 0.184 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | MC_SD11 | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD16 | MC_SD16 | MC_SD17 | MC_SD18 | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | MC_SD11 | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 | QC39 | QC40 | MC_SD17 | MC_SD18 | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
| | | | | | | **Date** | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 27/03/2021 | 27/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 |
| | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | **Source Zone** | | | | | | | | | | | | | | | |
| | | | | | | **Lab Report No.** | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111280 | 265849 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | 0.0015 | 0.0016 | 0.0003 | 0.0014 | 0.0004 | 0.0008 | 0.0006 | 0.0004 | 0.0044 | 0.0043 | 0.0048 | 0.0097 | 0.0022 | 0.0007 | 0.0009 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | 0.0005 | 0.0002 | <0.0002 | 0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0001 | 0.0008 | 0.0005 | 0.0005 | 0.0007 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | 0.0006 | 0.0004 | <0.0002 | 0.0003 | <0.0002 | 0.0004 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0026 | 0.0051 | 0.0005 | 0.0013 | 0.0010 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | 0.0004 | 0.0004 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | 0.0001 | 0.0013 | 0.0011 | 0.0010 | 0.0025 | 0.0006 | 0.0003 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0002 | <0.001 | <0.001 | 0.002 | 0.003 | <0.001 | 0.001 | 0.002 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | 0.0002 | 0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | 0.0003 | 0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | 0.0012 | 0.0013 | 0.0003 | 0.0015 | 0.0007 | 0.0007 | 0.0006 | 0.0004 | 0.0028 | 0.0024 | 0.0016 | 0.0098 | 0.0012 | 0.0004 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | 0.0885 | 0.192 | 0.0425 | 0.176 | 0.103 | 0.119 | 0.0991 | 0.073 | 0.138 | 0.233 | 0.175 | 0.423 | 0.0620 | 0.0075 | 0.0088 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | 0.0008 | 0.0016 | 0.0004 | 0.0016 | 0.0008 | 0.0013 | 0.0009 | 0.0006 | 0.0032 | 0.0019 | 0.0008 | 0.0029 | 0.0013 | <0.0002 | 0.0003 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | 0.0104 | 0.0219 | 0.0058 | 0.0253 | 0.0112 | 0.0167 | 0.0142 | 0.0076 | 0.0322 | 0.0233 | 0.0117 | 0.0387 | 0.0128 | 0.0016 | 0.0029 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | 0.0014 | 0.0034 | 0.0009 | 0.0033 | 0.0015 | 0.0021 | 0.0016 | 0.0012 | 0.0030 | 0.0032 | 0.0017 | 0.0043 | 0.0011 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | 0.0009 | 0.0018 | <0.0002 | 0.0024 | 0.0015 | 0.0011 | 0.0008 | 0.0007 | 0.0013 | 0.0017 | 0.0010 | 0.0026 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | 0.0007 | 0.0012 | 0.0003 | 0.0011 | 0.0006 | 0.0010 | 0.0007 | 0.0004 | 0.0028 | 0.0019 | 0.0007 | 0.0025 | 0.0012 | <0.0002 | 0.0004 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | **0.0989** | **0.214** | **0.0483** | **0.201** | **0.114** | **0.136** | **0.113** | **0.081** | **0.170** | **0.256** | **0.187** | **0.462** | **0.0748** | 0.0091 | **0.0117** |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | 0.0004 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.001 | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - | - | - | - | - | 0.073 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | 0.108 | 0.227 | 0.0505 | 0.214 | 0.120 | 0.143 | 0.119 | 0.085 | 0.190 | 0.273 | 0.204 | 0.506 | 0.0829 | 0.0128 | 0.0165 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 | MC_SD29 | TC_SD02 | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 | TC_SD09 | TC_SD10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 | MC_SD29 | TC_SD02 | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 | TC_SD09 | TC_SD10 |
| | | | | | | **Date** | 13/03/2021 | 13/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 15/03/2021 | 16/03/2021 | 12/03/2021 | 12/03/2021 | 12/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 |
| | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | **Catchment Zone** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek |
| | | | | | | **Source Zone** | | | | | | | | | | | | | | |
| | | | | | | **Lab Report No.** | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | 0.0045 | 0.0004 | 0.0020 | 0.0051 | 0.0022 | 0.0004 | 0.0014 | 0.0008 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | 0.0003 | 0.0020 | 0.0002 | 0.0009 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 | 0.0005 | 0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | 0.0075 | 0.0004 | 0.0004 | 0.0017 | <0.0002 | 0.0004 | 0.0007 | 0.0007 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | 0.0008 | <0.0002 | 0.0004 | 0.0012 | 0.0007 | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | 0.005 | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 | <0.001 | <0.001 | 0.004 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0003 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 | 0.0011 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | 0.0007 | <0.0002 | 0.0012 | 0.0030 | 0.0024 | 0.0004 | 0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | 0.0151 | 0.0080 | 0.170 | 0.471 | 0.383 | 0.0120 | 0.0067 | 0.0048 | 0.0016 | 0.0050 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | 0.0013 | <0.0002 | 0.0016 | 0.0038 | 0.0022 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | 0.0146 | 0.0028 | 0.0250 | 0.0533 | 0.0399 | 0.0006 | 0.0050 | 0.0027 | 0.0007 | 0.0025 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | 0.0006 | <0.0002 | 0.0032 | 0.0064 | 0.0062 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | 0.0025 | 0.0054 | 0.0026 | 0.0010 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | 0.0008 | 0.0002 | 0.0012 | 0.0027 | 0.0013 | <0.0002 | 0.0004 | 0.0002 | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | | - | | | | - | - | - | | | | - | |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | **0.0297** | **0.0108** | **0.195** | **0.524** | **0.423** | **0.0126** | **0.0117** | 0.0075 | 0.0023 | 0.0075 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | 0.0002 | 0.0019 | 0.0009 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | 0.0509 | 0.0118 | 0.208 | 0.562 | 0.442 | 0.0180 | 0.0152 | 0.0098 | 0.0063 | 0.0083 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B3 - Sediment Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | | | **Location Code** | TC_SD11 | TC_SD12 | TC_SD13 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Field ID** | TC_SD11 | TC_SD12 | TC_SD13 |
| | | | | | | **Date** | 15/03/2021 | 15/03/2021 | 17/03/2021 |
| | | | | | | **Sample Type** | Normal | Normal | Normal |
| | | | | | | **Catchment Zone** | Water Mill Creek | Water Mill Creek | Water Mill Creek |
| | | | | | | **Source Zone** | | | |
| | | | | | | **Lab Report No.** | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | PFAS NEPM 2.0: Ecological, direct exposure | PFAS NEPM 2.0: Ecological, indirect exposure | PFAS NEPM 2.0: Health, Industrial/ commercial (HIL D) | **PFAS NEPM 2.0: Health, Residential with garden/ accessible soil (HIL A)** | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | | | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | | | <0.0005 | <0.0005 | <0.0005 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | | | <0.001 | <0.001 | <0.001 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 10[#1] | | 50[#1] | **0.1[#1]** | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | mg/kg | 0.005 | | | | | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 1[#1] | 0.01[#1] | | | <0.0002 | 0.0043 | 0.0049 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | | | <0.0002 | 0.0004 | 0.0003 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | | | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropropanesulfonic acid (PFPrS) | mg/kg | 0.005 | | | | | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | | | 20[#1] | **0.01[#1]** | <0.0002 | 0.0047 | 0.0052 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | | | | | <0.0005 | <0.0005 | <0.0005 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | | | | | <0.0002 | <0.0002 | <0.0002 |
| **PFAS** | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | mg/kg | 0.005 | | | | | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | | | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | | | <0.0002 | 0.0047 | 0.0052 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SB01 | A_SB01 | A_SB01 | A_SB02 | A_SB02 | A_SB02 | A_SB03 | A_SB03 | A_SB04 | A_SB04 | A_SB04 | A_SB05 | A_SB05 | A_SB05 |
| | | | | | | | | **Field ID** | A_SB01_0.1 | A_SB01_0.5 | A_SB01_1.0 | A_SB02_0.1 | A_SB02_0.5 | A_SB02_1.5 | A_SB03_0.1 | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB04_1.0 | A_SB05_0.1 | A_SB05_0.4 | A_SB05_1.0 |
| | | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | **PFAS NEMP - 99% species protection (Leachable)** | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | 0.10 | 0.28 | 0.08 | <0.05 | <0.05 | <0.05 | 1.48 | 2.05 | <0.05 | 0.08 | 0.20 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.05 | 0.03 | 0.05 | 0.04 | 0.02 | <0.02 | 0.06 | 0.04 | 0.08 | 0.05 | 0.07 | 0.04 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | 0.08 | 0.10 | 0.06 | <0.02 | <0.02 | <0.02 | 0.07 | 0.06 | 0.03 | <0.02 | 0.06 | 0.04 | 0.03 | 0.03 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.07 | 0.02 | 0.03 | 0.05 | 0.03 | <0.02 | 0.08 | 0.06 | 0.12 | 0.04 | 0.07 | 0.08 | <0.02 | 0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.05 | 0.07 | 0.04 | 0.02 | <0.02 | <0.02 | 0.10 | 0.08 | 0.04 | 0.04 | 0.04 | 0.03 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | 0.08 | 0.07 | 0.05 | <0.02 | <0.02 | <0.02 | 0.37 | 0.28 | <0.02 | 0.05 | 0.07 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.15 | 0.28 | 0.17 | 0.04 | 0.06 | 0.04 | 0.11 | 0.08 | 0.17 | 0.13 | 0.14 | 0.05 | 0.02 | 0.02 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | **6.45** | **59.2** | **31.2** | **0.70** | **10.2** | **21.5** | **5.29** | **6.36** | **7.82** | **44.8** | **44.5** | **1.10** | **4.85** | **6.65** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.33 | 0.38 | 0.30 | 0.17 | 0.19 | 0.16 | 0.11 | 0.07 | 0.41 | 0.23 | 0.28 | 0.11 | 0.02 | 0.03 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | 0.03 | 0.13 | 0.07 | <0.02 | 0.04 | 0.06 | <0.02 | <0.02 | 0.05 | 0.15 | 0.10 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | 1.31 | 0.18 | 0.23 | 0.09 | 0.03 | <0.02 | 0.06 | 0.10 | 0.89 | 1.25 | 0.80 | 0.05 | 0.33 | 0.14 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | *6.78* | *59.6* | *31.5* | *0.87* | *10.4* | *21.7* | *5.40* | *6.43* | *8.23* | *45.0* | *44.8* | *1.21* | *4.87* | *6.68* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | 0.56 | 0.63 | 0.24 | <0.02 | 0.06 | <0.02 | 0.33 | 0.64 | 1.03 | 0.88 | 0.36 | 0.02 | 0.03 | 0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 9.26 | 61.4 | 32.5 | 1.21 | 10.6 | 21.8 | 8.06 | 9.82 | 10.9 | 47.7 | 46.7 | 1.52 | 5.28 | 6.91 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SB06 | A_SB06 | A_SB06 | A_SB07 | A_SB07 | A_SB07 | A_SB08 | A_SB08 | A_SB08 | A_SB09 | A_SB09 | A_SB09 | A_SB10 | A_SB10 |
| | | | | | | | | **Field ID** | A_SB06_0.1 | A_SB06_0.5 | A_SB06_1.5 | A_SB07_0.1 | A_SB07_0.4 | A_SB07_1.5 | A_SB08_0.4 | A_SB08_1.0 | QC04 | A_SB09_0.1 | A_SB09_0.5 | A_SB09_1.5 | A_SB10_0.5 | A_SB10_1.5 |
| | | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 9/03/2021 | 10/03/2021 | 9/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 9/03/2021 | 10/03/2021 | 9/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | 0.02 | 0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.03 | <0.02 | <0.02 | 0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.03 | 0.03 | 0.02 | 0.03 | 0.02 | 0.03 | 0.03 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.72 | **6.29** | **8.58** | 0.73 | **2.45** | **9.10** | 1.92 | **3.03** | 0.26 | 0.57 | **4.60** | **7.33** | **7.05** | **6.26** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.04 | 0.02 | 0.02 | 0.07 | 0.03 | 0.04 | 0.05 | 0.03 | 0.07 | 0.04 | 0.03 | 0.04 | 0.12 | 0.08 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | 0.09 | 0.06 | 0.06 | 0.03 | 0.06 | <0.02 | 0.27 | 0.12 | <0.02 | 0.07 | 0.07 | 0.13 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | *0.76* | *6.31* | *8.60* | *0.80* | *2.48* | *9.14* | *1.97* | *3.06* | *0.33* | *0.61* | *4.63* | *7.37* | *7.17* | *6.34* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | 0.18 | 0.07 | 0.02 | <0.02 | <0.02 | 0.22 | 0.11 | 0.03 | 0.03 | 0.06 | 0.09 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.93 | 6.58 | 8.78 | 0.94 | 2.58 | 9.19 | 2.56 | 3.32 | 0.38 | 0.73 | 4.78 | 7.61 | 7.21 | 6.35 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SB10 | A_SB11 | A_SB11 | A_SB11 | A_SB12 | A_SB12 | A_SB12 | A_SB13 | A_SB14 | A_SB15 | A_SB15 | A_SB15 | A_SB16 | A_SB16 |
| | | | | | | | | **Field ID** | QC08 | A_SB11_0.5 | A_SB11_1.1 | QC11 | A_SB12_0.1 | A_SB12_0.5 | A_SB12_1.0 | A_SB13_0.1 | A_SB14_0.1 | A_SB15_0.1 | A_SB15_0.5 | A_SB15_1.0 | A_SB16_0.1 | A_SB16_0.5 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Field_D | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | 0.10 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.10 | 0.04 | 0.03 | 0.08 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.02 | 0.19 | 0.12 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.03 | 0.10 | 0.07 | 0.22 | 0.04 | 0.03 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.02 | 0.06 | 0.04 | 0.09 | 0.05 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.06 | 0.14 | 0.08 | 0.41 | 0.17 | 0.04 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.75 | **2.85** | **2.47** | 1.62 | 0.45 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | <0.01 | <0.01 | 0.04 | 0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.21 | 0.14 | 0.07 | 0.18 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | 0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | 0.02 | 0.06 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.96 | *2.99* | *2.54* | 1.80 | 0.45 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | <0.01 | <0.01 | 0.04 | 0.02 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | 0.33 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 1.17 | 3.38 | 3.19 | 3.14 | 0.85 | 0.11 | 0.08 | 0.03 | 0.02 | 0.02 | <0.01 | <0.01 | 0.04 | 0.02 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SB16 | A_SB17 | A_SB17 | A_SB17 | A_SB18 | A_SB18 | A_SB18 | A_SB19 | A_SB19 | A_SB19 | A_SB20 | A_SB21 | A_SB21 | A_SB21 |
| | | | | | | | | **Field ID** | A_SB16_1.0 | A_SB17_0.1 | A_SB17_0.5 | A_SB17_1.5 | A_SB18_0.1 | A_SB18_0.5 | A_SB18_1.5 | A_SB19_0.1 | A_SB19_0.5 | A_SB19_1.0 | A_SB20_0.1 | A_SB21_0.1 | A_SB21_0.5 | A_SB21_1.0 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 | ES2115092 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | 0.13 | <0.05 | <0.05 | 0.54 | <0.05 | <0.05 | <0.05 | 0.74 | 0.22 | 0.20 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.03 | 0.02 | 0.27 | 1.90 | 1.46 | 0.22 | 2.21 | 1.26 | <0.02 | 0.10 | 0.20 | 0.04 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.02 | <0.02 | 0.04 | <0.02 | <0.02 | 0.14 | 0.02 | 0.03 | <0.02 | 0.11 | 0.15 | 0.08 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.05 | 0.04 | 0.06 | 0.43 | 0.33 | 0.09 | 0.39 | 0.25 | <0.02 | 0.05 | 0.06 | 0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.03 | <0.02 | 0.11 | 0.21 | 0.59 | <0.02 | 0.37 | 0.24 | <0.02 | 0.13 | 0.10 | 0.04 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | 0.10 | 0.06 | 0.10 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | 0.04 | <0.01 | 0.68 | 4.15 | 0.15 | 0.10 | 1.40 | 1.60 | <0.01 | 0.17 | 0.22 | 0.07 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | <0.01 | 0.02 | 0.12 | 0.02 | **9.24** | **3.01** | 0.19 | **36.0** | **71.7** | **57.5** | 0.13 | **2.39** | **9.84** | **3.95** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.10 | 0.26 | 1.23 | <0.02 | 0.62 | 0.31 | <0.02 | <0.02 | 0.06 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 3.27 | 11.1 | 30.6 | 0.29 | 6.17 | 4.91 | <0.02 | 0.19 | 1.03 | 0.27 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 1.25 | 4.48 | 0.23 | 0.06 | 0.63 | 1.46 | <0.02 | 0.07 | 0.13 | 0.04 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | 0.09 | 0.05 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.14 | 0.29 | 0.03 | 0.30 | 0.30 | <0.02 | <0.02 | 0.03 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | <0.01 | 0.02 | 0.12 | 0.02 | *12.5* | *14.1* | *30.8* | *36.3* | *77.9* | *62.4* | 0.13 | *2.58* | *10.9* | *4.22* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 0.02 | 0.29 | 0.08 | 15.2 | 25.8 | 35.3 | 37.6 | 83.9 | 68.0 | 0.13 | 4.05 | 12.2 | 4.89 |

**Comments**
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**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SB22 | A_SB22 | A_SB22 | A_SB23 | A_SB23 | A_SB23 | A_SB23 | A_SB24 | A_SB25 | A_SB25 | A_SB25 | A_SB26 | A_SB26 | A_SB26 |
| | | | | | | | | **Field ID** | A_SB22_0.1 | A_SB22_0.5 | A_SB22_1.5 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB23_1.5 | A_SB24_0.1 | A_SB25_0.1 | A_SB25_1.0 | QC48 | A_SB26_0.1 | A_SB26_0.3 | A_SB26_0.5 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115092 | ES2115099 | ES2115092 | ES2115099 | ES2115099 | ES2115099 | ES2115092 | ES2115099 | ES2115099 | ES2115092 | ES2115099 | ES2115099 | ES2115099 | ES2115092 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | 0.08 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.08 | 0.04 | 0.23 | <0.02 | 0.02 | 0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | 0.09 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.09 | 0.10 | 0.37 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.05 | 0.05 | 0.41 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.05 | 0.09 | 0.51 | 0.02 | 0.02 | 0.11 | 0.17 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.17 | **2.52** | 0.87 | **3.04** | **10.4** | **4.59** | **4.20** | **2.15** | 0.48 | 0.04 | 0.06 | 0.07 | 0.36 | 0.45 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.23 | 0.08 | 0.66 | 0.12 | 0.07 | 0.22 | 0.37 | 0.03 | <0.02 | 0.05 | 0.12 | <0.02 | <0.02 | 0.05 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | 0.02 | <0.02 | <0.02 | 0.10 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | 0.08 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | *0.40* | *2.60* | *1.53* | *3.16* | *10.5* | *4.81* | *4.57* | *2.18* | 0.48 | 0.09 | 0.18 | 0.07 | 0.36 | 0.50 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | 0.14 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.67 | 3.05 | 3.40 | 3.40 | 10.5 | 5.04 | 4.80 | 2.18 | 0.48 | 0.09 | 0.18 | 0.07 | 0.36 | 0.50 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SD01 | A_SS02 | A_SS06 | A_SS11 | A_SS13 | A_SS19 | A_SS20 | A_SS22 | A_SS23 | A_SS24 | A_SS28 | A_SS30 | A_SS30 | A_SS30 |
| | | | | | | | | **Field ID** | A_SD01 | A_SS02 | A_SS06 | A_SS11 | A_SS13 | A_SS19 | A_SS20 | A_SS22 | A_SS23 | A_SS24 | A_SS28 | A_SS30 | QC112 | QC212 |
| | | | | | | | | **Date** | 22/01/2020 | 21/01/2020 | 21/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 |
| | | | | | | | | **Location Type** | Sediment | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | 702872 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.20 | <0.05 | <0.05 | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 3.02 | 0.08 | 0.69 | 0.15 | 1.30 | <0.05 | 0.22 | 0.22 | 0.12 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | 0.06 | 0.09 | 0.45 | 0.08 | 0.11 | 0.47 | 0.63 | 0.14 | 0.17 | 0.17 | 0.17 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.11 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.30 | 0.05 | 0.08 | 0.32 | 0.38 | <0.02 | 0.69 | 0.70 | 0.35 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | 0.02 | <0.02 | 0.03 | 0.20 | 0.18 | 0.09 | 0.12 | 0.29 | 0.28 | 0.16 | 0.24 | 0.27 | 0.24 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.12 | 0.03 | 0.04 | 0.13 | 0.22 | <0.02 | 0.12 | 0.13 | 0.13 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.21 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.48 | 0.03 | 0.10 | 0.22 | 0.29 | <0.02 | 0.12 | 0.17 | 0.06 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.06 | <0.02 | 0.09 | 0.09 | 0.30 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.01 | 0.01 | 0.02 | 0.02 | 0.04 | 0.41 | 0.08 | 0.13 | 0.43 | 0.68 | 0.06 | 0.88 | 0.99 | 0.65 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | <0.01 |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.11 | 0.28 | 0.80 | 0.14 | 0.26 | **10.6** | 0.68 | 1.90 | **10.1** | **9.12** | 0.71 | 1.52 | **2.10** | 0.81 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.04 | <0.02 | <0.02 | 0.18 | 0.24 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.02 | 0.06 | <0.02 | 0.20 | 0.45 | 0.40 | 0.20 | 0.22 | 2.42 | 2.03 | 0.24 | 0.33 | 0.31 | 0.26 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | 0.14 | 0.14 | 0.02 | 0.03 | 0.02 | 0.01 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.02 | 0.04 | 0.34 | 0.22 | 0.05 | <0.02 | <0.02 | <0.01 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.04 | <0.02 | <0.02 | 0.14 | 0.24 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | <0.01 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.13 | 0.34 | 0.80 | 0.34 | 0.71 | *11.0* | 0.88 | *2.12* | *12.5* | *11.2* | 0.95 | 1.85 | *2.41* | 1.07 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.07 | 0.02 | 0.04 | 0.25 | 0.09 | <0.02 | <0.02 | <0.02 | <0.05 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.72 |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.46 |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.14 | 0.37 | 0.84 | 0.45 | 1.17 | 16.4 | 1.36 | 3.56 | 15.7 | 16.3 | 1.38 | 4.32 | 5.28 | 3.05 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS34 | A_SS38 | A_SS45 | A_SS54 | A_SS58 | A_SS62 | A_SS64 | A_SS65 | A_SS66 | A_SS67 | A_SS68 | A_SS69 | A_SS70 | A_SS71 |
| | | | | | | | | **Field ID** | A_SS34 | A_SS38 | A_SS45 | A_SS54 | A_SS58 | A_SS62 | A_SS64 | A_SS65 | A_SS66 | A_SS67 | A_SS68 | A_SS69 | A_SS70 | A_SS71 |
| | | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 22/01/2020 | 22/01/2020 | 23/01/2020 | 23/01/2020 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2005692 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | 0.28 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | 0.14 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.04 | 0.15 | 0.04 | 0.62 | 0.02 | 0.08 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | 0.10 | 0.09 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | 0.27 | 0.05 | 0.07 | <0.02 | 0.07 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | 0.07 | 0.04 | 0.06 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | 0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.03 | 0.16 | 0.17 | 0.17 | 0.02 | 0.07 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.24 | 1.80 | 0.52 | 0.70 | 0.23 | 0.33 | 0.03 | 0.03 | 0.15 | <0.01 | 0.02 | 0.05 | 0.01 | 0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | <0.02 | 0.28 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.13 | 0.60 | 0.12 | 4.84 | 0.03 | 0.02 | <0.02 | <0.02 | 0.06 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | <0.02 | 0.18 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | 0.02 | <0.02 | 0.08 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.37 | *2.40* | 0.64 | *5.54* | 0.26 | 0.35 | 0.03 | 0.03 | 0.21 | <0.01 | 0.02 | 0.05 | 0.01 | 0.02 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.44 | 3.26 | 1.20 | 7.28 | 0.30 | 0.60 | 0.03 | 0.03 | 0.26 | <0.01 | 0.02 | 0.05 | 0.01 | 0.02 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS72 | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 | A_SS83 | A_SS83 | A_SS84 |
| | | | | | | | | **Field ID** | A_SS72 | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 | A_SS83 | QC13 | A_SS84 |
| | | | | | | | | **Date** | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 10/03/2021 | 9/03/2021 | 10/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.06 | 0.07 | 0.02 | 0.14 | <0.01 | 0.05 | 0.04 | 0.03 | 0.05 | 0.04 | 0.06 | 0.06 | 0.05 | 0.05 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.06 | 0.11 | 0.02 | 0.14 | <0.01 | 0.05 | 0.04 | 0.03 | 0.05 | 0.04 | 0.06 | 0.08 | 0.07 | 0.05 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.06 | 0.11 | 0.02 | 0.15 | <0.01 | 0.05 | 0.04 | 0.03 | 0.05 | 0.04 | 0.06 | 0.08 | 0.07 | 0.05 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS85 | A_SS86 | A_SS87 | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 | A_SS92 | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
| | | | | | | | | **Field ID** | A_SS85 | A_SS86 | A_SS87 | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 | QC02 | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.06 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | 0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | 0.06 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.14 | 0.13 | 0.01 | 0.01 | 0.13 | 0.08 | 0.05 | 0.19 | 0.11 | 0.02 | 0.02 | 0.18 | 0.06 | 0.83 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.08 | 0.09 | <0.02 | <0.02 | <0.02 | <0.02 | 0.07 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.14 | 0.15 | 0.01 | 0.01 | 0.13 | 0.08 | 0.05 | 0.27 | 0.20 | 0.02 | 0.02 | 0.18 | 0.06 | 0.90 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.14 | 0.16 | 0.01 | 0.01 | 0.14 | 0.08 | 0.05 | 0.27 | 0.20 | 0.02 | 0.02 | 0.19 | 0.06 | 1.07 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS97 | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 | A_SS103 | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 | A_SS108 | A_SS108 |
| | | | | | | | | **Field ID** | QC17 | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 | A_SS103 | QC19 | A_SS104 | A_SS105 | A_SS106 | A_SS107 | A_SS108 | QC23 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Field_D | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal | Field_D |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.06 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 1.16 | 1.27 | 0.59 | 1.20 | 0.48 | <0.05 | <0.05 | 0.30 | 0.16 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | 0.03 | <0.02 | 0.17 | <0.02 | <0.02 | 0.04 | 0.08 | 0.06 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | 0.49 | 0.46 | 0.15 | 0.02 | 0.02 | <0.02 | 0.03 | 0.06 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.04 | 0.04 | 0.45 | <0.02 | <0.02 | <0.02 | 0.03 | 0.04 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | 0.07 | 0.03 | 0.02 | 0.13 | <0.02 | <0.02 | <0.02 | 0.05 | 0.05 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.08 | 0.58 | 0.66 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.04 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | 0.11 | 0.17 | 0.09 | 0.85 | 0.05 | 0.05 | <0.01 | 0.11 | 0.12 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.62 | <0.01 | <0.01 | <0.01 | 0.20 | **19.5** | **19.5** | **9.86** | **7.23** | 1.03 | 0.40 | 0.10 | **5.53** | **6.12** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.06 | <0.02 | <0.02 | <0.02 | 0.03 | 0.15 | 0.10 | 0.05 | 1.46 | 0.07 | <0.02 | 0.05 | 0.24 | 0.23 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.08 | 0.09 | 0.08 | 0.03 | <0.02 | <0.02 | 0.03 | 0.05 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.20 | 0.07 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.06 | 0.06 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.68 | <0.01 | <0.01 | <0.01 | 0.23 | *19.6* | *19.6* | *9.91* | *8.69* | 1.10 | 0.40 | 0.15 | *5.77* | *6.35* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.82 | <0.01 | <0.01 | <0.01 | 0.23 | 21.5 | 22.4 | 11.9 | 12.0 | 1.68 | 0.47 | 0.19 | 6.51 | 7.01 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS109 | A_SS110 | A_SS111 | A_SS112 | A_SS113 | A_SS114 | A_SS115 | A_SS123 | A_SS124 | A_SS125 | A_SS126 | A_SS127 | A_SS128 |
| | | | | | | | | **Field ID** | A_SS109 | A_SS110 | A_SS111 | A_SS112 | A_SS113 | A_SS114 | A_SS115 | A_SS123 | A_SS124 | A_SS125 | A_SS126 | A_SS127 | A_SS128 |
| | | | | | | | | **Date** | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Headstone Creek | Headstone Creek | Headstone Creek | Headstone Creek | Headstone Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | 1.34 | <0.05 | 0.12 | <0.05 | 0.14 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 2.69 | 0.97 | 1.01 | 0.55 | <0.02 | <0.02 | 0.06 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | 0.03 | 0.14 | 0.06 | 0.16 | 0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.94 | 0.73 | 0.33 | 0.27 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.12 | 0.08 | 0.25 | 0.35 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | 0.4 | 0.3 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | 0.02 | 0.12 | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.26 | 0.18 | 5.64 | 1.16 | 0.04 | 0.05 | 0.10 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | **226** | **53.5** | **83.8** | **1.43** | **0.51** | **1.12** | **7.70** | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.07 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | 0.20 | 0.03 | 0.59 | 0.08 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 1.96 | 0.28 | 37.5 | 1.40 | 0.08 | 0.03 | 0.07 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | 0.54 | 0.06 | 8.61 | 0.34 | 0.02 | <0.02 | 0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | 0.61 | 0.59 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | 0.31 | 0.05 | 0.15 | 0.09 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | *228* | *53.8* | *121* | *2.83* | 0.59 | 1.15 | 7.77 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.07 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | 1.15 | 0.16 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 235 | 58.5 | 138 | 6.12 | 0.67 | 1.38 | 7.98 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.07 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_SS129 | A_SS130 | A_SS131 | A_SS132 | A_SS133 | A_SS134 | A_SS135 | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 | A_SS141 | A_STP_SS01 |
| | | | | | | | | **Field ID** | A_SS129 | A_SS130 | A_SS131 | A_SS132 | A_SS133 | A_SS134 | A_SS135 | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 | A_SS141 | A_STP_SS01 |
| | | | | | | | | **Date** | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 17/03/2021 | 17/03/2021 | 16/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Mission Creek | Mission Creek | Water Mill Creek | Rocky Point Creek | Headstone Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115099 | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | 0.05 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | 0.02 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.02 | 0.01 | <0.01 | <0.01 | 0.08 | 0.02 | 0.03 | 0.01 | <0.01 | 0.12 | 0.09 | <0.01 | <0.01 | 0.15 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | 0.11 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.02 | 0.01 | <0.01 | <0.01 | 0.11 | 0.02 | 0.03 | 0.01 | <0.01 | 0.23 | 0.09 | <0.01 | <0.01 | 0.15 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.02 | 0.01 | <0.01 | <0.01 | 0.18 | 0.02 | 0.03 | 0.01 | <0.01 | 0.23 | 0.10 | <0.01 | <0.01 | 0.21 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_STP_SS02 | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 | A_STP_SS09 | A_STP_SS10 | AD_SD09 | AD_SD10 | BBC_SD02 | BBC_SD03 |
| | | | | | | | | **Field ID** | A_STP_SS02 | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 | A_STP_SS09 | A_STP_SS10 | AD_SD09 | AD_SD10 | BBC_SD02 | BBC_SD03 |
| | | | | | | | | **Date** | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 20/01/2020 | 20/01/2020 | 14/03/2021 | 17/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Sediment | Sediment | Sediment | Sediment |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2005692 | ES2005692 | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.10 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.08 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.22 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.12 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.10 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | 0.24 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | <0.01 | 0.02 | <0.01 | 0.16 | 0.08 | 0.03 | 0.15 | 0.04 | 0.07 | 2.44 | 0.14 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | 0.05 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | 0.14 | 0.03 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | <0.01 | 0.02 | <0.01 | 0.21 | 0.12 | 0.03 | 0.15 | 0.04 | 0.07 | 2.58 | 0.17 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 0.02 | <0.01 | 0.23 | 0.12 | 0.03 | 0.16 | 0.04 | 0.07 | 3.48 | 0.17 | <0.01 | <0.01 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | BBC_SD04 | BBC_SD06 | CHAP_SS02 | ID011_SD02 | ID012_SD01 | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 | ID013_SS06 | ID013_SS07 | MC_SD03 |
| | | | | | | | | **Field ID** | BBC_SD04 | BBC_SD06 | CHAP_SS02 | ID011_SD02 | ID012_SD01 | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 | ID013_SS06 | ID013_SS07 | MC_SD03 |
| | | | | | | | | **Date** | 18/03/2021 | 18/03/2021 | 20/01/2020 | 21/01/2020 | 21/01/2020 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 20/01/2020 |
| | | | | | | | | **Location Type** | Sediment | Sediment | Soil | Sediment | Sediment | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Sediment |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Mission Creek | Headstone Creek | Broken Bridge Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2115099 | ES2115099 | ES2005692 | ES2005692 | ES2005692 | ES2115102 | ES2115102 | ES2115102 | ES2115102 | ES2115102 | ES2115102 | ES2115102 | ES2005692 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | <0.01 | <0.01 | 0.12 | 0.22 | <0.01 | 0.01 | 0.03 | 0.04 | 0.06 | 0.01 | 0.09 | <0.01 | 0.18 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.02 | <0.02 | <0.02 | <0.02 | 0.19 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | <0.01 | <0.01 | 0.14 | 0.22 | <0.01 | 0.01 | 0.03 | 0.06 | 0.08 | 0.01 | 0.09 | <0.01 | 0.37 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | 0.14 | 0.22 | <0.01 | 0.01 | 0.03 | 0.06 | 0.08 | 0.01 | 0.09 | <0.01 | 0.44 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | MC_SD04 | MC_SD04 | MC_SD07 | MC_SD08 | MC_SD08 | MC_SD08 | MC_SD11 | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
| | | | | | | | | **Field ID** | MC_SD04 | MC_SD04 | MC_SD07 | MC_SD08 | QC106 | QC206 | MC_SD11 | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
| | | | | | | | | **Date** | 20/01/2020 | 13/03/2021 | 13/03/2021 | 20/01/2020 | 20/01/2020 | 20/01/2020 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 |
| | | | | | | | | **Location Type** | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2005692 | ES2115099 | ES2115099 | ES2005692 | ES2005692 | 702872 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | 0.03 | 0.06 | 0.06 | 0.05 | 0.03 | 0.04 | <0.02 | 0.02 | <0.02 | 0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 | 0.02 | 0.04 | 0.04 | 0.03 | 0.02 | 0.02 | <0.01 | 0.02 | 0.02 | 0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | <0.01 | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.11 | 0.06 | 0.52 | **3.73** | **3.47** | **2.3** | 0.78 | 1.83 | 0.46 | 0.76 | 1.07 | 0.28 | 0.39 | 0.65 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | 0.05 | 0.04 | 0.04 | 0.04 | <0.02 | 0.04 | <0.02 | 0.04 | 0.03 | 0.03 | 0.04 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.08 | 0.13 | 0.48 | 0.54 | 0.50 | 0.46 | 0.19 | 0.45 | 0.14 | 0.41 | 0.33 | 0.24 | 0.32 | 0.16 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | 0.03 | 0.06 | 0.06 | 0.04 | 0.02 | 0.04 | <0.02 | 0.04 | 0.03 | <0.02 | 0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | 0.03 | 0.06 | 0.05 | 0.04 | <0.02 | 0.03 | <0.02 | 0.03 | 0.02 | 0.02 | 0.04 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | 0.02 | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.19 | 0.19 | 1.00 | *4.27* | *3.97* | *2.76* | 0.97 | *2.28* | 0.60 | 1.17 | 1.40 | 0.52 | 0.71 | 0.81 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | 2.79 | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | 2.33 | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.19 | 0.30 | 1.16 | 4.53 | 4.22 | 3 | 1.04 | 2.45 | 0.60 | 1.32 | 1.50 | 0.60 | 0.81 | 0.81 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 | MC_SD29 | PWS_CAS_TOILETS | PWS_CAS_TOILETS |
| | | | | | | | | **Field ID** | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 | MC_SD29 | PWS_CAS_TOILETS_0.1 | PWS_CAS_TOILETS_0.5 |
| | | | | | | | | **Date** | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 |
| | | | | | | | | **Location Type** | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | SW | Sediment | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115699 | ES2115699 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | 0.12 | 0.08 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.07 | 0.03 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.01 | 0.13 | 0.04 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | 0.04 | 0.02 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.46 | **5.05** | 1.18 | 0.01 | 0.02 | 0.02 | 0.02 | 1.42 | **2.56** | 1.77 | 0.02 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | 0.09 | 0.05 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.05 | 0.03 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.09 | 1.04 | 0.46 | 0.03 | 0.03 | 0.08 | 0.02 | 0.36 | 0.62 | 0.30 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.09 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.06 | 0.04 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | 0.08 | 0.05 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | 0.04 | 0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.55 | *6.09* | 1.64 | 0.04 | 0.05 | 0.10 | 0.04 | 1.78 | *3.18* | *2.07* | 0.02 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.56 | 6.68 | 1.91 | 0.04 | 0.05 | 0.10 | 0.04 | 1.92 | 3.44 | 2.21 | 0.02 | <0.01 | <0.01 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_EB_TOILETS | PWS_EB_TOILETS | PWS_HEAD_TOILETS | PWS_HEAD_TOILETS | TC_SD02 | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD12 | TC_SD13 | TC_SS01 |
| | | | | | | | | **Field ID** | PWS_EB_TOILETS_0.1 | PWS_EB_TOILETS_0.5 | PWS_HEAD_TOILETS_0.1 | PWS_HEAD_TOILETS_0.5 | TC_SD02 | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD12 | TC_SD13 | TC_SS01 |
| | | | | | | | | **Date** | 15/03/2021 | 15/03/2021 | 15/03/2021 | 15/03/2021 | 16/03/2021 | 12/03/2021 | 12/03/2021 | 12/03/2021 | 15/03/2021 | 17/03/2021 | 15/03/2021 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Sediment | Sediment | Sediment | Sediment | Sediment | Sediment | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Sampling Method** | Water Mill Creek | Water Mill Creek | Headstone Creek | Headstone Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek |
| | | | | | | | | **Lab Report No.** | ES2115699 | ES2115699 | ES2115699 | ES2115699 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 0.28 | 0.22 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.27 | 0.23 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.04 | 0.13 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | 0.23 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | 0.04 | 0.09 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.02 | 0.02 | 0.02 | <0.01 | 0.02 | 0.03 | <0.01 | 0.03 | 0.01 | 0.03 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.07 | 0.04 | <0.02 | 0.06 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.02 | 0.02 | 0.02 | <0.01 | 0.09 | 0.07 | <0.01 | 0.09 | 0.01 | 0.03 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.91 | 0.69 | 0.02 | <0.01 | 0.09 | 0.07 | <0.01 | 0.09 | 0.01 | 0.03 | <0.01 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B4: Soil and Sediment Leachability Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | TC_SS02 | TC_SS03 |
| | | | | | | | | **Field ID** | TC_SS02 | TC_SS03 |
| | | | | | | | | **Date** | 15/03/2021 | 15/03/2021 |
| | | | | | | | | **Location Type** | Soil | Soil |
| | | | | | | | | **Sample Type** | Normal | Normal |
| | | | | | | | | **Sampling Method** | Water Mill Creek | Water Mill Creek |
| | | | | | | | | **Lab Report No.** | ES2115099 | ES2115099 |
| | Unit | EQL | **PFAS NEMP - 90% species protection (Leachable)** | PFAS NEMP - 95% species protection (Leachable) | PFAS NEMP - 99% species protection (Leachable) | Potable Water Supply (Leachable) | *Primary Contact Recreation (Leachable)* | Stock Watering (Leachable) | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.05 | | | | | | | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#2] | 19[#2] | 0.56[#2] | *10[#3]* | 0.56[#2] | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#2] | 0.00023[#2] | | | | 0.03 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2[#3]* | 0.07[#2] | 0.05 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.05 | <0.01 |

**Comments**
#1 Australian Government Department of Health 2017
#2 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B5: Surface Water Soil Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | BBC_SW01 | BBC_SW05 | BBC_SW05 | BUMORAS_SW01 | Cockpit_SW01 | Cockpit_SW01 | Cockpit_SW01 | Cockpit_SW01 | DEPOT_SW01 | HC_SW01 | HC_SW01 |
| | | | | | | | | **Field ID** | BBC_SW01 | BBC_SW05 | QC65 | BUMORAS_SW01 | Cockpit_SW01 | COCKPIT_SW01 | QC104 | QC204 | DEPOT_SW01 | HC_SW01 | QC43 |
| | | | | | | | | **Date** | 15/01/2020 | 18/03/2021 | 18/03/2021 | 14/01/2020 | 18/01/2020 | 17/03/2021 | 18/01/2020 | 18/01/2020 | 11/03/2021 | 14/03/2021 | 14/03/2021 |
| | | | | | | | | **Location Type** | SW | SW | Sediment | SW | SW | SW | SW | SW | SW | SW | SW |
| | | | | | | | | **Sample Type** | Normal | Normal | Field_D | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Field_D |
| | | | | | | | | **Location Description** | | | | | | | | | | | |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Rocky Point Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Headstone Creek | Headstone Creek |
| | | | | | | | | **Lab Report No.** | ES2002626 | ES2111268 | ES2111280 | ES2002626 | ES2002808 | ES2111280 | ES2002803 | 699303 | ES2111278 | ES2111280 | ES2111280 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.05 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | <0.01 | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | 0.03 | 0.02 | 0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | 0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | <0.01 | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.03 | 0.04 | 0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | 0.01 | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | 0.01 | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.03 | 0.04 | <0.1 | <0.01 | <0.01 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#4 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B5: Surface Water Soil Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | HC_SW01 | ID003_SW01 | ID007_SPRING | ID012_SW02 | ID012_SW03 | ID012_SW03 | ID012_SW03 | ID012_SW04 | MC_SD28 | MC_SD28 | MC_SW04 | MC_SW11 | MC_SW13 |
| | | | | | | | | **Field ID** | QC44 | ID003_SW01 | ID007_SPRING | ID012_SW02 | ID012_SW03 | QC63 | QC64 | ID012_SW04 | QC59 | QC60 | MC_SW04 | MC_SW11 | MC_SW13 |
| | | | | | | | | **Date** | 14/03/2021 | 16/01/2020 | 18/01/2020 | 21/01/2020 | 18/03/2021 | 18/03/2021 | 18/03/2021 | 18/03/2021 | 17/03/2021 | 17/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 |
| | | | | | | | | **Location Type** | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW |
| | | | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Field_D | Interlab_D | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | | Private | Private | Private | Private | Private | Private | Private | | | | | |
| | | | | | | | | **Sampling Method** | Headstone Creek | Rocky Point Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | 265849 | ES2002619 | ES2002822 | ES2002830 | ES2111259 | ES2111259 | 265845 | ES2111259 | ES2111280 | 265849 | ES2111268 | ES2111268 | ES2111268 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | 0.59 | 0.67 | 0.40 | 0.67 | 0.52 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | 0.01 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.18 | 0.20 | 0.14 | 0.17 | 0.13 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | 0.06 | 0.12 | 0.02 | 0.11 | 0.08 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.02 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.02 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.22 | 0.28 | 0.02 | 0.23 | 0.15 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | <0.01 | 0.10 | 0.06 | 0.05 | 0.05 | <0.01 | **5.59** | **7.1** | 0.38 | **4.01** | **3.53** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | 0.51 | 0.61 | 0.27 | 0.58 | 0.45 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.01 | 0.03 | <0.02 | 0.08 | 0.02 | 0.02 | 0.02 | <0.02 | 3.76 | 4.4 | 0.88 | 4.51 | 3.48 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | 0.23 | 0.28 | 0.02 | 0.24 | 0.17 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | 0.51 | 0.56 | 0.52 | 0.52 | 0.48 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | 0.03 | <0.01 | 0.18 | 0.08 | 0.07 | 0.07 | <0.01 | *9.35* | *11* | 1.26 | *8.52* | *7.01* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | <0.01 | - | - | - | - | - | 0.05 | - | - | 7.3 | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 0.03 | <0.01 | 0.18 | 0.08 | 0.07 | 0.07 | <0.01 | 11.6 | 14 | 2.75 | 11.1 | 9.09 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#4 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B5: Surface Water Soil Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | MC_SW21 | MC_SW24 | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | PWS_DUCK_DAM | PWS_DUCK_DAM | PWS_DUCK_DAM | PWS_DUCK_DAM | PWS_HEAD_DAM | PWS_HEAD_DAM |
| | | | | | | | | **Field ID** | MC_SW21 | MC_SW24 | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | PWS_DUCK_DAM | PWS_DUCK_DAM | QC41 | QC42 | PWS_HEAD_DAM | PWS_HEAD_DAM |
| | | | | | | | | **Date** | 13/03/2021 | 13/03/2021 | 13/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 14/01/2020 | 14/03/2021 | 14/03/2021 | 14/03/2021 | 14/01/2020 | 16/03/2021 |
| | | | | | | | | **Location Type** | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal |
| | | | | | | | | **Location Description** | | | | | | | Public | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Headstone Creek | Headstone Creek |
| | | | | | | | | **Lab Report No.** | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2002626 | ES2111280 | ES2111280 | 265849 | ES2002626 | ES2111280 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 2.05 | 0.03 | 0.04 | 0.70 | 0.64 | 0.70 | <0.02 | <0.02 | <0.02 | 0.01 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.46 | 0.03 | 0.05 | 0.17 | 0.16 | 0.17 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.41 | <0.02 | <0.02 | 0.12 | 0.11 | 0.11 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | 0.3 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.02 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | 0.92 | <0.01 | <0.01 | 0.24 | 0.24 | 0.25 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | **24.0** | 0.03 | 0.05 | **4.23** | **5.85** | **5.52** | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | 2.49 | 0.03 | 0.04 | 0.64 | 0.53 | 0.56 | <0.02 | <0.02 | <0.02 | 0.01 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 15.9 | 0.14 | 0.17 | 4.82 | 4.08 | 4.07 | 0.09 | 0.07 | 0.08 | 0.1 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | 1.42 | <0.02 | <0.02 | 0.28 | 0.26 | 0.26 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | 1.69 | 0.04 | 0.04 | 0.74 | 0.60 | 0.50 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | *39.9* | *0.17* | *0.22* | *9.05* | *9.93* | *9.59* | 0.12 | 0.09 | 0.10 | 0.12 | 0.02 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | 0.02 | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 49.6 | 0.30 | 0.39 | 12.0 | 12.6 | 12.2 | 0.12 | 0.09 | 0.10 | 0.16 | 0.02 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#4 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B5: Surface Water Soil Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_HEAD_DAM | PWS_HEAD_DAM | PWS-WWII_DAM | TC_SW01 | TC_SW02 | TC_SW02 | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 | TC_SW12 | TC_SW13 | WW11_DAM |
| | | | | | | | | **Field ID** | QC100 | QC200 | PWS-WWII_DAM | TC_SW01 | TC_SW02 | TC_SW02 | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 | TC_SW12 | TC_SW13 | WW11_DAM |
| | | | | | | | | **Date** | 14/01/2020 | 14/01/2020 | 13/01/2020 | 14/01/2020 | 16/01/2020 | 13/03/2021 | 12/03/2021 | 12/03/2021 | 13/03/2021 | 13/03/2021 | 15/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 |
| | | | | | | | | **Location Type** | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW | SW |
| | | | | | | | | **Sample Type** | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Public | Public | Public | | | | | | | | | | | Public |
| | | | | | | | | **Sampling Method** | Headstone Creek | Headstone Creek | Mission Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2002626 | 699266 | ES2002626 | ES2002626 | ES2002626 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111268 | ES2111280 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 2.68 | <0.02 | <0.02 | 0.03 | <0.02 | 0.05 | <0.02 | 0.12 | <0.02 | <0.02 | <0.02 | 2.21 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 0.65 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | 0.55 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 0.51 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.75 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.05 | 0.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | 1.13 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 1.25 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | 0.02 | <0.01 | **44.6** | <0.01 | 0.03 | 0.07 | 0.03 | 0.15 | 0.01 | 0.29 | <0.01 | 0.04 | 0.10 | **21.0** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 2.97 | <0.02 | <0.02 | 0.04 | <0.02 | 0.06 | <0.02 | 0.14 | <0.02 | <0.02 | <0.02 | 3.00 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 22.6 | <0.02 | 0.06 | 0.23 | 0.10 | 0.40 | 0.03 | 0.85 | <0.02 | <0.02 | 0.03 | 13.6 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 2.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | 1.65 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.01 | 2.30 | <0.02 | <0.02 | 0.06 | <0.02 | 0.07 | <0.02 | 0.11 | <0.02 | <0.02 | <0.02 | 2.42 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | 0.02 | <0.01 | *67.2* | <0.01 | 0.09 | 0.30 | 0.13 | 0.55 | 0.04 | 1.14 | <0.01 | 0.04 | 0.13 | *34.6* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.02 | <0.1 | 79.9 | <0.01 | 0.09 | 0.43 | 0.13 | 0.74 | 0.04 | 1.58 | <0.01 | 0.04 | 0.13 | 46.7 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#4 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | A_BORE1 | A_STP_OUT | A_TANK1 | A_TANK3 | A_TAP1 | A_TAP2 | A_TAP3 | A_TAP4 | A_TAP5 | AIRPORT_BORE | AIRPORT_BORE | AIRPORT_BORE | PWS_AIRPORT_BORE | PWS_AIRPORT_BORE |
| | | | | | | | | **Field ID** | A_BORE1 | A_STP_OUT | A_TANK1 | A_TANK3 | A_TAP1 | A_TAP2 | A_TAP3 | A_TAP4 | A_TAP5 | AIRPORT_BORE | QC06 | QC07 | PWS_AIRPORT_BORE | QC101 |
| | | | | | | | | **Date** | 14/01/2020 | 16/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 9/03/2021 | 9/03/2021 | 9/03/2021 | 14/01/2020 | 14/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Field_D |
| | | | | | | | | **Location Description** | Public | | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek |
| | | | | | | | | **Lab Report No.** | ES2002626 | ES2111268 | ES2111278 | ES2111278 | ES2111278 | ES2111278 | ES2111280 | ES2111280 | ES2111280 | ES2111278 | ES2111279 | 265850 | ES2002626 | ES2002626 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 1.32 | 1.44 | 1.5 | 1.35 | 1.34 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.30 | 0.33 | 0.38 | 0.33 | 0.33 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.29 | 0.20 | 0.30 | 0.28 | 0.27 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.25 | 0.2 | 0.2 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | **0.01** | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | **0.68** | **0.70** | **0.73** | **0.57** | **0.57** |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | **0.16** | <0.01 | <0.01 | **0.02** | **0.01** | <0.01 | **0.08** | <0.01 | **17.2** | **22.5** | **16** | **33.1** | **20.6** |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 1.35 | 1.55 | 1.4 | 1.62 | 1.47 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 0.07 | 0.08 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.04 | 7.68 | 12.2 | 8.5 | 11.4 | 8.24 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.69 | 0.92 | 0.75 | 0.92 | 0.89 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 1.13 | 1.14 | 1.4 | 1.27 | 1.23 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | 0.07 | 0.24 | <0.01 | <0.01 | 0.02 | 0.01 | <0.01 | 0.11 | 0.04 | *24.9* | *34.7* | *24* | *44.5* | *28.8* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | 17 | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 0.07 | 0.28 | <0.01 | <0.01 | 0.02 | 0.01 | <0.01 | 0.11 | 0.04 | 30.8 | 41.2 | 31 | 51.0 | 35.1 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_AIRPORT_BORE | CHAP_TAP1 | CHAP_TAP1 | CHAP_TAP1 | CHAP_TAP1 | CHAP_TAP2 | CHAP_TAP2 | COUNCIL_TAP1 | COUNCIL_TAP2 | DEPOT_TANK1 | DEPOT_TANK1 | DEPOT_TANK1 | DEPOT_TANK2 |
| | | | | | | | | **Field ID** | QC201 | CHAP_TAP1 | CHAP_TAP1 | QC30 | QC31 | CHAP_TAP2 | CHAP_TAP2 | COUNCIL_TAP1 | COUNCIL_TAP2 | DEPOT_TANK1 | QC110 | QC210 | DEPOT_TANK2 |
| | | | | | | | | **Date** | 14/01/2020 | 21/01/2020 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 21/01/2020 | 11/03/2021 | 9/03/2021 | 9/03/2021 | 21/01/2020 | 21/01/2020 | 21/01/2020 | 21/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Interlab_D | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal |
| | | | | | | | | **Location Description** | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | 699266 | ES2002810 | ES2111276 | ES2111276 | 265847 | ES2002810 | ES2111276 | ES2111279 | ES2111279 | ES2002819 | ES2002803 | 699303 | ES2002819 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | 1.2 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 0.38 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | 0.27 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 0.09 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.01 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | 0.25 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 0.07 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | 0.15 | <0.1 | <0.1 | <0.1 | <0.02 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.05 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | 0.57 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.17 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | 0.10 | - | - | - | - | - | - | - | - | - | - | <0.01 | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | 22 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 5.54 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | 1.2 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 0.45 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | 10 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 3.47 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | 0.62 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | 0.24 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | 1.1 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.01 | 0.35 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | 0.50 | - | - | - | - | - | - | - | - | - | - | <0.01 | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | *32* | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | *9.01* |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.05 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | 32.57 | - | - | - | - | - | - | - | - | - | - | <0.01 | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | 22.57 | - | - | - | <0.01 | - | - | - | - | - | - | <0.01 | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | 37.96 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.1 | 10.8 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | DEPOT_TANK3 | DEPOT_TAP | DEPOT_TAP1 | FRE_TAP1 | FRE_TAP1 | FRE_TAP1 | FRE_TAP1 | FRE_TAP2 | FRE_TAP3 | FRE_TAP5 | ID001_BORE | ID002_TANK | ID003_BORE |
| | | | | | | | | **Field ID** | DEPOT_TANK3 | DEPOT_TAP | DEPOT_TAP1 | FRE_TAP1 | FRE_TAP1 | QC35 | QC36 | FRE_TAP2 | FRE_TAP3 | FRE_TAP5 | ID001_BORE | ID002_TANK | ID003_BORE |
| | | | | | | | | **Date** | 11/03/2021 | 21/01/2020 | 11/03/2021 | 20/01/2020 | 12/03/2021 | 12/03/2021 | 12/03/2021 | 20/01/2020 | 12/03/2021 | 12/03/2021 | 16/01/2020 | 16/01/2020 | 16/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Private | Private | Private |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Water Mill Creek | Rocky Point Creek | Broken Bridge Creek | Rocky Point Creek |
| | | | | | | | | **Lab Report No.** | ES2111278 | ES2002819 | ES2111278 | ES2002817 | ES2111256 | ES2111256 | 265846 | ES2002817 | ES2111256 | ES2111256 | ES2002615 | ES2002614 | ES2002619 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | 0.37 | <0.02 | 0.37 | <0.02 | <0.02 | <0.01 | 1.07 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | 0.09 | <0.02 | 0.09 | <0.02 | <0.02 | <0.02 | 0.26 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | 0.07 | <0.02 | 0.07 | <0.02 | <0.02 | <0.01 | 0.21 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.02 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10* [#3] | 0.56[#2] | <0.01 | 0.16 | <0.01 | 0.16 | <0.01 | <0.01 | <0.01 | 0.44 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | **5.46** | <0.01 | **5.49** | <0.01 | <0.01 | <0.01 | **15.0** | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | 0.42 | <0.02 | 0.41 | <0.02 | <0.02 | <0.01 | 1.31 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | 3.33 | <0.02 | 3.14 | <0.02 | <0.02 | <0.01 | 7.30 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.23 | <0.02 | 0.23 | <0.02 | <0.02 | <0.01 | 0.74 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | 0.34 | <0.02 | 0.31 | <0.02 | <0.02 | <0.01 | 0.94 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2* [#3] | 0.07[#2] | <0.01 | *8.79* | <0.01 | *8.63* | <0.01 | <0.01 | <0.01 | *22.3* | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | <0.01 | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 10.5 | <0.01 | 10.3 | <0.01 | <0.01 | <0.01 | 27.5 | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | ID003_WELL | ID004_TANK | ID004_TANK | ID004_TAP1 | ID005_TANK | ID005_TANK | ID005_TANK | ID006_BORE1 | ID006_BORE2 | ID009_TAP1 | ID009_Well | ID009_Well | ID010_BORE |
| | | | | | | | | **Field ID** | ID003_WELL | ID004_TANK | ID004_TANK | ID004_TAP1 | ID005_TANK | QC103 | QC203 | ID006_BORE1 | ID006_BORE2 | ID009_TAP1 | ID009_Well | ID009_WELL | ID010_BORE |
| | | | | | | | | **Date** | 16/01/2020 | 16/01/2020 | 11/03/2021 | 11/03/2021 | 16/01/2020 | 16/01/2020 | 16/01/2020 | 17/01/2020 | 17/01/2020 | 11/03/2021 | 20/01/2020 | 11/03/2021 | 20/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private |
| | | | | | | | | **Sampling Method** | Rocky Point Creek | Mission Creek | Mission Creek | Mission Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Mission Creek | Mission Creek | Mission Creek | Rocky Point Creek |
| | | | | | | | | **Lab Report No.** | ES2002619 | ES2002609 | ES2111275 | ES2111275 | ES2002612 | ES2002626 | ES2002626 | ES2002821 | ES2002821 | ES2111277 | ES2002826 | ES2111277 | ES2002827 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | ID013_BORE | ID013_SW01 | ID013_SW01 | ID014_BORE | ID014_BORE | ID014_BORE | ID014_BORE | ID014_BORE | ID014_BORE | ID015_BORE | ID015_BORE | ID016_BORE | ID016_TAP1 | ID016_TAP2 | ID017_TAP1 | ID018_TAP1 |
| | | | | | | | | **Field ID** | ID013_BORE | ID013_SW01 | ID013_SW01 | ID014_BORE | ID014_BORE | QC33 | QC34 | QC117 | QC217 | ID015_BORE | ID015_BORE | ID016_BORE | ID016_TAP1 | ID016_TAP2 | ID017_TAP1 | ID018_TAP1 |
| | | | | | | | | **Date** | 22/01/2020 | 22/01/2020 | 11/03/2021 | 23/01/2020 | 12/03/2021 | 12/03/2021 | 12/03/2021 | 21/01/2020 | 23/01/2020 | 23/01/2020 | 16/03/2021 | 12/03/2021 | 12/03/2021 | 12/03/2021 | 16/03/2021 | 12/03/2021 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private | Private |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Headstone Creek |
| | | | | | | | | **Lab Report No.** | ES2002831 | ES2002831 | ES2111261 | ES2002813 | ES2111243 | ES2111243 | 265848 | ES2002803 | 699303 | ES2002814 | ES2111245 | ES2111244 | ES2111244 | ES2111244 | ES2111249 | ES2111250 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.02 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | 0.14 | 0.14 | 0.15 | 0.12 | 0.11 | 0.13 | 0.14 | 0.11 | 0.09 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | 0.03 | 0.04 | 0.02 | 0.02 | 0.04 | 0.04 | 0.03 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.02 | <0.1 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10* [#3] | 0.56[#2] | <0.01 | 0.07 | 0.05 | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.02 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | <0.01 | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | **2.78** | 1.38 | 1.93 | 0.89 | 0.84 | 1.0 | 1.73 | 1.5 | 0.46 | 0.15 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | 0.17 | 0.18 | 0.17 | 0.14 | 0.13 | 0.17 | 0.14 | 0.10 | 0.10 | 0.05 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | 1.72 | 1.46 | 1.20 | 1.04 | 0.98 | 1.2 | 1.02 | 0.74 | 0.63 | 0.30 | 0.14 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | 0.14 | 0.07 | 0.08 | 0.05 | 0.04 | 0.06 | 0.07 | 0.05 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | 0.14 | 0.17 | 0.16 | 0.15 | 0.15 | 0.17 | 0.14 | 0.11 | 0.11 | 0.06 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | 0.04 | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2* [#3] | 0.07[#2] | <0.01 | *4.50* | *2.84* | *3.13* | 1.93 | 1.82 | *2.2* | *2.75* | *2.24* | 1.09 | 0.45 | 0.14 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.5 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.1 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | 2.27 | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | 1.0 | - | 1.53 | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 5.22 | 3.51 | 3.80 | 2.47 | 2.33 | 2.8 | 3.32 | 2.73 | 1.46 | 0.61 | 0.20 | <0.01 | <0.01 | <0.01 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | ID019_TAP1 | ID019_TAP2 | ID020_TAP1 | ID021_TAP1 | ID022_TAP1 | ID023_TAP1 | ID023_TAP2 | ID024_TAP1 | PSW_POUND_BORE A | PWS_EB_TOILETS | PWS_HCAS_TOILETS | PWS_HEAD_TOILETS | PWS_HESSIES_RESV |
| | | | | | | | | **Field ID** | ID019_TAP1 | ID019_TAP2 | ID020_TAP1 | ID021_TAP1 | ID022_TAP1 | ID023_TAP1 | ID023_TAP2 | ID024_TAP1 | PSW_POUND_BORE A | PWS_EB_TOILETS | PWS_HCAS_TOILETS | PWS_HEAD_TOILETS | PWS_HESSIES_RESERVOIR |
| | | | | | | | | **Date** | 16/03/2021 | 16/03/2021 | 16/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 17/03/2021 | 14/01/2020 | 15/03/2021 | 16/03/2021 | 16/03/2021 | 14/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Private | Private | Private | Private | Private | Private | Private | Private | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Mission Creek | Mission Creek | Mission Creek | Mission Creek | Headstone Creek | Mission Creek | Mission Creek | Mission Creek | Water Mill Creek | Water Mill Creek | Broken Bridge Creek | Headstone Creek | Water Mill Creek |
| | | | | | | | | **Lab Report No.** | ES2111252 | ES2111252 | ES2111253 | ES2111248 | ES2111254 | ES2111247 | ES2111247 | ES2111246 | ES2002626 | ES2111280 | ES2111280 | ES2111280 | ES2002626 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.13 | <0.02 | <0.02 | 1.17 | 1.25 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.30 | 0.32 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | 0.16 | 0.16 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 | <0.01 | <0.01 | 0.55 | 0.57 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.71 | <0.01 | <0.01 | **20.8** | **21.2** | 0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.13 | <0.02 | <0.02 | 1.41 | 1.43 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.96 | <0.02 | <0.02 | 11.5 | 10.3 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | <0.02 | 0.85 | 0.86 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.14 | <0.02 | <0.02 | 1.26 | 1.38 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 1.67 | <0.01 | <0.01 | *32.3* | *31.5* | 0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 2.17 | <0.01 | <0.01 | 38.2 | 37.7 | 0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_HOSP_BORE | PWS_HOSP_TANK 1 | PWS_HOSP_TANK 2 | PWS_HOSP_TANK 3 | PWS_HOSP_TANK 4 | PWS_HOSP_TANK 5 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 |
| | | | | | | | | **Field ID** | PWS_HOSP_BORE | PWS_HOSP_TANK 1 | PWS_HOSP_TANK 2 | PWS_HOSP_TANK 3 | PWS_HOSP_TANK 4 | PWS_HOSP_TANK 5 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 | PWS_HOSP_TAP1 | QC118 | QC218 |
| | | | | | | | | **Date** | 15/01/2020 | 15/01/2020 | 15/01/2020 | 15/01/2020 | 15/01/2020 | 15/01/2020 | 15/01/2020 | 13/02/2020 | 10/03/2021 | 13/02/2020 | 13/02/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D |
| | | | | | | | | **Location Description** | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | ES2002622 | ES2002622 | ES2002622 | ES2002622 | ES2002622 | ES2002622 | ES2002622 | EM2002483 | ES2111281 | EM2002483 | 702421 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.05 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10* [#3] | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | <0.01 |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 0.45 | 0.46 | <0.01 | 0.48 | 0.54 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | 0.04 | <0.02 | 0.04 | 0.04 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | <0.01 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2* [#3] | 0.07[#2] | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 0.50 | 0.50 | <0.01 | 0.52 | 0.58 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | 0.58 |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | - | - | - | - | 0.54 |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 0.50 | 0.50 | <0.01 | 0.52 | 0.58 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_HOSP_TAP2 | PWS_HOSP_TAP3 | PWS_HOSP_TAP3 | PWS_HOSP_TAP4 | PWS_HOSP_TAP4 |
| | | | | | | | | **Field ID** | PWS_HOSP_TAP2 | PWS_HOSP_TAP3 | PWS_HOSP_TAP3 | PWS_HOSP_TAP4 | PWS_HOSP_TAP4 |
| | | | | | | | | **Date** | 13/02/2020 | 13/02/2020 | 10/03/2021 | 13/02/2020 | 10/03/2021 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Public | Public | Public | Public | Public |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | EM2002483 | EM2002483 | ES2111281 | EM2002483 | ES2111281 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | 0.30 | <0.01 | 0.43 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | 0.04 | <0.02 | 0.04 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | 0.34 | <0.01 | 0.47 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | 0.34 | <0.01 | 0.47 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B6: Bore, Tap and Tank Water Analytical Results**
**DITCRD, Norfolk, DSI**
**Norfolk Island**
**DITCRD**

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Location Code** | PWS_HOSP_TAP4A | PWS_HOSP_TAP6 | PWS_HOSP_TAP10 | PWS_KINGFISH_BORE B | PWS_SCH_BORE | PWS_SCH_BORE | PWS_SCH_BORE | PWS_SCH_TANK 1 | PWS_SCH_TAP | WC-01 | WC-02 | WC-03_BORE |
| | | | | | | | | **Field ID** | PWS_HOSP_TAP4A | PWS_HOSP_TAP6 | PWS_HOSP_TAP10 | PWS_KINGFISH_BORE B | PWS_SCH_BORE | QC102 | QC202 | PWS_SCH_TANK 1 | PWS_SCH_TAP | WC-01 | WC-02 | WC-03_BORE |
| | | | | | | | | **Date** | 14/03/2021 | 14/03/2021 | 14/03/2021 | 14/01/2020 | 16/01/2020 | 16/01/2020 | 16/01/2020 | 16/01/2020 | 16/01/2020 | 15/01/2020 | 16/01/2020 | 17/01/2020 |
| | | | | | | | | **Location Type** | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water | Water |
| | | | | | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Normal |
| | | | | | | | | **Location Description** | Public | Public | Public | Public | Public | Public | Public | Public | Public | Private | Private | Private |
| | | | | | | | | **Sampling Method** | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Broken Bridge Creek | Water Mill Creek | Water Mill Creek | Broken Bridge Creek |
| | | | | | | | | **Lab Report No.** | ES2111264 | ES2111264 | ES2111264 | ES2002626 | ES2002620 | ES2002620 | 699263 | ES2002620 | ES2002620 | ES2002617 | ES2002616 | ES2002618 |
| | Unit | EQL | **PFAS NEPM 2.0: Ecological, 90% species protection** | PFAS NEPM 2.0: Ecological, 95% species protection | PFAS NEPM 2.0: Ecological, 99% species protection | Potable Water Supply | *Primary Contact Recreation* | Stock Watering | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.01 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | **632[#1]** | 220[#1] | 19[#1] | 0.56[#2] | *10 [#3]* | 0.56[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | |
| Perfluorononanesulfonic acid (PFNS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | **2[#1]** | 0.13[#1] | 0.00023[#1] | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropropanesulfonic acid (PFPrS) | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | | | | 0.07[#2] | *2 [#3]* | 0.07[#2] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | | | | | | | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | | | | | | | - | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.1 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

**Comments**
#1 PFAS National Environmental Management Plan Version 2.0', Heads of EPA Australia and New Zealand 2020
#2 PFAS National Environmental Management Plan (HEPA 2018)
#3 Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, Canberra: National Health and Medical Research Council (2019)

**Table B7 - Grass Analytical Results**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | MC_BIOTA7 | MC_BIOTA12 | MC_BIOTA13 | | | MC_BIOTA18 | A_BIOTA123 | A_BIOTA124 | A_BIOTA125 | | | A_BIOTA126 | A_BIOTA127 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | MC_BIOTA7 | MC_BIOTA12 | MC_BIOTA13 | QC37 | QC38 | MC_BIOTA18 | A_BIOTA123 | A_BIOTA124 | A_BIOTA125 | QC52 | QC53 | A_BIOTA126 | A_BIOTA127 |
| | | **Date** | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 13/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 |
| | | **Sample Type** | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal | Normal | Normal | Field_D | Interlab_D | Normal | Normal |
| | | **Sample Description** | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass |
| | | **Lab Report Number** | ES2118258 | ES2118258 | ES2118258 | ES2111280 | 265849 | ES2118258 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | 265849 | ES2111280 | ES2111280 |
| | Unit | EQL | | | | | | | | | | | | | |
| NA | | | | | | | | | | | | | | | |
| Sample Description | -- | | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 |
| Physical Parameters | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | - | - | - | - | - | - | - | - | - | - | 19 | - | - |
| Weight of Sample Prepared | g | 0.1 | 170 | 234 | 288 | 286 | - | 233 | 17.3 | 20.5 | 23.8 | 75.2 | - | 31.7 | 30.6 |
| (n:2) Fluorotelomer Sulfonic Acids | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0001 | <0.002 | <0.002 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0001 | <0.002 | <0.002 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0002 | <0.002 | <0.002 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0002 | <0.002 | <0.002 |
| Perfluoroalkane Carboxylic Acids | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0003 | <0.001 | <0.001 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0005 | <0.002 | <0.002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0005 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.0004 | <0.002 | <0.002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.005 | <0.002 | <0.002 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0004 | <0.001 | <0.001 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | <0.005 | <0.005 | <0.005 | <0.005 | <0.002 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0005 | <0.005 | <0.005 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0005 | <0.001 | <0.001 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0005 | <0.002 | <0.002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0005 | <0.001 | <0.001 |
| Perfluorooctanoic acid (PFOA) | µg/kg | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.6 | <1 | <1 |
| Perfluoroalkane Sulfonic Acids | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.002 | 0.034 | 0.011 | 0.013 | 0.013 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0001 | <0.001 | <0.001 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.002 | 0.007 | 0.003 | 0.003 | 0.003 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0001 | <0.001 | <0.001 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0001 | <0.001 | <0.001 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0002 | <0.002 | <0.002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0001 | <0.001 | <0.001 |
| Sum of PFHxS and PFOS | mg/kg | | 0.004[#1] | 0.041[#1] | 0.0014[#1] | 0.016 | 0.016[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] |
| Perfluoroalkyl Sulfonamides | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.05 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.005 | <0.002 | <0.002 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0002 | <0.001 | <0.001 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.0002 | <0.001 | <0.001 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.001 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.001 | <0.005 | <0.005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.01 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.001 | <0.002 | <0.002 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.001 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.001 | <0.005 | <0.005 |
| PFAS | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | 0.001 | 0.009 | 0.004 | 0.004 | - | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | 0.001 | 0.025 | 0.007 | 0.009 | - | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | - | - | - | 0.013 | - | - | - | - | - | <0.001 | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.006 | 0.043 | 0.014 | 0.016 | 0.016 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

#1 Sum of PFHxS and PFOS calculated using 0.5x LOR for non-detects (calculated by Senversa as not reported by laboratory)

**Table B7 - Grass Analytical Results**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_BIOTA128 | A_BIOTA129 | A_BIOTA130 | A_BIOTA131 | A_BIOTA132 | | A_BIOTA133 | A_BIOTA134 | A_BIOTA135 | A_BIOTA136 | A_BIOTA137 | A_BIOTA138 | A_BIOTA139 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_BIOTA128 | A_BIOTA129 | A_BIOTA130 | A_BIOTA131 | A_BIOTA132 | QC54 | A_BIOTA133 | A_BIOTA134 | A_BIOTA135 | A_BIOTA136 | A_BIOTA137 | A_BIOTA138 | A_BIOTA139 |
| | | **Date** | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 | 16/03/2021 |
| | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Field_D | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| | | **Sample Description** | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass | Grass |
| | | **Lab Report Number** | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 | ES2111280 |
| | Unit | EQL | | | | | | | | | | | | | |
| NA | | | | | | | | | | | | | | | |
| Sample Description | -- | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Physical Parameters | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Weight of Sample Prepared | g | 0.1 | 29.5 | 21.9 | 23.1 | 23.3 | 17.1 | 92.8 | 25.9 | 30.8 | 6.4 | 10.1 | 10.3 | 11.8 | 11.0 |
| (n:2) Fluorotelomer Sulfonic Acids | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluoroalkane Carboxylic Acids | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0005 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorooctanoic acid (PFOA) | µg/kg | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Perfluoroalkane Sulfonic Acids | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Sum of PFHxS and PFOS | mg/kg | | 0.0015[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | <0.002[#1] | 0.0015[#1] | <0.002[#1] |
| Perfluoroalkyl Sulfonamides | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.001 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.001 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.001 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| PFAS | | | | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.006 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |

#1 Sum of PFHxS and PFOS calculated using 0.5x LOR for non-detects (calculated by Senversa

**Table B8 - Egg Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | |
|---|---|
| **Location Code** | **ID013_BIOTA2** |
| **Field ID** | ID013_BIOTA2 |
| **Date** | 11/03/2021 |
| **Sample Type** | Normal |
| **Sample Description** | Egg |
| **Lab Report No.** | ES2111261 |

| | Unit | EQL | Food for Human Consumption - Poultry eggs | |
|---|---|---|---|---|
| **Physical Parameters** | | | | |
| Moisture Content | % | 0.1 | | - |
| Weight of Sample Prepared | g | 0.1 | | 46.4 |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | <0.002 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | 0.003 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | <0.002 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | <0.002 |
| **Perfluoroalkane Carboxylic Acids** | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | <0.001 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0005 | | <0.002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | <0.001 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | <0.002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.002 | | <0.002 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | <0.001 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | <0.005 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0005 | | <0.001 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0005 | | <0.002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0005 | | <0.001 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.085[#1] | <0.001 |
| **Perfluoroalkane Sulfonic Acids** | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | | 0.004 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | <0.001 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | 0.005 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | <0.001 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | <0.002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | <0.001 |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.011[#1] | 0.009[#3] |
| **Perfluoroalkyl Sulfonamides** | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.002 | | <0.002 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | <0.001 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | <0.001 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.001 | | <0.002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.001 | | <0.005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.001 | | <0.002 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.001 | | <0.005 |
| **PFAS** | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | 0.002 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | 0.002 |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | - |
| Sum of PFAS | mg/kg | 0.0001 | | 0.012 |

**Comments**
#1 FSANZ (2017) trigger points for investigation

**Table B9 - Biota (Fruit and Vegetables) Analytical Results vs Beneficial Uses**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | | **Location Code** | **ID013_BIOTA1** | **ID013_BIOTA3** | **ID013_BIOTA4** | **ID013_BIOTA5** | **ID013_BIOTA7** | **ID013_BIOTA8** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **Field ID** | ID013_BIOTA1 | ID013_BIOTA3 | ID013_BIOTA4 | ID013_BIOTA5 | ID013_BIOTA7 | ID013_BIOTA8 |
| | | | | **Date** | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 | 11/03/2021 |
| | | | | **Sample Type** | Normal | Normal | Normal | Normal | Normal | Normal |
| | | | | **Sample Description** | Pawpaw | Mango | Capsicum | Basil | Chives | Parsley |
| | | | | **Lab Report No.** | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111261 | ES2111261 |
| | Unit | EQL | Food for Human Consumption - Fruits (all) | **Food for Human Consumption - Vegetables (all)** | | | | | | |
| **Physical Parameters** | | | | | | | | | | |
| Moisture Content | % | 0.1 | | | - | - | - | - | - | - |
| Weight of Sample Prepared | g | 0.1 | | | 140 | 365 | 42.9 | 33.8 | 48.0 | 24.6 |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0005 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0005 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0005 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0005 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.0051[#1] | **0.0088[#1]** | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.001[#2] | **0.0011[#1]** | <0.002[#3] | <0.002[#3] | <0.002[#3] | <0.002[#3] | <0.002[#3] | <0.002[#3] |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.002 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.001 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.001 | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.001 | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.001 | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **PFAS** | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

**Comments**
#1 FSANZ (2017) trigger points for investigation
#2 FSANZ (2017) LOR has been adopted as trigger point - LOR is to be adopted where LOR is higher than the trigger value in accordance with FSANZ
#3 Sum of PFHxS and PFOS calculated using 0.5x LOR for non-detects (calculated by Senversa as not reported by laboratory)

# Appendix C: Site Photographs

**Photo 1. Mission Creek Catchment. PS01. Sample location A_SS89, behind council building showing Airport bore tank. Dated 9 March 2021.**

**Photo 2. Mission Creek Catchment. PS01. Sample location A_TANK1. Dated 9 March 2021.**

**Photo 3. Mission Creek Catchment. PS01. Surface soil sample obtained from outdoor area on airside of terminal building (A_SS67). Dated 9 March 2021**

**Photo 4. Mission Creek Catchment. PS02. Showing location of new airport tanks and low-lying area to Mission Creek drainage. Dated 9 March 2021.**

**Photo 5. Mission Creek Catchment. PS02. Stockpiled soil from leveling of ground for new airport tanks. Dated 9 March 2021.**

**Photo 6. Mission Creek Catchment. Offsite drainage from PS02 at airport, sample location MC_SD26. Dated 15 March 2021**

**Photo 7. Mission Creek Catchment. PS03. Path leading to Airport Bore and WWII Dam at Waste Management Centre (A_SB26). Dated 15 March 2021.**

**Photo 8. Mission Creek Catchment. PS04. Burnt transformer used in fire training drill. Dated 10 March 2021.**

**Photo 9. Mission Creek Catchment. PS04. Sample location A_SS103. Dated 10 March 2021.**

**Photo 10. Mission Creek Catchment. PS05[CW1]. Sample location A_SS72 along taxiway adjacent to maintenance depot. Dated 9 March 2021.**

**Photo 11. Mission Creek Catchment. Current Fire Station PS06. Dated 31 January 2020 (PSI).**

**Photo 12. Mission Creek Catchment. PS08.Alignment of Mission Creek through chapel paddock, dry at the time of sampling. Dated 13 March 2021.**

**Photo 13. Mission Creek Catchment. Sample location MC_SW28 located north of Current Fire Training Ground. Dated 17 March 2021.**

**Photo 14. Mission Creek Catchment. PS11. Sewerage Treatment Plant output sample location (STP_OUT); discharges out to ocean near the mouth of Headstone Creek Dated 16 March 2021.**

**Photo 15. Mission Creek Catchment. PS11. Sewerage Treatment Plant, surface soil sample A_STP_SS03. Dated 16 March 2021.**

**Photo 16. Watermill Creek Catchment. PS07. The Common Oval, sample location TC_SS01. Dated 15 March 2021.**

**Photo 17. Watermill Creek Catchment. Watermill Dam (Duck Dam) truck fill point, sample location PWS_DUCK_DAM. Dated 14 March 2021.**

**Photo 18. Watermill Creek Catchment. PS16. Emily Bay public toilets, sample location PWS_EB_TOILETS collected from tap on outside of toilet building. Dated 15 March 2021.**

**Photo 19. Broken Bridge Creek Catchment. PS09. Sample location DEPOT_SS02. Dated 11 March 2021.**

**Photo 20. Broken Bridge Creek Catchment. PS09. Sample locations DEPOT_SS14 and DEPOT_SW01, stormwater drainage leading off site adjacent to aboveground tank. Dated 11 March 2021.**

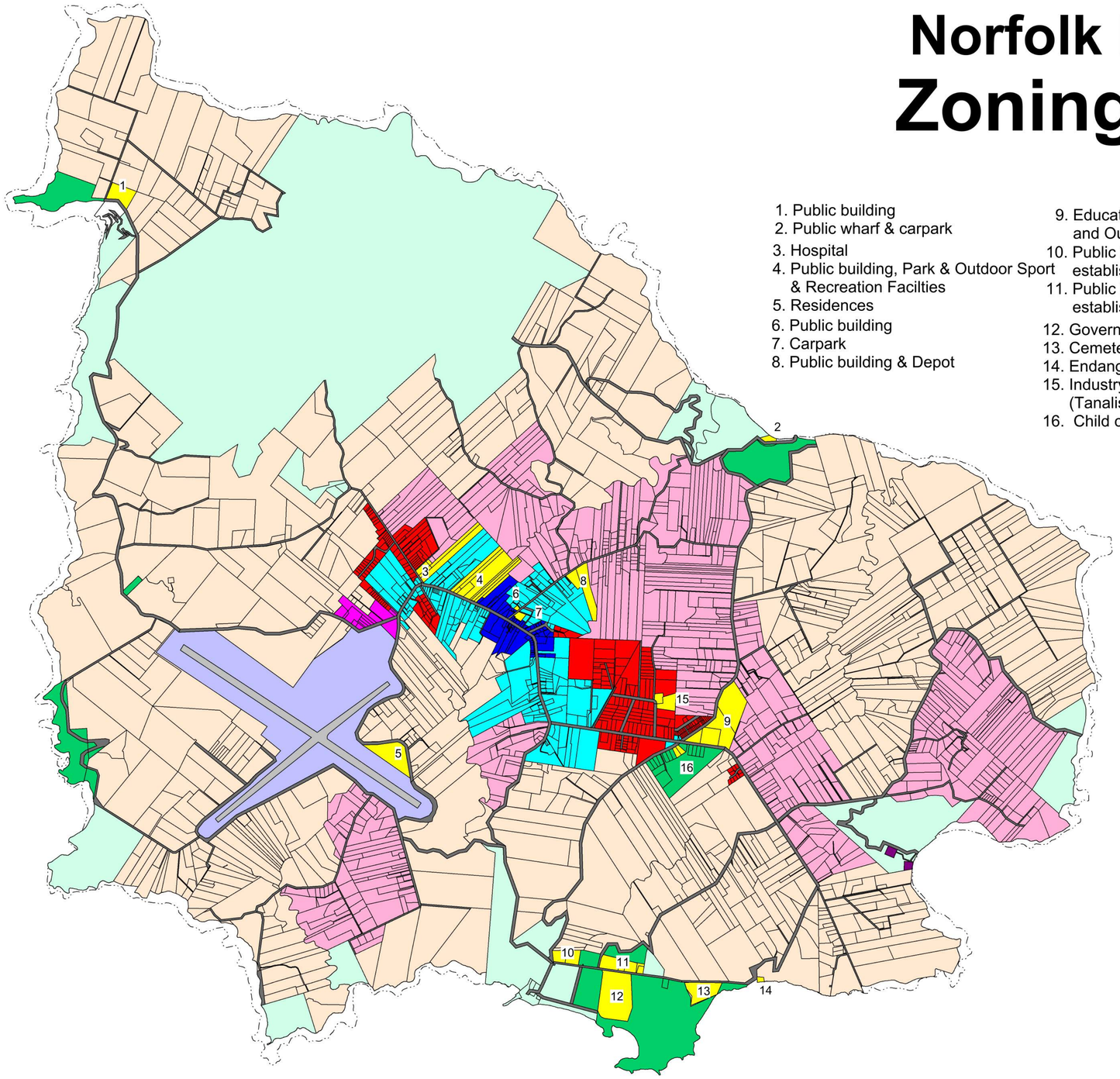
**Photo 21. Broken Bridge Creek Catchment. Sample location BBC_SD05, bridge over creek on Prince Phillip Drive. Dated 18 March 2021.**

**Photo 22. Broken Bridge Creek Catchment. Main hospital filtration room with new filters (replaced 2020 after initial sampling). Dated 9 March 2021.**

# Appendix D: Norfolk Island Zoning Map

NORFOLK ISLAND REGIONAL COUNCIL

# Norfolk Island
# Zoning Map




1. Public building
2. Public wharf & carpark
3. Hospital
4. Public building, Park & Outdoor Sport & Recreation Facilties
5. Residences
6. Public building
7. Carpark
8. Public building & Depot
9. Educational establishment / Indoor and Outdoor sport & recreation facilties
10. Public buildings & Education establishment
11. Public buildings & Education establishment
12. Government House & Domain
13. Cemetery
14. Endangered species habitat
15. Industry - Noxious, Hazardous or Offensive (Tanalising works), Public Works - Major, and Depot
16. Child care centre

- Rural
- Rural Residential
- Residential
- Mixed Use
- Business
- Light Industry
- Industrial
- Open Space
- Conservation
- Special Use
- Airport
- Roads
- Cadastral Boundaries
- Mean High Water Mark

0 1 2
kilometers

Last Variation Approved On: 10th April 2018
Last Variation Gazetted On: 13th April 2018
Last Variation Approved By: Eric Hutchinson
Administrator

# Appendix E: EPBC Protected Matters Search Results and Species List

Australian Government

Department of Agriculture, Water and the Environment

# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

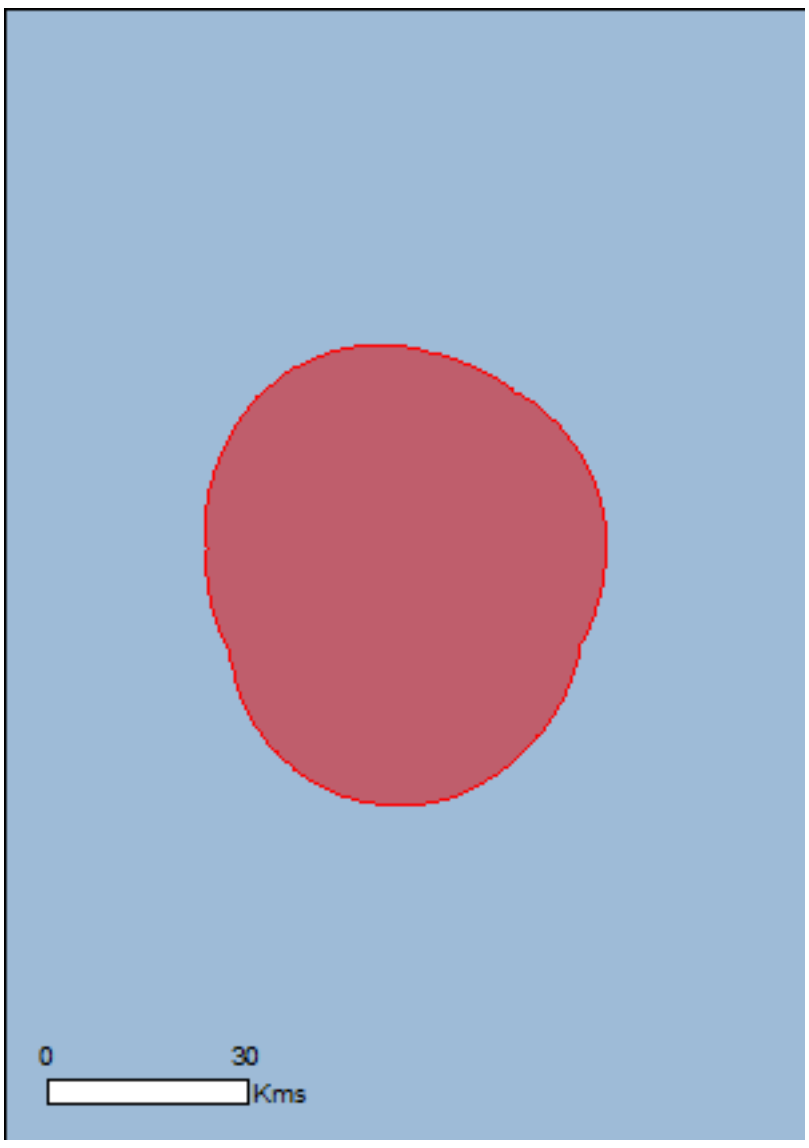
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

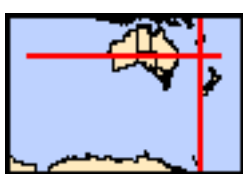
NRM NORFOLK ISLAND, EXTERNAL TERRITORY

Report created: 31/05/21 10:16:31


- Summary
- Details
  - Matters of NES
  - Other Matters Protected by the EPBC Act
  - Extra Information
- Caveat
- Acknowledgements


This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015



# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://environment.gov.au/protection/environment-assessments

| | |
|---|---|
| World Heritage Properties: | 1 |
| National Heritage Places: | 2 |
| Wetlands of International Significance: | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | 1 |
| Threatened Ecological Communities: | None |
| Threatened Species: | 88 |
| Migratory Species: | 44 |

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits-and-application-forms

| | |
|---|---|
| Commonwealth Lands: | 1 |
| Commonwealth Heritage Places: | 6 |
| Listed Marine Species: | 38 |
| Whales and Other Cetaceans: | 29 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | 3 |
| Australian Marine Parks: | 1 |

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

| | |
|---|---|
| State and Territory Reserves: | None |
| Regional Forest Agreements: | None |
| Invasive Species: | 21 |
| Nationally Important Wetlands: | None |

# Details

## Matters of National Environmental Significance

### World Heritage Properties [ Resource Information ]

| Name | State | Status |
|---|---|---|
| Australian Convict Sites (Kingston and Arthurs Vale Historic Area) | EXT | Declared property |

### National Heritage Properties [ Resource Information ]

| Name | State | Status |
|---|---|---|
| Historic | | |
| HMS Sirius Shipwreck | EXT | Listed place |
| Kingston and Arthurs Vale Historic Area | EXT | Listed place |

### Commonwealth Marine Area [ Resource Information ]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

| Name |
|---|
| EEZ and Territorial Sea |

### Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| BIRDS | | |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat may occur within area |
| Cyanoramphus cookii<br>Norfolk Island Green Parrot, Tasman Parakeet, Norfolk Island Parakeet [67046] | Endangered | Breeding known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Species or species habitat may occur within area |
| Diomedea antipodensis gibsoni<br>Gibson's Albatross [82270] | Vulnerable | Species or species habitat may occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Species or species habitat may occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Species or species habitat may occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Species or species habitat may occur within area |
| Fregetta grallaria grallaria<br>White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438] | Vulnerable | Species or species habitat likely to occur within area |
| Limosa lapponica baueri<br>Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat known to occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Ninox novaeseelandiae undulata<br>Norfolk Island Boobook, Norfolk Island Morepork, Southern Boobook (Norfolk Island) [26188] | Endangered | Breeding known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Pachycephala pectoralis xanthoprocta<br>Golden Whistler (Norfolk Island) [64444] | Vulnerable | Species or species habitat known to occur within area |
| Petroica multicolor<br>Norfolk Island Robin, Pacific Robin [604] | Vulnerable | Breeding likely to occur within area |
| Pterodroma heraldica<br>Herald Petrel [66973] | Critically Endangered | Species or species habitat may occur within area |
| Pterodroma leucoptera leucoptera<br>Gould's Petrel, Australian Gould's Petrel [26033] | Endangered | Species or species habitat may occur within area |
| Pterodroma neglecta neglecta<br>Kermadec Petrel (western) [64450] | Vulnerable | Breeding known to occur within area |
| Thalassarche eremita<br>Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| FISH | | |
| Epinephelus daemelii<br>Black Rockcod, Black Cod, Saddled Rockcod [68449] | Vulnerable | Species or species habitat likely to occur within area |
| MAMMALS | | |
| Balaenoptera borealis<br>Sei Whale [34] | Vulnerable | Species or species habitat likely to occur within area |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area |
| Balaenoptera physalus<br>Fin Whale [37] | Vulnerable | Species or species habitat likely to occur within area |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat may occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat may occur within |

| Name | Status | Type of Presence |
|---|---|---|
| | | area |
| OTHER | | |
| Advena campbellii<br>Campbell's Helicarionid Land Snail [81250] | Critically Endangered | Species or species habitat known to occur within area |
| Mathewsoconcha grayi ms<br>Gray's Helicarionid Land Snail [81852] | Critically Endangered | Species or species habitat likely to occur within area |
| Mathewsoconcha phillipii<br>Phillip Island Helicarionid Land Snail [81252] | Critically Endangered | Species or species habitat likely to occur within area |
| Mathewsoconcha suteri<br>a helicarionid land snail [81851] | Critically Endangered | Species or species habitat likely to occur within area |
| Quintalia stoddartii<br>Stoddart's Helicarionid Land Snail [81253] | Critically Endangered | Species or species habitat likely to occur within area |
| PLANTS | | |
| Abutilon julianae<br>Norfolk Island Abutilon [27797] | Critically Endangered | Species or species habitat known to occur within area |
| Achyranthes arborescens<br>Chaff Tree, Soft-wood [65879] | Critically Endangered | Species or species habitat known to occur within area |
| Achyranthes margaretarum<br>Phillip Island Chaffy Tree [68426] | Critically Endangered | Species or species habitat known to occur within area |
| Anthosachne kingiana subsp. kingiana<br>Phillip Island Wheat Grass [87946] | Critically Endangered | Species or species habitat known to occur within area |
| Blechnum norfolkianum<br>Norfolk Island Water-fern [65885] | Endangered | Species or species habitat known to occur within area |
| Boehmeria australis subsp. australis<br>Tree Nettle, Nettletree [83309] | Critically Endangered | Species or species habitat known to occur within area |
| Calystegia affinis<br>[48909] | Critically Endangered | Species or species habitat known to occur within area |
| Clematis dubia<br>a creeper, Clematis [22035] | Critically Endangered | Species or species habitat known to occur within area |
| Coprosma baueri<br>Coastal Coprosma [37851] | Endangered | Species or species habitat known to occur within area |
| Coprosma pilosa<br>Mountain Coprosma [37884] | Endangered | Species or species habitat known to occur within area |
| Cordyline obtecta<br>Ti [65878] | Vulnerable | Species or species habitat known to occur within area |
| Dendrobium brachypus<br>Norfolk Island Orchid [2592] | Endangered | Species or species habitat known to occur within area |
| Dysoxylum bijugum<br>Sharkwood, a tree [65892] | Vulnerable | Species or species habitat known to occur |

| Name | Status | Type of Presence |
|---|---|---|
| | | within area |
| Elatostema montanum<br>Mountain Procris [33862] | Critically Endangered | Species or species habitat known to occur within area |
| Euphorbia norfolkiana<br>Norfolk Island Euphorbia [65887] | Critically Endangered | Species or species habitat known to occur within area |
| Euphorbia obliqua<br>a herb [44385] | Vulnerable | Species or species habitat likely to occur within area |
| Hibiscus insularis<br>Phillip Island Hibiscus [30614] | Critically Endangered | Species or species habitat likely to occur within area |
| Hypolepis dicksonioides<br>Downy Ground-fern, Brake Fern, Ground Fern [10243] | Vulnerable | Species or species habitat likely to occur within area |
| Ileostylus micranthus<br>Mistletoe [65891] | Vulnerable | Species or species habitat known to occur within area |
| Lastreopsis calantha<br>Shield-fern, Shieldfern [65884] | Endangered | Species or species habitat known to occur within area |
| Marattia salicina<br>King Fern, Para, Potato Fern [16197] | Endangered | Species or species habitat likely to occur within area |
| Melicope littoralis<br>Shade Tree [22042] | Vulnerable | Species or species habitat known to occur within area |
| Melicytus latifolius<br>Norfolk Island Mahoe [56677] | Critically Endangered | Species or species habitat known to occur within area |
| Melicytus ramiflorus subsp. oblongifolius<br>Whiteywood, a tree [56680] | Vulnerable | Species or species habitat likely to occur within area |
| Meryta angustifolia<br>a tree [65881] | Vulnerable | Species or species habitat known to occur within area |
| Meryta latifolia<br>Shade Tree, Broad-leaved Meryta [65882] | Critically Endangered | Species or species habitat likely to occur within area |
| Muehlenbeckia australis<br>Shrubby Creeper, Pohuehue [68510] | Endangered | Species or species habitat known to occur within area |
| Myoporum obscurum<br>Popwood, Sandalwood, Bastard Ironwood [50255] | Critically Endangered | Species or species habitat known to occur within area |
| Myrsine ralstoniae<br>Beech [83889] | Vulnerable | Species or species habitat known to occur within area |
| Pennantia endlicheri<br>Pennantia [65890] | Endangered | Species or species habitat known to occur within area |
| Phreatia limenophylax<br>Norfolk Island Phreatia [9239] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Phreatia paleata<br>an orchid [20193] | Endangered | Species or species habitat known to occur within area |
| Pittosporum bracteolatum<br>Oleander [47181] | Vulnerable | Species or species habitat known to occur within area |
| Planchonella costata<br>[30944] | Endangered | Species or species habitat known to occur within area |
| Polyphlebium endlicherianum<br>Middle Filmy Fern [87494] | Endangered | Species or species habitat known to occur within area |
| Pteris kingiana<br>King's Brakefern [35183] | Endangered | Species or species habitat likely to occur within area |
| Pteris zahlbruckneriana<br>Netted Brakefern [65893] | Endangered | Species or species habitat likely to occur within area |
| Senecio australis<br>a daisy [40250] | Vulnerable | Species or species habitat likely to occur within area |
| Senecio evansianus<br>a daisy [55340] | Endangered | Species or species habitat known to occur within area |
| Senecio hooglandii<br>a daisy [55346] | Vulnerable | Species or species habitat known to occur within area |
| Streblus pendulinus<br>Siah's Backbone, Sia's Backbone, Isaac Wood [21618] | Endangered | Species or species habitat known to occur within area |
| Taeniophyllum norfolkianum<br>Minute Orchid, Ribbon-root Orchid [82347] | Vulnerable | Species or species habitat likely to occur within area |
| Tmesipteris norfolkensis<br>Hanging Fork-fern [65895] | Vulnerable | Species or species habitat known to occur within area |
| Ungeria floribunda<br>Bastard Oak [41714] | Vulnerable | Species or species habitat known to occur within area |
| Wikstroemia australis<br>Kurrajong [42074] | Critically Endangered | Species or species habitat known to occur within area |
| Zehneria baueriana<br>Native Cucumber, Giant Cucumber [39253] | Endangered | Species or species habitat known to occur within area |
| REPTILES | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat likely to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat likely to occur within area |
| Christinus guentheri<br>Lord Howe Island Gecko, Lord Howe Island Southern Gecko [59250] | Vulnerable | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat likely to occur within area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat likely to occur within area |
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Species or species habitat likely to occur within area |
| Oligosoma lichenigerum<br>Lord Howe Island Skink [91467] | Vulnerable | Species or species habitat likely to occur within area |
| SHARKS | | |
| Carcharodon carcharias<br>White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat likely to occur within area |

## Migratory Species

[ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Birds | | |
| Anous stolidus<br>Common Noddy [825] | | Breeding known to occur within area |
| Ardenna carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Species or species habitat known to occur within area |
| Ardenna grisea<br>Sooty Shearwater [82651] | | Species or species habitat may occur within area |
| Ardenna pacifica<br>Wedge-tailed Shearwater [84292] | | Breeding known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Species or species habitat may occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Species or species habitat may occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Species or species habitat may occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Species or species habitat may occur within area |
| Fregata ariel<br>Lesser Frigatebird, Least Frigatebird [1012] | | Species or species habitat known to occur within area |
| Fregata minor<br>Great Frigatebird, Greater Frigatebird [1013] | | Species or species habitat known to occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Phaethon rubricauda<br>Red-tailed Tropicbird [994] | | Breeding known to occur |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | within area |
| Sula dactylatra<br>Masked Booby [1021] | | Breeding known to occur within area |
| Thalassarche eremita<br>Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Migratory Marine Species | | |
| Balaena glacialis  australis<br>Southern Right Whale [75529] | Endangered* | Species or species habitat may occur within area |
| Balaenoptera bonaerensis<br>Antarctic Minke Whale, Dark-shoulder Minke Whale [67812] | | Species or species habitat likely to occur within area |
| Balaenoptera borealis<br>Sei Whale [34] | Vulnerable | Species or species habitat likely to occur within area |
| Balaenoptera edeni<br>Bryde's Whale [35] | | Species or species habitat likely to occur within area |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area |
| Balaenoptera physalus<br>Fin Whale [37] | Vulnerable | Species or species habitat likely to occur within area |
| Carcharhinus longimanus<br>Oceanic Whitetip Shark [84108] | | Species or species habitat may occur within area |
| Carcharodon carcharias<br>White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat likely to occur within area |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat likely to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat likely to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat likely to occur within area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Isurus oxyrinchus<br>Shortfin Mako, Mako Shark [79073] | | Species or species habitat likely to occur within area |
| Isurus paucus<br>Longfin Mako [82947] | | Species or species habitat likely to occur within area |
| Lamna nasus<br>Porbeagle, Mackerel Shark [83288] | | Species or species habitat may occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat may occur within area |
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Species or species habitat likely to occur within area |
| Orcinus orca<br>Killer Whale, Orca [46] | | Species or species habitat may occur within area |
| Physeter macrocephalus<br>Sperm Whale [59] | | Species or species habitat may occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Species or species habitat known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat may occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [ Resource Information ]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

| Name |
|---|
| Commonwealth Land - Norfolk Island National Park |

### Commonwealth Heritage Places [ Resource Information ]

| Name | State | Status |
|---|---|---|
| Natural | | |
| Nepean Island Reserve | EXT | Listed place |
| Phillip Island | EXT | Listed place |
| Selwyn Reserve (2003 boundary) | EXT | Listed place |
| Historic | | |
| Arched Building, Longridge | EXT | Listed place |

| Name | State | Status |
|---|---|---|
| HMS Sirius Shipwreck | EXT | Listed place |
| Kingston and Arthurs Vale Commonwealth Tenure Area | EXT | Listed place |

## Listed Marine Species

[ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|
| Birds | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Anous stolidus<br>Common Noddy [825] | | Breeding known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Species or species habitat known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat may occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Species or species habitat may occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Species or species habitat may occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Species or species habitat may occur within area |
| Diomedea gibsoni<br>Gibson's Albatross [64466] | Vulnerable* | Species or species habitat may occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Species or species habitat may occur within area |
| Fregata ariel<br>Lesser Frigatebird, Least Frigatebird [1012] | | Species or species habitat known to occur within area |
| Fregata minor<br>Great Frigatebird, Greater Frigatebird [1013] | | Species or species habitat known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Morus serrator<br>Australasian Gannet [1020] | | Breeding known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Phaethon rubricauda<br>Red-tailed Tropicbird [994] | | Breeding known to occur within area |
| Procelsterna cerulea<br>Grey Noddy, Blue Noddy [64378] | | Breeding known to occur within area |
| Pterodroma cervicalis<br>White-necked Petrel [59642] | | Breeding known to occur within area |
| Pterodroma nigripennis<br>Black-winged Petrel [1038] | | Breeding known to occur within area |
| Pterodroma solandri<br>Providence Petrel [1040] | | Breeding known to occur within area |
| Puffinus assimilis<br>Little Shearwater [59363] | | Breeding known to occur within area |
| Puffinus carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [1043] | | Species or species habitat known to occur within area |
| Puffinus griseus<br>Sooty Shearwater [1024] | | Species or species habitat may occur within area |
| Puffinus pacificus<br>Wedge-tailed Shearwater [1027] | | Breeding known to occur within area |
| Sula dactylatra<br>Masked Booby [1021] | | Breeding known to occur within area |
| Thalassarche eremita<br>Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Fish | | |
| Halicampus boothae<br>Booth's Pipefish [66218] | | Species or species habitat may occur within area |
| Reptiles | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat likely to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat likely to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat likely to occur within area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Species or species habitat likely to occur within area |

## Whales and other Cetaceans

[ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Mammals | | |
| Balaenoptera acutorostrata<br>Minke Whale [33] | | Species or species habitat may occur within area |
| Balaenoptera bonaerensis<br>Antarctic Minke Whale, Dark-shoulder Minke Whale [67812] | | Species or species habitat likely to occur within area |
| Balaenoptera borealis<br>Sei Whale [34] | Vulnerable | Species or species habitat likely to occur within area |
| Balaenoptera edeni<br>Bryde's Whale [35] | | Species or species habitat likely to occur within area |
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat may occur within area |
| Balaenoptera physalus<br>Fin Whale [37] | Vulnerable | Species or species habitat likely to occur within area |
| Delphinus delphis<br>Common Dolphin, Short-beaked Common Dolphin [60] | | Species or species habitat may occur within area |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat may occur within area |
| Feresa attenuata<br>Pygmy Killer Whale [61] | | Species or species habitat may occur within area |
| Globicephala macrorhynchus<br>Short-finned Pilot Whale [62] | | Species or species habitat may occur within area |
| Globicephala melas<br>Long-finned Pilot Whale [59282] | | Species or species habitat may occur within area |
| Grampus griseus<br>Risso's Dolphin, Grampus [64] | | Species or species habitat may occur within area |
| Kogia breviceps<br>Pygmy Sperm Whale [57] | | Species or species habitat may occur within area |
| Kogia simus<br>Dwarf Sperm Whale [58] | | Species or species habitat may occur within area |
| Lagenodelphis hosei<br>Fraser's Dolphin, Sarawak Dolphin [41] | | Species or species habitat may occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat may occur within area |
| Mesoplodon densirostris<br>Blainville's Beaked Whale, Dense-beaked Whale | | Species or species |

| Name | Status | Type of Presence |
|---|---|---|
| [74] | | habitat may occur within area |
| Mesoplodon grayi<br>Gray's Beaked Whale, Scamperdown Whale [75] | | Species or species habitat may occur within area |
| Mesoplodon layardii<br>Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556] | | Species or species habitat may occur within area |
| Orcinus orca<br>Killer Whale, Orca [46] | | Species or species habitat may occur within area |
| Peponocephala electra<br>Melon-headed Whale [47] | | Species or species habitat may occur within area |
| Physeter macrocephalus<br>Sperm Whale [59] | | Species or species habitat may occur within area |
| Pseudorca crassidens<br>False Killer Whale [48] | | Species or species habitat likely to occur within area |
| Stenella attenuata<br>Spotted Dolphin, Pantropical Spotted Dolphin [51] | | Species or species habitat may occur within area |
| Stenella coeruleoalba<br>Striped Dolphin, Euphrosyne Dolphin [52] | | Species or species habitat may occur within area |
| Stenella longirostris<br>Long-snouted Spinner Dolphin [29] | | Species or species habitat may occur within area |
| Steno bredanensis<br>Rough-toothed Dolphin [30] | | Species or species habitat may occur within area |
| Tursiops truncatus s. str.<br>Bottlenose Dolphin [68417] | | Species or species habitat may occur within area |
| Ziphius cavirostris<br>Cuvier's Beaked Whale, Goose-beaked Whale [56] | | Species or species habitat may occur within area |

| Commonwealth ReservesTerrestrial | | [ Resource Information ] |
|---|---|---|
| Name | State | Type |
| Norfolk Island | EXT | Botanic Gardens |
| Norfolk Island (Mt Pitt) | EXT | National Park (Commonwealth) |
| Norfolk Island (Phillip Island) | EXT | National Park (Commonwealth) |

| Australian Marine Parks | [ Resource Information ] |
|---|---|
| Name | Label |
| Norfolk | Special Purpose Zone (Norfolk) (IUCN |

## Extra Information

## Invasive Species

[ Resource Information ]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

| Name | Status | Type of Presence |
|---|---|---|
| **Birds** | | |
| Anas platyrhynchos<br>Mallard [974] | | Species or species habitat likely to occur within area |
| Callipepla californica<br>California Quail [59451] | | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Carduelis chloris<br>European Greenfinch [404] | | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Gallus gallus<br>Red Junglefowl, Feral Chicken, Domestic Fowl [917] | | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| Turdus merula<br>Common Blackbird, Eurasian Blackbird [596] | | Species or species habitat likely to occur within area |
| Turdus philomelos<br>Song Thrush [597] | | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120] | | Species or species habitat likely to occur within area |
| Rattus exulans<br>Pacific Rat, Polynesian Rat [79] | | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| **Plants** | | |
| Anredera cordifolia<br>Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] | | Species or species habitat likely to occur within area |
| Asparagus plumosus<br>Climbing Asparagus-fern [48993] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Eichhornia crassipes<br>Water Hyacinth, Water Orchid, Nile Lily [13466] | | Species or species habitat likely to occur within area |
| Lantana camara<br>Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] | | Species or species habitat likely to occur within area |
| Lycium ferocissimum<br>African Boxthorn, Boxthorn [19235] | | Species or species habitat likely to occur within area |
| Rubus fruticosus aggregate<br>Blackberry, European Blackberry [68406] | | Species or species habitat likely to occur within area |
| **Reptiles** | | |
| Hemidactylus frenatus<br>Asian House Gecko [1708] | | Species or species habitat likely to occur within area |

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining oigations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environment and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-Forestry Corporation, NSW
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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# Appendix F: Data Quality Objectives

# Appendix F: Data Quality Objectives

Quality assurance procedures were adopted for this DSI to provide a consistent approach to evaluation of whether the data quality objectives (DQOs) required by the project have been achieved. The approach, detailed in a seven-step process, was consistent with NEPM DQO process, as outlined in Schedule B2 *Guideline on Site Characterisation.* The approach focusses on assessment of the useability of the data in terms of accuracy and reliability in forming conclusions on the condition of the element of the environment being investigated.

The approach taken is in accordance with the Sampling and Analysis Quality Plan (Senversa, 2020b) and in accordance with the seven-step DQO process is presented in **Table F-1** below.

**Table F-1: DQO Seven-Step Summary**

| DQO Seven-step Process |
|---|
| **1. State the problem.**<br>Historically (potentially since the early 1980s), Norfolk Island Airport used PFAS containing AFFF in firefighting drills and may have been used to extinguish fires outside of the airport. CSIRO first discovered the presence of PFAS in late 2019, with a second round of CSIRO sampling in early 2020 confirming these results. Senversa undertook targeted sampling during the PSI in January 2020 and further targeted sampling was undertaken in March 2021 as part of the DSI. |
| **2. Identify the decision/goal of the study.**<br>The primary goal (overall objective) of the targeted sampling was to fill data gaps identified within the PSI that related to potentially unacceptable risks posed by PFAS exposure to identified sensitive receptors.<br>This information was used to assess the nature and extent of PFAS contamination on site, and the extent to which it has migrated off-site. Following completion of this DSI, this information will be used to assess the risk to the identified sensitive human health and ecological receptors through completion of a HHERA. |
| **3. Identify the information inputs.**<br>The primary chemicals of interest are the 28 PFAS and the collection and analysis of environmental media included:<br>• Soil samples.<br>• Sediment and surface water samples.<br>• Grass and biota samples.<br>• Selected private property water tanks/point-of-use taps and extraction bores. |
| **4. Define the boundaries of the study.**<br>The investigation area includes the on-site areas as defined in **Figure A1**, and extends off-site to include the wider island where PFAS may have migrated to. |
| **5. Develop the analytical approach.**<br>NATA accredited laboratories have been used for the given analytes and media; ALS Environmental were the primary laboratory, while EnviroLab Services were the secondary laboratory.<br>Appropriate laboratory limits of reporting to meet the drinking water criteria were requested from the primary and secondary laboratories for the assessment of PFAS in water. The following laboratory limits of reporting were requested from the laboratories for each medium:<br>• Soil and sediment – <0.005 mg/kg<br>• Water – <0.01 µg/L<br>• Leachate – <0.01 µg/L |
| **6. Specify performance or acceptance criteria.**<br>Assessment criteria for the protected beneficial uses of soil/sediment, groundwater and surface water is based on the *PFAS National Environmental Management Plan (NEMP) 2.0, Heads of EPAs Australia and New Zealand (HEPA)*.<br>Field blind and split duplicate samples were collected at a frequency of 1 in 10 samples. All field blanks, rinsate blanks, trip blanks, and laboratory method blanks required an acceptance limit of concentrations below the laboratory limit of reporting. All blank samples were assessed for the potential cross-contamination of contaminants of interest (i.e. PFAS). A data quality assurance review, which includes a data validation checklist with specific acceptance criteria for each batch of samples and discussion of non-conforming results, has been completed and is presented in **Appendix J.** |
| **7. Develop the plan for obtaining data.**<br>The scope of works, strategy and methodology for investigation are outlined in the DSI. |

# Appendix G: Fieldwork Methodology

# Appendix G: Fieldwork Methodology

The following describes the methodology undertaken during the fieldworks program for on-site and off-site sampling during the targeted DSI investigation.

| Activity | Item | Description |
|---|---|---|
| **Targeted Soil Bore sampling** | Dates | 9, 10, 14 & 15 March 2021 |
| | Sample IDs | A_SB01 to A_SB26, PWS_CAS_TOILETS, PWS_EB_TOILETS, PWS_HEAD_TOILETS |
| | Method | A total of 29 soil bores were advanced to vertically delineate locations on site. Locations were targeted based on outcomes of the PSI (Senversa, 2020).<br>Soil bores on site were advanced using hand auger methods to a target depth of 1.5 m bgl or until refusal was met (SB03, SB20, SB21, SB24 & SB26).<br>Offsite soil bores were advanced to a target depth of 0.5 m bgl.<br>Soil samples were collected at depths of circa 0.1, 0.5, 1.0 and 1.5 m bgl, or where there were changes in lithology. Soil samples were collected directly from the hand auger into laboratory supplied PFAS jars with a gloved hand.<br>Soils encountered were logged using a modified method based on the Unified Soil Classification System (USCS), in accordance with Australian Standard AS1726-2017 in line with the Soil Logging Description Chart and borelogs provided in **Appendix K**. |
| **Targeted and Grid-based Shallow Soil Sampling** | Dates | 9 – 18 March 2021 |
| | Sample IDs | A_SS64 to A_SS141, A_STP_SS01 to A_STP_SS10, DEPOT_SS01 to DEPOT_SS16, TC_SS01 to TC_SS03<br>Private Properties - ID013_SS01 to ID013_SS06 |
| | Method | A total of 96 targeted shallow soil locations on-site were sampled during the targeted sampling field program. Locations were targeted based on outcomes of the PSI (Senversa, 2020).<br>Targeted soil samples were collected directly below the ground surface cover (grass/ gravel) at depths of approximately 0.1 m bgl.<br>Soil samples were collected from directly under the grass/gravel surface cover using either a hand trowel or gloved hand. Soil was then placed into laboratory supplied PFAS jars and placed in a chilled esky.<br>Surface soils were logged using a modified method based on the USCS, as per the targeted soil bores. |
| **Private Property and Public Water Tanks and Taps** | Dates | 10 to 17 March 2021 |
| | Sample IDs | Private Properties - ID004_TANK, ID009_TAP01, ID009_TAP1, ID009_WELL, ID013_SW01, ID016_TAP2, ID016_TAP2, ID017_TAP1, ID018_TAP1, ID019_TAP1, ID019_TAP2, ID020_TAP1, ID021_TAP1, ID022_TAP1, ID023_TAP1, ID023_TAP2, ID024_TAP1<br>Public Water Supply - A_TANK1 to A_TANK 3, A_TAP1 to A_TAP5, CHAP_TAP1, CHAP_TAP2, COUNCIL_TAP1 COUNCIL_TAP2, DEPOT_TANK 3, DEPOT_TAP1, FRE_TAP1, FRE_TAP1_K, FRE_TAP3 to FRE_TAP6, PWS_CAS_TOILETS, PWS_EB_TOILETS, PWS_HEAD_TOILETS, PWS_HOSP_TANK1 to PWS_HOSP_TANK8, PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4, PWS_HOSP_TAP4A, PWS_HOSP_TAP5 to PWS_HOSP_TAP21 & PWS_HOSP_ZIP<br>Sewerage Treatment Plant - A_STP_IN, A_STP_OUT, A_STP_POND1, A_STP_POND2, A_STP_POND3, A_STP_RAW_IN |

| Activity | Item | Description |
|---|---|---|
| | Method | Water tank samples were collected by turning on the outlet to flush it of water for approximately 30 seconds (1 to 1.5 litres of water) by using a smooth flowing water stream. Sample bottles for were filled directly using the smooth flowing water stream.<br>Where a tap was not present, a disposable bailer was lowered into the tank. Sample bottles were filled directly from the bailer.<br>Samples were collected in two laboratory supplied bottles, which were then placed into a zip lock bag (to keep pairs together) and placed in a chilled esky. |
| **Private Property and Public Bores** | Dates | 8, 12 to 16 March 2021 |
| | Sample IDs | Public Water Supply – PWS_AIRPORT_BORE<br>Private Properties - ID009_WELL, ID014_BORE, ID015_BORE, ID016_BORE |
| | Method | Bore samples were collected by turning on the outlet to flush it of water for approximately 30 seconds (1 to 1.5 litres of water) by using a smooth flowing water stream. Sample bottles for were filled directly using the smooth flowing water stream.<br>Where a tap was not present, a disposable bailer was lowered into the bore. Sample bottles were filled directly from the bailer.<br>PWS_AIRPORT_BORE was sampled from a concrete holding tank in the north eastern portion of the site as there was no direct access to the bore.<br>Samples were collected in two laboratory supplied bottles, which were then placed into a zip lock bag (to keep pairs together) and placed in a chilled esky. |
| **Private Property and Public Surface Water Sampling** | Dates | 12 – 18 March 2021 |
| | Sample IDs | Public Water Supply – COCKPIT_SW01, DEPOT_SW01, PWS_HEAD_DAM, PWS_DUCK_DAM, PWS_DUCK_DAMA, PWS_WWII_DAM.<br>Private Properties - ID012_SW03, ID012_SW04, ID013_SW01.<br>Creeks - BBC_SW02, BBC_SW05, HC_SW01, MC_SW04, MC_SW11, MC_SW13, MC_SW21, MC_SW24 to MW_SW28, TC_SW02 to TC_SW07, TC_SW12, TC_SW13 |
| | Method | Surface water was collected by placing a laboratory supplied bottle approximately 5 cm below the water surface (where possible) using a gloved hand. It is noted, some surface water bodies were less than 5 cm depth; care was taken to ensure samples from those locations did not contain sediment or suspended solids.<br>Where surface water could not be directly accessed, an extendable surface water sampling pole with a laboratory supplied sample bottle attached, was used to collect samples.<br>Where paired surface water and sediment samples were collected, surface water was collected first to ensure disturbed sediments did not impact the sample.<br>Samples were collected in two laboratory supplied bottles, which were then placed into a zip lock bag (to keep pairs together) and placed in a chilled esky. |
| **Sediment Sampling** | Dates | 12 - 13, 15 - 18 March 2021 |
| | Sample IDs | Public Water Supply – A_SD10, PWS_WWII_DAM.<br>Private Properties - ID012_SD03, ID012_SD04, ID025_SD01<br>Creeks - BBC_SD03 to BBC_SD06, MC_SD04, MC_SD07, MC_SD11 to MC_SD29, TC_SD02, TC_SD03 to TC_SD13 |
| | Method | The sediment was collected using a hand trowel or gloved hand.<br>Where grass, reeds or vegetation growth covered the sediment, this material was moved aside using hands or hand tools, with the sediment sample collected from directly underneath the vegetation layer (i.e. at 0-0.1 m bgl from the sediment layer).<br>Waterlogged sediment samples were squeezed to remove excess water (where possible). Samples were placed into laboratory supplied PFAS jars using disposable nitrile gloves.<br>Sediment samples were logged using a modified method based on the USCS, as per the targeted soil bores. |

| Activity | Item | Description |
|---|---|---|
| **Biota Sampling** | Dates | 11, 13, 16 & 17 March 2021 |
| | Sample IDs | Onsite - A_BIOTA123 to A_BIOTA139<br>Creeks – MC_BIOTA7, MC_BIOTA12, MC_BIOTA14 to MC_BIOTA16, MC_BIOTA18<br>Private Properties – ID012_BIOTA3, ID013_BIOTA1 to ID013_BIOTA7 |
| | Method | Grass samples were obtained by cutting with shears or pulling with nitrile gloves from an approximate 1 $m^2$ area. Samples were obtained of green grass with minimal soils and roots.<br>Produce samples (fruit, vegetables, herbs etc.) were collected directly from the plant with a preference for ripe and fresh samples which would be ready to harvest and eat. Eggs collected were laid on the morning of sampling. All samples were collected using a gloved hand.<br>Biota samples were placed into laboratory supplied zip-lock bags and placed in a chilled esky. Eggs were wrapped in bubble wrap and placed within an empty PFAS jar to protect the egg on transit to the laboratory. The jars containing eggs were placed in a chilled esky. |

## General Investigation and Sampling Requirements

The following table details general investigation and sampling techniques associated with the site works.

| Activity | Description and Further Information |
|---|---|
| **Field Parameter Measurement** | Field water quality parameters (pH, electrical conductivity (EC), temperature, dissolved oxygen (DO) and redox potential) were measured in a separate vessel for each water sample type using a calibrated water quality meter (WQM). The calibration certificate for the WQM is included in **Appendix H**.<br>Field observations were noted for surface water including characteristics such as colour, odour, turbidity, discoloration, presence of unusual materials such as waste, etc. |
| **Photographs** | A photograph of each sample location was taken for records and was included in the georeferenced database application where records of sampling were also collected. |
| **Location Survey** | A georeferenced database application was used on a portable device to establish all investigation sampling locations. The accuracy of such a method was within +/- 3-5 m of the proposed location coordinates, unless cloud cover or poor coverage reduced satellite accuracy. |
| **Sample Handling and Preservation** | • Samples were placed into laboratory supplied PFAS jars and bottles.<br>• Sample containers were filled to the top with no head space.<br>• Each pair of sample containers collected were placed into a LDPE zip-lock bag.<br>• Samples were collected and stored on ice blocks prior to and during transit to the laboratory to minimise sample degradation.<br>• All samples collected were recorded on field logs sheets or in the sampling database and within the georeferenced database application.<br>• Chain of Custody (COC) forms were completed for transport to the laboratory.<br>• Samples were couriered from Norfolk Island to the laboratories in Sydney via Brisbane. Due to customs requirements, samples took up over 10 days to reach the laboratory.<br>• Quality control samples were collected during the sampling program, Quality assurance is detailed in **Appendix J**. |
| **Waste Disposal** | • All soil bores were backfilled using soil generate from the bore.<br>• No spoil was generated for surface water, surface soil and sediment sampling. |

| Activity | Description and Further Information |
|---|---|
| **Avoidance of Cross Contamination** | Sampling procedures used to prevent cross contamination considered the guidance provided in Appendix 1 of the Interim Guideline of the Assessment and Management of PFAS (WA DER, 2016) during site works and involve:<br>• Samples were placed into laboratory-supplied jars / bottles appropriate for PFAS sampling (i.e. without Teflon liners). Sampling bottles for other contaminants were standard laboratory supplied containers.<br>• All sample containers were stored in individual LDPE zip-lock bags.<br>• Decontamination of re-usable sampling equipment was completed between sampling locations and before collection of each sample using a Liquinox and potable water wash, and a double rinse with potable water.<br>• Use of dedicated disposable latex free gloves that were replaced between each sample collection and location.<br>• Quality control samples were collected for each sample media to assess cross contamination.<br>• Quality control samples to assess cross contamination were collected during the sampling program as per **Appendix J** of the report.<br>Results of field blank analysis are included in **Appendix J**. |

## Justification for Deviation from Proposed Scope of Works

### *Saline Samples*

Saline samples were collected where locations were deemed safe to collect samples. Due to the topography of Norfolk Island, the mouths of several creeks were sheer cliff faces, and therefore saline samples could not be collected safely.

Saline samples were collected from Emily Bay at the mouth of Watermill Creek (SW07).

Saline samples could not be safely collected from the mouths of Mission Creek and Headstone Creek. Whilst saline samples could not be collected, a surface water sample was collected at the closest point upgradient of the mouth; Mission Creek was dry near the mouth and therefore the nearest upgradient safe sampling point was a sediment sample (SD19). Headstone Creek was sampled at the nearest point from an outfall pipe adjacent the Headstone Waste Centre (HC_SW01).

### *Surface Water Samples*

Surface water samples could only be collected from where surface water was present. As such, surface water was not sampled at 200 m intervals of Mission Creek, and at other locations.

### *Biota sampling (serum)*

Biota serum sampling could not be undertaken due to the logistical challenges in collecting cattle serum samples on Norfolk Island. An alternative approach was proposed to assess the risks associated with the uptake of PFAS by cattle.

### *Ecologist for sensitive ecological receptors*

Following discussion with the project team, further data on the nature and extent of PFAS to confirm what ecosystems it potentially impacted was considered to be required before a decision could be made on what ecological receptors may require further assessment.

It is noted that while ecosystems may have the potential to be exposed to PFAS in the environment, and it may not be possible to exclude potential risks to these receptors via a screening level assessment, further detailed ecological risk assessment work will only be warranted where such assessments are deemed likely to impact upon required management actions.

# Appendix H: Calibration Certificates

# Equipment Calibration Form
## YSI ProPlus

**Enqip #:** 13479
**Company:** Senversa
**Consultant:** Carlyn Williams
**PO #:** M17776
**Certificate #:** 19919

### INSTRUMENT IDENTIFICATION

**Model Number:** 6050000
**Serial Number:** 18G100362
**Instrument Type:** YSI ProPlus

### INSPECTION RECORD

| | | | |
|---|---|---|---|
| **Batteries Checked:** | PASS | **Date & Time:** | PASS |
| **Electrodes Cleaned/Checked:** | PASS | **Temperature:** | PASS |

### CALIBRATION DETAILS

| Sensor | Cal Solution | Value | Reading |
|---|---|---|---|
| pH | Buffer 4.00 | 4.00 pH | 4.00 pH |
| | Buffer 7.00 | 7.00 pH | 7.00 pH |
| Redox | Standard ORP | 241 mV @ 15 °C | 241 mV |
| $O_2$ | Zero Dissolved Oxygen | 0.0 % | 0.0 % |
| | Air | 100.0 % | 100.0 % |
| Conductivity | Standard Conductivity | 2.76 mS/cm | 2.76 mS/cm |

**Calibration Successful:** YES

**Calibrated By:** Doyle Schapendonk **Test Date:** 4/03/2021

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# Appendix I: Laboratory Analytical Reports

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111243** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:10 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID014_BORE | QC33 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111243-001 | ES2111243-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.15** | **0.15** | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.14** | **0.13** | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **1.04** | **0.98** | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.05** | **0.04** | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.89** | **0.84** | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.02** | **0.02** | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.12** | **0.11** | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.02** | **0.02** | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.04** | **0.04** | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID014_BORE | QC33 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111243-001 | ES2111243-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **2.47** | **2.33** | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **1.93** | **1.82** | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.28** | **2.16** | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **106** | **104** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **104** | **104** | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111243** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

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ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111243** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 2 |
| Order number | : ---- | No. of samples analysed | : 2 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID014_BORE, | QC33 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID014_BORE, | QC33 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID014_BORE, | QC33 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID014_BORE, | QC33 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID014_BORE, | QC33 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111243**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 2 / 2 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC34 has been forwarded to Eurofins for testing.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111243-001 | 12-Mar-2021 00:00 | ID014_BORE | ✓ |
| ES2111243-002 | 12-Mar-2021 00:00 | QC33 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 1 of 1 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 1 | IDW14-BOAE | W | 12/3 | AM | PFAS | 2 | X | |
| 2 | QC33 | W | 12/3 | AM | PFAS | 2 | X | |
| - | QC34 | W | 12/3 | AM | PFAS | 2 | X | please forward to eurofins |
| Total | | | | | | | 0 | |

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins / QC34
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2111243

Telephone : +61-2-8784 8555

**Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:** Sampler Name: C. Williams Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 6:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111244** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:10 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID016_TAP1 | ID016_TAP2 | ID016_BORE | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111244-001 | ES2111244-002 | ES2111244-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | **0.03** | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.03** | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.14** | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID016_TAP1 | ID016_TAP2 | ID016_BORE | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111244-001 | ES2111244-002 | ES2111244-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | **0.20** | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.14** | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | **0.17** | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **106** | **115** | **107** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **105** | **106** | **106** | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111244** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111244** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 3 |
| Order number | : ---- | No. of samples analysed | : 3 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID016_TAP1, ID016_BORE | ID016_TAP2, | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID016_TAP1, ID016_BORE | ID016_TAP2, | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID016_TAP1, ID016_BORE | ID016_TAP2, | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID016_TAP1, ID016_BORE | ID016_TAP2, | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID016_TAP1, ID016_BORE | ID016_TAP2, | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111244**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 |
| Receipt Detail | : | No. of samples received / analysed | : 3 / 3 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please note that one PFAS bottle from sample ID016_BORE was received empty.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111244-001 | 12-Mar-2021 00:00 | ID016_TAP1 | ✓ |
| ES2111244-002 | 12-Mar-2021 00:00 | ID016_TAP2 | ✓ |
| ES2111244-003 | 12-Mar-2021 00:00 | ID016_BORE | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

**Senversa Pty Ltd**
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 1 of 1 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

Analysis Required

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | | |
| 1 | 1D016_TAP1 | W | 12/3 | AM | PFAS | 2 | X | |
| 2 | 1D016_TAP2 | W | 12/3 | AM | PFAS | 2 | X | |
| 3 | 1D016_BORE | W | 12/3 | AM | PFAS | 2 | X | |
| Total | | | | | | | 0 | |

Environmental Division
Sydney
Work Order Reference
ES2111244

Telephone : +61-2-8784 8555

**Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:**

**Sampler Name:** CARLYN WILLIAMS **Signature:** **Date:** 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: CWilliams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26-3-21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 13:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111245** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:10 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | 10015_BORE | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111245-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.06** | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.05** | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.30** | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.15** | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.04** | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.01** | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | 10015_BORE | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111245-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.61** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.45** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.56** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **103** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **104** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111245** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111245** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| 10015_BORE | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| 10015_BORE | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| 10015_BORE | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| 10015_BORE | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| 10015_BORE | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111245**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111245-001 | 16-Mar-2021 00:00 | 10015_BORE | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | 10015_BORE | W | 16/3 | PM | PFAS | 2 | X |
| Total | | | | | | | 0 |

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division
Sydney
Work Order Reference
ES2111245

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 18/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111246** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:10 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Results confirmed by re-extraction and re-analysis.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | 1D024_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111246-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **0.14** | ---- | ---- | ---- | ---- |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **0.13** | ---- | ---- | ---- | ---- |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **0.96** | ---- | ---- | ---- | ---- |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.04** | ---- | ---- | ---- | ---- |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **0.71** | ---- | ---- | ---- | ---- |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **0.13** | ---- | ---- | ---- | ---- |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | **0.02** | ---- | ---- | ---- | ---- |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.04** | ---- | ---- | ---- | ---- |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | 1D024_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111246-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **2.17** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **1.67** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.00** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **101** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **104** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111246** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111246** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** 1D024_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** 1D024_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** 1D024_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** 1D024_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** 1D024_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111246**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111246-001 | 17-Mar-2021 00:00 | 1D024_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-565-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 1 of 1 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division Sydney
Work Order Reference
ES2111246

Telephone : +61-2-8784 8555

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | | | | | | | | | | | | |
| 1 | 10024-TAP1 | W | 17/3 | PM | | 2 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:** | **Sampler Name:** | **Signature:** | **Date:** |

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111247** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:10 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID023_TAP1 | ID023_TAP2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111247-001 | ES2111247-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID023_TAP1 | ID023_TAP2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111247-001 | ES2111247-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 106 | 103 | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 107 | 101 | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111247** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111247** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 2 |
| Order number | : ---- | No. of samples analysed | : 2 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID023_TAP1, ID023_TAP2 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID023_TAP1, ID023_TAP2 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID023_TAP1, ID023_TAP2 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID023_TAP1, ID023_TAP2 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID023_TAP1, ID023_TAP2 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111247**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 2 / 2 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111247-001 | 17-Mar-2021 00:00 | ID023_TAP1 | ✓ |
| ES2111247-002 | 17-Mar-2021 00:00 | ID023_TAP2 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-565-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| 1 | 1D023_TAP1 | W | 17/3 | PM | PFAS | 2 | X |
| 2 | 1D023-TAP2 | W | 17/3 | PM | PFAS | 2 | X |
| Total | | | | | | | 0 |

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division Sydney
Work Order Reference
ES2111247

Telephone : + 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (If applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111248** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID021_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111248-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID021_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111248-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 103 | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 105 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111248** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111248** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID021_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID021_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID021_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID021_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID021_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111248**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111248-001 | 17-Mar-2021 00:00 | ID021_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 1 of 1 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | 10021-TAP1 | W | 17/3 | PM | PFAS | 2 | X |
| Total | | | | | | | 0 |

Environmental Division Sydney
Work Order Reference
ES2111248

Telephone : + 61-2-8784 8555

**Sampler:** I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS | Signature: | Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111249** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID017_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111249-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID017_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111249-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 101 | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 107 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111249** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111249** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID017_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID017_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID017_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID017_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID017_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111249**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111249-001 | 16-Mar-2021 00:00 | ID017_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) | Comments |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | | |
| 1 | 10017-TAP1 | W | 16/3 | Am | PFAS | 2 | X | |
| Total | | | | | | | 0 | |

Environmental Division Sydney
Work Order Reference
ES2111249

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 17/3 | Carrier / Reference #: | Name/Signature: M. Brown | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111250** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID018_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111250-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID018_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111250-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **96.3** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **102** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111250** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111250** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID018_TAP1 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID018_TAP1 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID018_TAP1 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID018_TAP1 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID018_TAP1 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111250**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111250-001 | 12-Mar-2021 00:00 | ID018_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Environmental Division
Sydney
Work Order Reference
ES2111250

Telephone : +61-2-8784 8555

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | 1D018-TAP1 | W | 12/3 | AM | PFAS | 2 | X |
| Total | | | | | | | 0 |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: [signature] Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: AW | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111252** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID019_TAP1 | ID019_TAP2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111252-001 | ES2111252-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID019_TAP1 | ID019_TAP2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111252-001 | ES2111252-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 103 | 106 | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 107 | 103 | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111252** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111252** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 2 |
| Order number | : ---- | No. of samples analysed | : 2 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID019_TAP1, ID019_TAP2 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID019_TAP1, ID019_TAP2 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID019_TAP1, ID019_TAP2 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID019_TAP1, ID019_TAP2 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID019_TAP1, ID019_TAP2 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111252**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 2 / 2 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111252-001 | 16-Mar-2021 00:00 | ID019_TAP1 | ✓ |
| ES2111252-002 | 16-Mar-2021 00:00 | ID019_TAP2 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | 10019-TAP1 | W | 16/3 | AM | PFAS | 2 | X |
| 2 | 10019-TAP2 | W | 16/3 | AM | " " | 2 | X |
| Total | | | | | | | 0 |

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division
Sydney
Work Order Reference
ES2111252

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 18/3 | Carrier / Reference #: | Name/Signature: Mbond | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111253** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID020_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111253-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID020_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111253-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **98.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **103** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111253** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111253** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID020_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID020_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID020_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID020_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID020_TAP1 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **31-Mar-2021** | 12-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111253**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111253-001 | 16-Mar-2021 00:00 | ID020_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | of |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | |
| 1 | 1D020-TAP1 | W | 16/3 | PM | PFAS | 2 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2111253

Telephone : + 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26-3-21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111254** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID022_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111254-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID022_TAP1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111254-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 97.6 | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 98.1 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111254** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111254** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID022_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID022_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID022_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID022_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID022_TAP1 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **31-Mar-2021** | 13-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111254**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111254-001 | 17-Mar-2021 00:00 | ID022_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-865-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | | |
| 1 | 10022_TAP1 | W | 17/3 | PM | PFAS | 2 | X | |
| Total | | | | | | | 0 | |

Environmental Division Sydney
Work Order Reference
ES2111254

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 1 of 1 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

**Analysis Required**

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | 10022_TAP1 | W | 17/3 | PM | PFAS | 2 | X |
| Total | | | | | | | 0 |

Environmental Division Sydney
Work Order Reference
ES2111254

Telephone : +61-2-8784 8555

**Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:**

**Sampler Name:** CARLYN WILLIAMS **Signature:** [redacted] **Date:** 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W.Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: MGaud | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111256** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:18 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 4 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | FRE_TAP1 | FRE_TAP3 | FRE_TAP5 | QC35 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111256-001 | ES2111256-003 | ES2111256-005 | ES2111256-007 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | FRE_TAP1 | FRE_TAP3 | FRE_TAP5 | QC35 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111256-001 | ES2111256-003 | ES2111256-005 | ES2111256-007 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 87.3 | 92.3 | 96.0 | 96.5 | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 96.8 | 98.5 | 99.2 | 92.3 | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111256** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 4 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 128 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 125 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595627)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595627)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 128 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 122 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111256** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 7 |
| Order number | : ---- | No. of samples analysed | : 4 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 38 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 38 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** QC35 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **01-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** FRE_TAP1, FRE_TAP3, FRE_TAP5 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** QC35 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **01-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** FRE_TAP1, FRE_TAP3, FRE_TAP5 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** QC35 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **01-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** FRE_TAP1, FRE_TAP3, FRE_TAP5 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** QC35 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **01-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** FRE_TAP1, FRE_TAP3, FRE_TAP5 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| QC35 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **01-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| FRE_TAP1, FRE_TAP3, FRE_TAP5 | **12-Mar-2021** | **31-Mar-2021** | 08-Sep-2021 | ✓ | **31-Mar-2021** | 08-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 38 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 38 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 38 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 38 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111256**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 7 / 4 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC36 has been forwarded to Eurofins for testing.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111256-001 | 12-Mar-2021 00:00 | FRE_TAP1 | | ✓ |
| ES2111256-002 | 12-Mar-2021 00:00 | FRE_TAP1_K | ✓ | |
| ES2111256-003 | 12-Mar-2021 00:00 | FRE_TAP3 | | ✓ |
| ES2111256-004 | 12-Mar-2021 00:00 | FRE_TAP4 | ✓ | |
| ES2111256-005 | 12-Mar-2021 00:00 | FRE_TAP5 | | ✓ |
| ES2111256-006 | 12-Mar-2021 00:00 | FRE_TAP6 | ✓ | |
| ES2111256-007 | 12-Mar-2021 00:00 | QC35 | | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | FRE_TAP1 | W | 12/3/21 | PM | PFAS BOTTLE | 2 | X | | | | | | | | | | |
| 2 | FRE_TAP1_K | ↑ | ↓ | ↓ | ↓ | ↓ | | | | | | | | | | X | |
| 3 | FRE_TAP 3 | | | | | | X | | | | | | | | | | |
| 4 | FRE_TAP 4 | | | | | | | | | | | | | | | X | |
| 5 | FRE_TAP 5 | | | | | | X | | | | | | | | | | |
| 6 | FRE_TAP 6 | | | | | | | | | | | | | | | X | |
| 7 | QC35 | | | | | | X | | | | | | | | | | |
| – | QC36 | ↓ | ↓ | ↓ | ↓ | ↓ | X | | | | Please forward to Eurofins | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins / QC36
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2111256

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 12/3/21

| Relinquished By: | | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 19/2/21 | | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00am | | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111257** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 09:34 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID025_SD01 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111257-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 48.7 | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID025_SD01 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111257-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **91.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111257** | Page | : 1 of 7 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3599409)** | | | | | | | | | |
| ES2111259-004 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 93.1 | 91.6 | 1.52 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0056 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0080 | 2.47 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0924 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0072 | 3.19 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.313 | 8.36 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0022 | 4.76 | 0% - 50% |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0019 | 7.14 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0053 | 3.39 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0028 | 4.20 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 115 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 120 | 65.0 | 137 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 108 | 69.2 | 143 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 93.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 120 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 106 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 100 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 116 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 122 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 110 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 91.3 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 114 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 125 | 63.0 | 144 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352) - continued** | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | ID025_SD01 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 88.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 128 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111257** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 1 |
| Order number | : ---- | No. of samples analysed | : 1 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **SOIL**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Moisture Content | 1 | 13 | 7.69 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / ***Container*** / *Client Sample ID(s)* | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar (EA055)** ID025_SD01 | **18-Mar-2021** | **----** | ---- | ---- | **01-Apr-2021** | 01-Apr-2021 | ✓ |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** ID025_SD01 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** ID025_SD01 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)** ID025_SD01 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** ID025_SD01 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)** ID025_SD01 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 1 | 13 | **7.69** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111257**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 1 / 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111257-001 | 18-Mar-2021 00:00 | ID025_SD01 | ✓ | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 69 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Sample Information | | | | | Container Information | | Analysis Required | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | |
| 1 | 1D025-SD01 | S | 18/3 | AM | | 1 | X | |
| Total | | | | | | | 0 | |

Environmental Division Sydney
Work Order Reference
ES2111257

Telephone : + 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 18/3 | Carrier / Reference #: | Name/Signature: MJound | Date: 26.3.21 |
| Of: Senversa | Time: 8:30 | Date/Time: | Of: ALS | Time: 11:02 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111259** | Page | : 1 of 9 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:18 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 6 | | |
| No. of samples analysed | : 5 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | QC63 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-006 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.02** | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.05** | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | QC63 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-006 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.07** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.07** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.07** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **97.9** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **95.1** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID012_SD03 | ID012_SD04 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-001 | ES2111259-004 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **87.4** | **93.1** | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0006** | <0.0005 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0073** | **0.0019** | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.002 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0006 | <0.0012 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0006 | <0.0012 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID012_SD03 | ID012_SD04 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-001 | ES2111259-004 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0006 | <0.0012 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0006 | <0.0012 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0006 | <0.0012 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0005 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0079** | **0.0019** | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0079** | **0.0019** | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0079** | **0.0019** | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.5** | **106** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **104** | **104** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID012_SW03 | ID012_SW04 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-002 | ES2111259-005 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.02** | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.06** | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID012_SW03 | ID012_SW04 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111259-002 | ES2111259-005 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.08** | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.08** | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.08** | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **94.8** | **95.4** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **94.5** | **89.3** | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SEAWATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111259** | Page | : 1 of 8 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 6 | | |
| No. of samples analysed | : 5 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3599409)** | | | | | | | | | |
| ES2111259-004 | ID012_SD04 | EA055: Moisture Content | ---- | 0.1 | % | 93.1 | 91.6 | 1.52 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0056 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0080 | 2.47 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0924 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0072 | 3.19 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.313 | 8.36 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0022 | 4.76 | 0% - 50% |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0019 | 7.14 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0053 | 3.39 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0028 | 4.20 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 115 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 120 | 65.0 | 137 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 108 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 93.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 120 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 106 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 100 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 116 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 122 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 110 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 91.3 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 114 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352) - continued** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 125 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 88.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 128 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111259** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 6 |
| Order number | : ---- | No. of samples analysed | : 5 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Moisture Content | 1 | 13 | 7.69 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **----** | ---- | ---- | **01-Apr-2021** | 01-Apr-2021 | ✓ |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID012_SD03, ID012_SD04 | **18-Mar-2021** | **30-Mar-2021** | 14-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID012_SW03, QC63 | ID012_SW04, | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **01-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID012_SW03, QC63 | ID012_SW04, | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **01-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID012_SW03, QC63 | ID012_SW04, | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **01-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID012_SW03, QC63 | ID012_SW04, | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **01-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| ID012_SW03, QC63 | ID012_SW04, | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **01-Apr-2021** | 14-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 1 | 13 | **7.69** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111259**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 3 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 6 / 5 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC63 has been forwarded to Eurofins for testing.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **BIOTA**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) BIOTA No analysis requested |
|---|---|---|---|
| ES2111259-003 | 18-Mar-2021 00:00 | ID012_BIOTA3 | ✓ |

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111259-001 | 18-Mar-2021 00:00 | ID012_SD03 | ✓ | ✓ |
| ES2111259-004 | 18-Mar-2021 00:00 | ID012_SD04 | ✓ | ✓ |

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111259-002 | 18-Mar-2021 00:00 | ID012_SW03 | ✓ |
| ES2111259-005 | 18-Mar-2021 00:00 | ID012_SW04 | ✓ |
| ES2111259-006 | 18-Mar-2021 00:00 | QC63 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 076 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| 1 | 10012_SD03 | S | 18/3 | AM | PFAS | 1 | X | | | | | | | | | | | |
| 2 | 10012_SW03 | W | 18/3 | AM | PFAS | 2 | X | | | | | | | | | | | |
| 3 | 10012_BIOTA3 | BIOTA | 18/3 | AM | PFAS bag | 1 | [illegible] | | | | | | | | | | X | |
| 4 | 10012_SD04 | S | 18/3 | AM | PFAS | 1 | X | | | | | | | | | | | |
| 5 | 10012_SW04 | W | 18/3 | AM | PFAS | 2 | X | | | | | | | | | | | |
| 6 | QC63 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| 7 | QC64 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | please forward to eurofins |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | Subcon / Forward Lab / Split WO | | | | | | | | | | | | | | | | | |
| | Lab / Analysis: Eurofins / QC64 | | | | | | | | | | | | | | | | | |
| | Organised By / Date: | | | | | | | | | | | | | | | | | |
| | Relinquished By / Date: | | | | | | | | | | | | | | | | | |
| | Connote / Courier: | | | | | | | | | | | | | | | | | |
| | WO No: | | | | | | | | | | | | | | | | | |
| | Attached By PO / Internal Sheet: | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2111259
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: [signature] Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: [signature] | Date: 18/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 3:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111261** | Page | : 1 of 13 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:18 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 15 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | ID013_BIOTA1 | ID013_BIOTA2 | ID013_BIOTA3 | ID013_BIOTA4 | ID013_BIOTA5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111261-001 | ES2111261-002 | ES2111261-003 | ES2111261-004 | ES2111261-005 |
| | | | | Result | Result | Result | Result | Result |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | PAW PAW | EGG | MANGO | CAPSICUM | BASIL |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 140 | 46.4 | 365 | 42.9 | 33.8 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 5 | <1 | <1 | <1 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | 2 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | 2 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 4 | <1 | <1 | <1 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | ID013_BIOTA1 | ID013_BIOTA2 | ID013_BIOTA3 | ID013_BIOTA4 | ID013_BIOTA5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111261-001 | ES2111261-002 | ES2111261-003 | ES2111261-004 | ES2111261-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)** | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)** | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)** | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)** | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **4:2 Fluorotelomer sulfonic acid (4:2 FTS)** | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **6:2 Fluorotelomer sulfonic acid (6:2 FTS)** | 27619-97-2 | 2 | µg/kg | <2 | **3** | <2 | <2 | <2 |
| **8:2 Fluorotelomer sulfonic acid (8:2 FTS)** | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231P: PFAS Sums** | | | | | | | | |
| **^ Sum of PFAS** | ---- | 1 | µg/kg | <1 | **12** | <1 | <1 | <1 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| **13C4-PFOS** | ---- | 1 | % | **79.0** | **83.0** | **74.5** | **83.0** | **75.5** |
| **13C8-PFOA** | ---- | 1 | % | **117** | **114** | **114** | **118** | **114** |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | ID013_BIOTA7 | ID013_BIOTA8 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-007 | ES2111261-008 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | CHIVES | CELERY | ---- | ---- | ---- |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 48.0 | 24.6 | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | ID013_BIOTA7 | ID013_BIOTA8 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-007 | ES2111261-008 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | 78.0 | 81.5 | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 1 | % | 118 | 116 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111261-009 | ES2111261-010 | ES2111261-011 | ES2111261-012 | ES2111261-013 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **21.3** | **16.7** | **15.4** | **9.4** | **10.9** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0006** | **0.0006** | **0.0006** | **0.0006** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0014** | **0.0165** | **0.0035** | **0.0052** | **0.0059** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | **0.0002** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | **0.0006** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111261-009 | ES2111261-010 | ES2111261-011 | ES2111261-012 | ES2111261-013 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0020** | **0.0179** | **0.0041** | **0.0058** | **0.0059** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0020** | **0.0171** | **0.0041** | **0.0058** | **0.0059** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0020** | **0.0179** | **0.0041** | **0.0058** | **0.0059** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **88.5** | **96.0** | **97.0** | **96.5** | **99.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **101** | **102** | **103** | **100** | **105** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS06 | ID013_SS07 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-014 | ES2111261-015 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **10.1** | **26.6** | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | **0.0005** | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0071** | **0.0022** | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS06 | ID013_SS07 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-014 | ES2111261-015 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0071** | **0.0027** | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0071** | **0.0027** | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0071** | **0.0027** | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **97.5** | **81.5** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **97.5** | **97.5** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID013_SSW01 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-016 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **0.17** | ---- | ---- | ---- | ---- |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **0.18** | ---- | ---- | ---- | ---- |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **1.46** | ---- | ---- | ---- | ---- |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.07** | ---- | ---- | ---- | ---- |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **1.38** | ---- | ---- | ---- | ---- |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | **0.03** | ---- | ---- | ---- | ---- |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **0.14** | ---- | ---- | ---- | ---- |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | **0.03** | ---- | ---- | ---- | ---- |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.05** | ---- | ---- | ---- | ---- |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID013_SSW01 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111261-016 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **3.51** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **2.84** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **3.26** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **93.5** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **94.1** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **BIOTA** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 50 | 130 |
| **13C8-PFOA** | ---- | 50 | 130 |

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111261** | Page | : 1 of 11 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 30-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 15 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **BIOTA**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328) - continued** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3599409)** | | | | | | | | | |
| ES2111259-004 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 93.1 | 91.6 | 1.52 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0056 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0080 | 2.47 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0924 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0072 | 3.19 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.313 | 8.36 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0022 | 4.76 | 0% - 50% |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0019 | 7.14 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0053 | 3.39 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0028 | 4.20 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111268-001 | Anonymous | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **BIOTA**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | 5 µg/kg | 102 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | 5 µg/kg | 109 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 5 µg/kg | 96.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <1 | 5 µg/kg | 118 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | 25 µg/kg | 114 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | 5 µg/kg | 80.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | 5 µg/kg | 111 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | 5 µg/kg | 119 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 90.8 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <1 | 5 µg/kg | 113 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 76.4 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 93.9 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <1 | 5 µg/kg | 106 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <2 | 12.5 µg/kg | 104 | 88.1 | 105 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 81.6 | 144 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 84.7 | 135 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 78.9 | 20.5 | 150 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | 5 µg/kg | 120 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | 5 µg/kg | 108 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | 5 µg/kg | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | 5 µg/kg | 87.6 | 65.0 | 137 |

Sub-Matrix: **BIOTA**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | 5 µg/kg | # 92.0 | 93.4 | 130 |
| **EP231P: PFAS Sums (QCLot: 3593328)** | | | | | | | | |
| EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | ---- | ---- | ---- | ---- |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 115 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352) - continued** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 108 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 5 µg/kg | 103 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 5 µg/kg | 109 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 5 µg/kg | 111 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 5 µg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 5 µg/kg | 113 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 5 µg/kg | 122 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 25 µg/kg | 113 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 5 µg/kg | 125 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 5 µg/kg | 115 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 5 µg/kg | 81.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 5 µg/kg | 116 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 5 µg/kg | 115 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 5 µg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 5 µg/kg | 122 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 5 µg/kg | 118 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 5 µg/kg | 76.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 12.5 µg/kg | 95.8 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 µg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 12.5 µg/kg | # 111 | 88.1 | 105 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 12.5 µg/kg | 107 | 81.6 | 144 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 12.5 µg/kg | 107 | 84.7 | 135 |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328) - continued** | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 12.5 µg/kg | 81.1 | 20.5 | 150 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 5 µg/kg | 114 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 5 µg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | ID013_BIOTA1 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 5 µg/kg | 112 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 5 µg/kg | 116 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 5 µg/kg | 86.8 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 5 µg/kg | # 92.4 | 93.4 | 130 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 93.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 120 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 106 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 100 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 116 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 122 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 110 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 91.3 | 69.8 | 131 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352) - continued** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 114 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 125 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 88.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 128 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111261** | Page | : 1 of 8 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 16 |
| Order number | : ---- | No. of samples analysed | : 15 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **BIOTA**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Laboratory Control Spike (LCS) Recoveries** | | | | | | | |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | QC-3593328-002 | ---- | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.0 % | 93.4-130% | **Recovery less than lower control limit** |
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231C: Perfluoroalkyl Sulfonamides | ES2111261--001 | ID013_BIOTA1 | **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 111 % | 88.1-105% | **Recovery greater than upper data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2111261--001 | ID013_BIOTA1 | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.4 % | 93.4-130% | **Recovery less than lower data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | |
| **HDPE Soil Jar**<br>ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | ---- | ---- | ---- | 01-Apr-2021 | 25-Mar-2021 | **7** |

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type / Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | |
| Moisture Content | 1 | 13 | 7.69 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

| Quality Control Sample Type / Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **Biota Sample Pre-Preparation** | | | | | | | |
| **HDPE Soil Jar (Biota-PP)**<br>ID013_BIOTA2 | **11-Mar-2021** | **30-Mar-2021** | ---- | ---- | **----** | ---- | ---- |
| **Snap Lock Bag (Biota-PP)**<br>ID013_BIOTA1, ID013_BIOTA3,<br>ID013_BIOTA4, ID013_BIOTA5,<br>ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **30-Mar-2021** | ---- | ---- | **----** | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231-PFOS-SP)**<br>ID013_BIOTA2 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231-PFOS-SP)**<br>ID013_BIOTA1, ID013_BIOTA3,<br>ID013_BIOTA4, ID013_BIOTA5,<br>ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>ID013_BIOTA2 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)**<br>ID013_BIOTA1, ID013_BIOTA3,<br>ID013_BIOTA4, ID013_BIOTA5,<br>ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>ID013_BIOTA2 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)**<br>ID013_BIOTA1, ID013_BIOTA3,<br>ID013_BIOTA4, ID013_BIOTA5,<br>ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID013_BIOTA2 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| ID013_BIOTA1, ID013_BIOTA3, ID013_BIOTA4, ID013_BIOTA5, ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID013_BIOTA2 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| ID013_BIOTA1, ID013_BIOTA3, ID013_BIOTA4, ID013_BIOTA5, ID013_BIOTA7, ID013_BIOTA8 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **----** | ---- | ---- | **01-Apr-2021** | 25-Mar-2021 | × |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **30-Mar-2021** | 07-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **30-Mar-2021** | 07-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **30-Mar-2021** | 07-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **30-Mar-2021** | 07-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **11-Mar-2021** | **30-Mar-2021** | 07-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SSW01 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SSW01 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SSW01 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SSW01 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SSW01 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **BIOTA**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | 10.00 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Moisture Content | EA055 | 1 | 13 | 7.69 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | 10.00 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | 0.00 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | 5.26 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | 5.26 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | 0.00 | 5.00 | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| PFOS - Linear/Branched Speciation | EP231-PFOS-SP | BIOTA | In-house: Linear PFOS is determined by quantiation of the separate linear peak using linear PFOS. Branched PFOS is determined as the difference between total PFOS (determined using a mixed linear/branched standard) and linear PFOS. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | BIOTA | In-house: A sample extract is analysed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of biota which is then solvent extracted. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Prep-Preparation for Biota Analysis | * Biota-PP | BIOTA | A sample is prepared from whole or particular tissues/organs, identified, homogenised and the total weight of prepared sample recorded. |
| Sample Preparation for PFAS in Biota | EP231-PR | BIOTA | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of homogenised biota which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111261**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 3 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 16 / 15 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **BIOTA**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) BIOTA No analysis requested | BIOTA - Biota-PP Pre-preparation of Biota Samples | BIOTA - EP231X PFAS - Full Suite (28 analytes) - includes PFOS |
|---|---|---|---|---|---|
| ES2111261-001 | 11-Mar-2021 00:00 | ID013_BIOTA1 | | ✓ | ✓ |
| ES2111261-002 | 11-Mar-2021 00:00 | ID013_BIOTA2 | | ✓ | ✓ |
| ES2111261-003 | 11-Mar-2021 00:00 | ID013_BIOTA3 | | ✓ | ✓ |
| ES2111261-004 | 11-Mar-2021 00:00 | ID013_BIOTA4 | | ✓ | ✓ |
| ES2111261-005 | 11-Mar-2021 00:00 | ID013_BIOTA5 | | ✓ | ✓ |
| ES2111261-006 | 11-Mar-2021 00:00 | ID013_BIOTA6 | ✓ | | |
| ES2111261-007 | 11-Mar-2021 00:00 | ID013_BIOTA7 | | ✓ | ✓ |
| ES2111261-008 | 11-Mar-2021 00:00 | ID013_BIOTA8 | | ✓ | ✓ |

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111261-009 | 11-Mar-2021 00:00 | ID013_SS01 | ✓ | ✓ |
| ES2111261-010 | 11-Mar-2021 00:00 | ID013_SS02 | ✓ | ✓ |
| ES2111261-011 | 11-Mar-2021 00:00 | ID013_SS03 | ✓ | ✓ |
| ES2111261-012 | 11-Mar-2021 00:00 | ID013_SS04 | ✓ | ✓ |
| ES2111261-013 | 11-Mar-2021 00:00 | ID013_SS05 | ✓ | ✓ |
| ES2111261-014 | 11-Mar-2021 00:00 | ID013_SS06 | ✓ | ✓ |
| ES2111261-015 | 11-Mar-2021 00:00 | ID013_SS07 | ✓ | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111261-016 | 11-Mar-2021 00:00 | ID013_SSW01 | ✓ |

## *Proactive Holding Time Report*

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / **Client Sample ID(s)** | **Container** | **Due for extraction** | **Due for analysis** | **Samples Received** | | **Instructions Received** | |
|---|---|---|---|---|---|---|---|
| | | | | **Date** | **Evaluation** | **Date** | **Evaluation** |
| **EA055: Moisture Content** | | | | | | | |
| ID013_SS01 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS02 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS03 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS04 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS05 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS06 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| ID013_SS07 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1D013_BIOTA 1 | BIOTA | 11/3 | | | 1 | X | | | | | | | | | | | |
| 2 | 1D013_BIOTA 2 | | | | | | X | | | | | | | | | | | |
| 3 | 1D013_BIOTA 3 | | | | | | X | | | | | | | | | | | |
| 4 | 1D013_BIOTA 4 | | | | | | X | | | | | | | | | | | |
| 5 | 1D013_BIOTA 5 | | | | | | X | | | | | | | | | | | |
| 6 | 1D013_BIOTA 6 | | | | | | [redacted] | | | | | | | | | | X | |
| 7 | 1D013_BIOTA 7 | | | | | | X | | | | | | | | | | | |
| 8 | 1D013_BIOTA 8 | | | | | | X | | | | | | | | | | | |
| 9 | 1D013_SS01 | S | | | | | X | | | | | | | | | | | |
| 10 | 1D013_SS02 | | | | | | X | | | | | | | | | | | |
| 11 | 1D013_SS03 | | | | | | X | | | | | | | | | | | |
| 12 | 1D013_SS04 | | | | | | X | | | | | | | | | | | |
| 13 | 1D013_SS05 | | | | | | X | | | | | | | | | | | |
| 14 | 1D013_SS06 | | | | | | X | | | | | | | | | | | |
| 15 | 1D013_SS07 | | | | | | X | | | | | | | | | | | |
| | [redacted] | | | | | | | | | | | | | | | | | |
| 16 | 1D013_SW01 | W | 11/3 | | | 2 | X | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Totals | | | | | | | 0 | | | | | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2111261

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: MYoung | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: CW
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111264** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:19 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 29 | | |
| No. of samples analysed | : 3 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HOSP_TAP4A | PWS_HOSP_TAP6 | PWS_HOSP_TAP10 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111264-010 | ES2111264-012 | ES2111264-016 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HOSP_TAP4A | PWS_HOSP_TAP6 | PWS_HOSP_TAP10 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111264-010 | ES2111264-012 | ES2111264-016 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 91.8 | 102 | 99.7 | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 96.7 | 92.1 | 92.7 | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111264** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 29 | | |
| No. of samples analysed | : 3 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111264** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 29 |
| Order number | : ---- | No. of samples analysed | : 3 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_HOSP_TAP4A, PWS_HOSP_TAP10 | PWS_HOSP_TAP6, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_HOSP_TAP4A, PWS_HOSP_TAP10 | PWS_HOSP_TAP6, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_HOSP_TAP4A, PWS_HOSP_TAP10 | PWS_HOSP_TAP6, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_HOSP_TAP4A, PWS_HOSP_TAP10 | PWS_HOSP_TAP6, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_HOSP_TAP4A, PWS_HOSP_TAP10 | PWS_HOSP_TAP6, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |

## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111264**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 3 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 29 / 3 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111264-001 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_1 | ✓ | |
| ES2111264-002 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_2 | ✓ | |
| ES2111264-003 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_3 | ✓ | |
| ES2111264-004 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_4 | ✓ | |
| ES2111264-005 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_5 | ✓ | |
| ES2111264-006 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_6 | ✓ | |
| ES2111264-007 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_7 | ✓ | |
| ES2111264-008 | 14-Mar-2021 00:00 | PWS_HOSP_TANK_8 | ✓ | |
| ES2111264-009 | 14-Mar-2021 00:00 | PWS_HOSP_ZIP | ✓ | |
| ES2111264-010 | 14-Mar-2021 00:00 | PWS_HOSP_TAP4A | | ✓ |
| ES2111264-011 | 14-Mar-2021 00:00 | PWS_HOSP_TAP5 | ✓ | |
| ES2111264-012 | 14-Mar-2021 00:00 | PWS_HOSP_TAP6 | | ✓ |
| ES2111264-013 | 14-Mar-2021 00:00 | PWS_HOSP_TAP7 | ✓ | |
| ES2111264-014 | 14-Mar-2021 00:00 | PWS_HOSP_TAP8 | ✓ | |
| ES2111264-015 | 14-Mar-2021 00:00 | PWS_HOSP_TAP9 | ✓ | |
| ES2111264-016 | 14-Mar-2021 00:00 | PWS_HOSP_TAP10 | | ✓ |
| ES2111264-017 | 14-Mar-2021 00:00 | PWS_HOSP_TAP11 | ✓ | |
| ES2111264-018 | 14-Mar-2021 00:00 | PWS_HOSP_TAP12 | ✓ | |
| ES2111264-019 | 14-Mar-2021 00:00 | PWS_HOSP_TAP13 | ✓ | |
| ES2111264-020 | 15-Mar-2021 00:00 | PWS_HOSP_TAP14 | ✓ | |
| ES2111264-021 | 15-Mar-2021 00:00 | PWS_HOSP_TAP15 | ✓ | |
| ES2111264-022 | 15-Mar-2021 00:00 | PWS_HOSP_TAP16 | ✓ | |
| ES2111264-023 | 15-Mar-2021 00:00 | PWS_HOSP_TAP17 | ✓ | |
| ES2111264-024 | 15-Mar-2021 00:00 | PWS_HOSP_TAP18 | ✓ | |
| ES2111264-025 | 15-Mar-2021 00:00 | PWS_HOSP_TAP19 | ✓ | |
| ES2111264-026 | 15-Mar-2021 00:00 | PWS_HOSP_TAP20 | ✓ | |
| ES2111264-027 | 15-Mar-2021 00:00 | PWS_HOSP_TAP21 | ✓ | |
| ES2111264-028 | 15-Mar-2021 00:00 | QC50 | ✓ | |
| ES2111264-029 | 14-Mar-2021 00:00 | QC51 | ✓ | |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 2 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Environmental Division Sydney
Work Order Reference
ES2111264
Telephone - + 61-2-8784 8555

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PWS-HOSP-TANK1 | Water | 14/3/21 | AM | PFAS BOTTLE | 2 | | | | | | | | | | X | |
| 2 | PWS-HOSP-TANK2 | | | | | | | | | | | | | | | X | |
| 3 | PWS-HOSP-TANK3 | | | | | | | | | | | | | | | X | |
| 4 | PWS-HOSP-TANK4 | | | | | | | | | | | | | | | X | |
| 5 | PWS-HOSP-TANK5 | | | | | | | | | | | | | | | X | |
| 6 | PWS-HOSP-TANK6 | | | | | | | | | | | | | | | X | |
| 7 | PWS-HOSP-TANK7 | | | | | | | | | | | | | | | X | |
| 8 | PWS-HOSP-TANK8 | | | | | | | | | | | | | | | X | |
| 9 | PWS-HOSP-ZIP | | | | | | | | | | | | | | | ~~X~~ | |
| 10 | PWS-HOSP-TAP4A | | | | | | X | | | | | | | | | | |
| 11 | PWS-HOSP-TAP5 | | | | | | | | | | | | | | | X | |
| 12 | PWS-HOSP-TAP6 | | | | | | X | | | | | | | | | | |
| 13 | PWS-HOSP-TAP7 | | | | | | | | | | | | | | | X | |
| 14 | PWS-HOSP-TAP8 | | | | | | | | | | | | | | | X | |
| 15 | PWS-HOSP-TAP9 | | | | | | | | | | | | | | | X | |
| 16 | PWS-HOSP-TAP10 | | | | | | X | | | | | | | | | | |
| 17 | PWS-HOSP-TAP11 | | | | | | | | | | | | | | | X | |
| 18 | PWS-HOSP-TAP12 | | | | | | | | | | | | | | | X | |
| 19 | PWS-HOSP-TAP13 | | | | | | | | | | | | | | | X | |
| 20 | PWS-HOSP-TAP14 | | 15/3/21 | PM | | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | |

Analysis Required

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 15/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 19/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00am | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 6515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 2 of 2 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 076 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | PWS_HOSP_TAP15 | Water | 15/3/21 | PM | PFAS BOTTLE | 2 | | | | | | | | | | | X | |
| 22 | PWS_HOSP_TAP16 | ↓ | ↓ | | | | | | | | | | | | | | X | |
| 23 | PWS_HOSP_TAP17 | | | | | | | | | | | | | | | | X | |
| 24 | PWS_HOSP_TAP18 | | | | | | | | | | | | | | | | X | |
| 25 | PWS_HOSP_TAP19 | | | | | | | | | | | | | | | | X | |
| 26 | PWS_HOSP_TAP20 | | | | | | | | | | | | | | | | X | |
| 27 | PWS_HOSP_TAP21 | ↓ | ↓ | | | | | | | | | | | | | | X | |
| | [redacted] | | | | | | | | | | | | | | | | | |
| 28 | QC50 | Water | 15/3 | PM | PFAS | 2 | | | | | | | | | | | X | |
| 29 | QC51 | ↓ | ↓ | PM | PFAS | 2 | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | | |

**Sampler:** I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

**Sampler Name:** H Pedersen **Signature:** [signature] **Date:** 15/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: AP [signature] | Date: 19/3/21 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00am | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 31 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 09-Apr-2021 16:16 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 92 | | |
| No. of samples analysed | : 66 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: LOR for particular sample#39 raised due to high moisture content.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD04 | MC_SD07 | MC_SD11 | MC_SD12 | MC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-001 | ES2111268-003 | ES2111268-004 | ES2111268-006 | ES2111268-007 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **70.1** | **21.6** | **45.8** | **51.7** | **36.1** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0061** | **0.0011** | **0.0007** | **0.0012** | **0.0003** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0082** | **0.0018** | **0.0008** | **0.0016** | **0.0004** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0924** | **0.0249** | **0.0104** | **0.0219** | **0.0058** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0075** | **0.0030** | **0.0014** | **0.0034** | **0.0009** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.288** | **0.145** | **0.0885** | **0.192** | **0.0425** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0020** | **0.0013** | **0.0009** | **0.0018** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0018** | **0.0003** | **0.0006** | **0.0004** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0055** | **0.0010** | **0.0015** | **0.0016** | **0.0003** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0012** | **0.0003** | **0.0004** | **0.0004** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0027** | **0.0011** | **0.0012** | **0.0013** | **0.0003** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | **0.0002** | **0.0005** | **0.0002** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0004** | **0.0002** | **0.0002** | **0.0002** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | **0.0002** | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | **0.0002** | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD04 | MC_SD07 | MC_SD11 | MC_SD12 | MC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-001 | ES2111268-003 | ES2111268-004 | ES2111268-006 | ES2111268-007 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.416** | **0.180** | **0.108** | **0.227** | **0.0505** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.380** | **0.170** | **0.0989** | **0.214** | **0.0483** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.398** | **0.174** | **0.103** | **0.219** | **0.0492** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.0** | **83.5** | **104** | **112** | **124** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **99.0** | **106** | **102** | **116** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-009 | ES2111268-010 | ES2111268-011 | ES2111268-012 | ES2111268-013 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 52.7 | 19.7 | 50.8 | 75.7 | 78.6 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0011 | 0.0006 | 0.0010 | 0.0028 | 0.0019 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0016 | 0.0008 | 0.0013 | 0.0032 | 0.0019 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0253 | 0.0112 | 0.0167 | 0.0322 | 0.0233 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0033 | 0.0015 | 0.0021 | 0.0030 | 0.0032 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.176 | 0.103 | 0.119 | 0.138 | 0.233 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0024 | 0.0015 | 0.0011 | 0.0013 | 0.0017 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0003 | <0.0002 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0014 | 0.0004 | 0.0008 | 0.0044 | 0.0043 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0004 | <0.0002 | <0.0002 | 0.0013 | 0.0011 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0015 | 0.0007 | 0.0007 | 0.0028 | 0.0024 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0002 | 0.0002 | <0.0002 | 0.0008 | 0.0005 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-009 | ES2111268-010 | ES2111268-011 | ES2111268-012 | ES2111268-013 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.214** | **0.120** | **0.143** | **0.190** | **0.273** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.201** | **0.114** | **0.136** | **0.170** | **0.256** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.206** | **0.116** | **0.139** | **0.182** | **0.266** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **95.0** | **90.0** | **90.5** | **94.0** | **95.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **105** | **100** | **103** | **102** | **106** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-014 | ES2111268-015 | ES2111268-016 | ES2111268-018 | ES2111268-019 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 71.7 | 30.4 | 40.6 | 28.2 | 71.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0025 | 0.0012 | <0.0002 | 0.0004 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0008 | 0.0029 | 0.0013 | <0.0002 | 0.0003 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0117 | 0.0387 | 0.0128 | 0.0016 | 0.0029 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0017 | 0.0043 | 0.0011 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.175 | 0.423 | 0.0620 | 0.0075 | 0.0088 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0026 | <0.0002 | <0.0002 | 0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.002 | 0.003 | <0.001 | 0.001 | 0.002 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0026 | 0.0051 | 0.0005 | 0.0013 | 0.0010 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0048 | 0.0097 | 0.0022 | 0.0007 | 0.0009 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0010 | 0.0025 | 0.0006 | 0.0003 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0016 | 0.0098 | 0.0012 | 0.0004 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0005 | 0.0007 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-014 | ES2111268-015 | ES2111268-016 | ES2111268-018 | ES2111268-019 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.204** | **0.506** | **0.0829** | **0.0128** | **0.0165** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.187** | **0.462** | **0.0748** | **0.0091** | **0.0117** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.199** | **0.494** | **0.0805** | **0.0128** | **0.0160** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **102** | **88.0** | **93.0** | **91.5** | **90.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | **96.5** | **96.0** | **93.0** | **95.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-020 | ES2111268-022 | ES2111268-024 | ES2111268-026 | ES2111268-028 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 73.5 | 64.9 | 63.4 | 76.5 | 60.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0008 | 0.0002 | 0.0012 | 0.0027 | 0.0013 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0013 | <0.0002 | 0.0016 | 0.0038 | 0.0022 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0146 | 0.0028 | 0.0250 | 0.0533 | 0.0399 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0006 | <0.0002 | 0.0032 | 0.0064 | 0.0062 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0151 | 0.0080 | 0.170 | 0.471 | 0.383 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0025 | 0.0054 | 0.0026 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.005 | <0.001 | <0.001 | 0.002 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0075 | 0.0004 | 0.0004 | 0.0017 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0045 | 0.0004 | 0.0020 | 0.0051 | 0.0022 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0008 | <0.0002 | 0.0004 | 0.0012 | 0.0007 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0007 | <0.0002 | 0.0012 | 0.0030 | 0.0024 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0005 | 0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0003 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0003 | 0.0020 | 0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0002 | 0.0019 | 0.0009 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-020 | ES2111268-022 | ES2111268-024 | ES2111268-026 | ES2111268-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0509** | **0.0118** | **0.208** | **0.562** | **0.442** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0297** | **0.0108** | **0.195** | **0.524** | **0.423** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0490** | **0.0118** | **0.200** | **0.540** | **0.430** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **96.5** | **94.0** | **102** | **95.5** | **100** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.5** | **94.5** | **96.0** | **91.5** | **96.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD29 | TC_SS01 | TC_SS02 | TC_SS03 | TC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-030 | ES2111268-031 | ES2111268-032 | ES2111268-033 | ES2111268-034 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **21.0** | **23.0** | **40.2** | **40.7** | **64.7** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0006** | <0.0002 | **0.0038** | <0.0002 | **0.0050** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0005** | <0.0002 | **0.0004** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0120** | **0.0007** | **0.0096** | **0.0010** | **0.0067** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0010** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0007** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0014** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0011** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0009** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD29 | TC_SS01 | TC_SS02 | TC_SS03 | TC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-030 | ES2111268-031 | ES2111268-032 | ES2111268-033 | ES2111268-034 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0180** | **0.0007** | **0.0139** | **0.0010** | **0.0152** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0126** | **0.0007** | **0.0134** | **0.0010** | **0.0117** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0141** | **0.0007** | **0.0134** | **0.0010** | **0.0144** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.5** | **89.5** | **101** | **92.5** | **95.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **97.0** | **96.5** | **95.0** | **97.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-037 | ES2111268-039 | ES2111268-041 | ES2111268-043 | ES2111268-045 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **62.8** | **80.0** | **52.9** | **40.8** | **6.2** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0027** | **0.0007** | **0.0025** | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0048** | **0.0016** | **0.0050** | <0.0002 | <0.0002 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | **0.004** | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0008** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-037 | ES2111268-039 | ES2111268-041 | ES2111268-043 | ES2111268-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0098** | **0.0063** | **0.0083** | <0.0002 | <0.0002 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0075** | **0.0023** | **0.0075** | <0.0002 | <0.0002 |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0094** | **0.0063** | **0.0079** | <0.0002 | <0.0002 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **102** | **94.0** | **101** | **96.5** | **93.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **95.5** | **102** | **99.0** | **95.5** | **97.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD09 | TC_SD10 | TC_SD11 | TC_SD12 | TC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-046 | ES2111268-047 | ES2111268-048 | ES2111268-049 | ES2111268-051 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **Moisture Content** | ---- | 0.1 | % | **12.7** | **22.4** | **4.8** | **65.4** | **53.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | **0.0003** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0043** | **0.0049** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD09 | TC_SD10 | TC_SD11 | TC_SD12 | TC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-046 | ES2111268-047 | ES2111268-048 | ES2111268-049 | ES2111268-051 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **91.5** | **84.5** | **92.0** | **94.5** | **99.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.5** | **96.5** | **93.0** | **97.0** | **102** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD04 | BBC_SD05 | BBC_SD06 | A_STP_SS01 | A_STP_SS02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-053 | ES2111268-054 | ES2111268-056 | ES2111268-057 | ES2111268-058 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **14.5** | **34.6** | **33.1** | **8.1** | **18.5** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | **0.0006** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0024** | **0.0084** | **0.0014** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0010** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0008** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD04 | BBC_SD05 | BBC_SD06 | A_STP_SS01 | A_STP_SS02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-053 | ES2111268-054 | ES2111268-056 | ES2111268-057 | ES2111268-058 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0011** | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0135** | **0.0014** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0090** | **0.0014** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0111** | **0.0014** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **99.0** | **99.0** | **91.0** | **90.5** | **93.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **104** | **101** | **98.0** | **100** | **101** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-059 | ES2111268-060 | ES2111268-061 | ES2111268-062 | ES2111268-063 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **22.7** | **24.4** | **17.9** | **14.9** | **8.4** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0009** | **0.0004** | **0.0016** | **0.0010** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0047** | **0.0036** | **0.0114** | **0.0080** | **0.0017** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | **0.0002** | **0.0002** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | **0.0003** | **0.0005** | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0003** | **0.0004** | **0.0005** | **0.0002** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-059 | ES2111268-060 | ES2111268-061 | ES2111268-062 | ES2111268-063 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0068** | **0.0049** | **0.0144** | **0.0092** | **0.0017** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0056** | **0.0040** | **0.0130** | **0.0090** | **0.0017** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0062** | **0.0049** | **0.0142** | **0.0092** | **0.0017** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **85.0** | **89.0** | **84.5** | **91.5** | **86.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **99.5** | **97.5** | **103** | **95.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS08 | A_STP_SS09 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-064 | ES2111268-065 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **16.2** | **8.3** | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0007** | **0.0003** | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0003** | <0.0002 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0212** | **0.0045** | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | <0.0002 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0006** | <0.0002 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | <0.0002 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0009** | **0.0003** | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0003** | **0.0002** | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS08 | A_STP_SS09 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-064 | ES2111268-065 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0247** | **0.0053** | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0219** | **0.0048** | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0241** | **0.0051** | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **96.0** | **92.0** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **101** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW04 | MC_SW11 | MC_SW13 | MC_SW21 | MC_SW24 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-002 | ES2111268-005 | ES2111268-008 | ES2111268-017 | ES2111268-021 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.52** | **0.52** | **0.48** | **1.69** | **0.04** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.27** | **0.58** | **0.45** | **2.49** | **0.03** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.88** | **4.51** | **3.48** | **15.9** | **0.14** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.02** | **0.24** | **0.17** | **1.42** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.38** | **4.01** | **3.53** | **24.0** | **0.03** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | **0.1** | **0.1** | **0.1** | **0.3** | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.14** | **0.17** | **0.13** | **0.46** | **0.03** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.40** | **0.67** | **0.52** | **2.05** | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.02** | **0.11** | **0.08** | **0.41** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | **0.23** | **0.15** | **0.92** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW04 | MC_SW11 | MC_SW13 | MC_SW21 | MC_SW24 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-002 | ES2111268-005 | ES2111268-008 | ES2111268-017 | ES2111268-021 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **2.75** | **11.1** | **9.09** | **49.6** | **0.30** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **1.26** | **8.52** | **7.01** | **39.9** | **0.17** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.46** | **10.3** | **8.47** | **45.7** | **0.27** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **93.0** | **91.9** | **88.7** | **86.5** | **94.1** |
| 13C8-PFOA | ---- | 0.02 | % | **95.6** | **90.5** | **92.0** | **91.2** | **91.7** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | TC_SW02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-023 | ES2111268-025 | ES2111268-027 | ES2111268-029 | ES2111268-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.04** | **0.74** | **0.60** | **0.50** | **0.06** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.04** | **0.64** | **0.53** | **0.56** | **0.04** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.17** | **4.82** | **4.08** | **4.07** | **0.23** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | **0.28** | **0.26** | **0.26** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.05** | **4.23** | **5.85** | **5.52** | **0.07** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.1** | **0.1** | **0.1** | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.05** | **0.17** | **0.16** | **0.17** | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.04** | **0.70** | **0.64** | **0.70** | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.12** | **0.11** | **0.11** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.24** | **0.24** | **0.25** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | TC_SW02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-023 | ES2111268-025 | ES2111268-027 | ES2111268-029 | ES2111268-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.39** | **12.0** | **12.6** | **12.2** | **0.43** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.22** | **9.05** | **9.93** | **9.59** | **0.30** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.35** | **11.1** | **11.8** | **11.4** | **0.39** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **96.0** | **90.4** | **93.0** | **89.6** | **89.3** |
| 13C8-PFOA | ---- | 0.02 | % | **93.7** | **90.3** | **94.0** | **94.3** | **91.3** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-036 | ES2111268-038 | ES2111268-040 | ES2111268-042 | ES2111268-044 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | **0.07** | <0.02 | **0.11** | <0.02 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | **0.06** | <0.02 | **0.14** | <0.02 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **0.10** | **0.40** | **0.03** | **0.85** | <0.02 |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.02** | <0.02 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **0.03** | **0.15** | **0.01** | **0.29** | <0.01 |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | **0.05** | <0.02 | **0.12** | <0.02 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | **0.01** | <0.01 | **0.02** | <0.01 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-036 | ES2111268-038 | ES2111268-040 | ES2111268-042 | ES2111268-044 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.13** | **0.74** | **0.04** | **1.58** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.13** | **0.55** | **0.04** | **1.14** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.13** | **0.68** | **0.04** | **1.42** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **91.5** | **94.6** | **87.2** | **90.0** | **87.3** |
| 13C8-PFOA | ---- | 0.02 | % | **95.4** | **93.8** | **91.8** | **93.1** | **89.0** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW12 | TC_SW13 | BBC_SW05 | A_STP_OUT | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 18-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-050 | ES2111268-052 | ES2111268-055 | ES2111268-071 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | <0.02 | **0.03** | <0.02 | **0.08** | ---- |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **0.04** | **0.10** | <0.01 | **0.16** | ---- |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | ---- |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | ---- |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.01** | ---- |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW12 | TC_SW13 | BBC_SW05 | A_STP_OUT | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 18-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-050 | ES2111268-052 | ES2111268-055 | ES2111268-071 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.28** | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.24** | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.28** | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **94.1** | **90.2** | **88.5** | **91.0** | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **94.7** | **93.5** | **92.3** | **94.7** | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 17 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 09-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 92 | | |
| No. of samples analysed | : 66 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3591911)** | | | | | | | | | |
| ES2111268-032 | TC_SS02 | EA055: Moisture Content | ---- | 0.1 | % | 40.2 | 38.3 | 5.01 | 0% - 20% |
| ES2111280-012 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 14.9 | 14.6 | 2.23 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3592983)** | | | | | | | | | |
| ES2111268-058 | A_STP_SS02 | EA055: Moisture Content | ---- | 0.1 | % | 18.5 | 18.4 | 0.00 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593874)** | | | | | | | | | |
| ES2110780-007 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 54.6 | 55.4 | 1.52 | 0% - 20% |
| ES2111268-011 | MC_SD16 | EA055: Moisture Content | ---- | 0.1 | % | 50.8 | 53.2 | 4.55 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593875)** | | | | | | | | | |
| ES2111268-022 | MC_SD25 | EA055: Moisture Content | ---- | 0.1 | % | 64.9 | 66.1 | 1.87 | 0% - 20% |
| ES2111268-056 | BBC_SD06 | EA055: Moisture Content | ---- | 0.1 | % | 33.1 | 34.9 | 5.22 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0056 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0080 | 2.47 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0924 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0072 | 3.19 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.313 | 8.36 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0022 | 4.76 | 0% - 50% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600194)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600194) - continued** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0008 | 0.0007 | 18.6 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0117 | 0.0109 | 6.91 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0017 | 0.0017 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.175 | 0.150 | 15.8 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0006 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0120 | 0.0132 | 9.73 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0047 | 0.0056 | 17.6 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0019 | 7.14 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0053 | 3.39 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111268-001 | MC_SD04 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0028 | 4.20 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0026 | 0.0024 | 8.39 | 0% - 50% |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0048 | 0.0049 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0016 | 0.0016 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0005 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.002 | 0.002 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0006 | 0.0007 | 18.9 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0011 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-059 | A_STP_SS03 | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600194) - continued** | | | | | | | | | |
| ES2111268-030 | MC_SD29 | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.01 | 0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3606063) - continued** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.04 | 0.05 | 22.2 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.2 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.0 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.8 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 96.4 | 71.0 | 135 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194) - continued** | | | | | | | | |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.6 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 97.9 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 127 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 115 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 101 | 69.8 | 131 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 106 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 100 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 108 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 117 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 130 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 108 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 91.6 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 85.2 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 98.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 90.8 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 114 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 125 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 124 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.2 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 129 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.6 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 106 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 125 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 99.7 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 117 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 117 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 97.0 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 117 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 122 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606063)** | | | | | | | | |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606063) - continued** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 103 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 100 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.9 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 101 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 117 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 118 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 104 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 116 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 103 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

*Matrix Spike (MS) Report*

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 93.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 120 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 106 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 89.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 95.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 71.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 99.6 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 118 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 110 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 120 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 121 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 122 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 109 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 124 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 100 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 116 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 122 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 115 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 91.2 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 105 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 109 | 71.0 | 131 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194) - continued** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 108 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 110 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 124 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 111 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 114 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 108 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 102 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 110 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 116 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 127 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 128 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 128 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 112 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 116 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 108 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 110 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 91.3 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 114 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 125 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 116 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 99.8 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 106 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 107 | 68.7 | 130 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194) - continued** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 99.0 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 108 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 108 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 115 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 107 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 107 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 120 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 117 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 88.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 128 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 80.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 98.4 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 112 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 82.4 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 116 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 126 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 13 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 09-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 92 |
| Order number | : ---- | No. of samples analysed | : 66 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111268--014 | MC_SD19 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

### Regular Sample Surrogates

Sub-Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Samples Submitted** | | | | | | | |
| EP231S: PFAS Surrogate | ES2111268-007 | MC_SD13 | **13C4-PFOS** | ---- | 124 % | 60.0-120 % | **Recovery greater than upper data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| TC_SD04, TC_SD06 | TC_SD05, | ---- | ---- | ---- | 30-Mar-2021 | 26-Mar-2021 | **4** |
| **HDPE Soil Jar** | | | | | | | |
| MC_SD04, MC_SD11, MC_SD13, MC_SD15, MC_SD17, MC_SD19, MC_SD21, MC_SD23, MC_SD25, BBC_SD06 | MC_SD07, MC_SD12, MC_SD14, MC_SD16, MC_SD18, MC_SD20, MC_SD22, MC_SD24, TC_SS03, | ---- | ---- | ---- | 30-Mar-2021 | 27-Mar-2021 | **3** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type / Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 1 | 25 | 4.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 25 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 26-Mar-2021 | × |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 27-Mar-2021 | × |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18, | | | | | | | |
| MC_SD19, | MC_SD20, | | | | | | | |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 29-Mar-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 30-Mar-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 31-Mar-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 01-Apr-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>TC_SD04, TC_SD05,<br>TC_SD06 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, TC_SS03,<br>BBC_SD06 | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14,<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18 | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD29, TC_SS01,<br>TC_SS02, TC_SD07,<br>TC_SD08, TC_SD09,<br>TC_SD10, TC_SD11,<br>TC_SD12 | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>TC_SD02, A_STP_SS01,<br>A_STP_SS02, A_STP_SS03,<br>A_STP_SS04, A_STP_SS05,<br>A_STP_SS06, A_STP_SS07,<br>A_STP_SS08, A_STP_SS09 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD26, MC_SD27,<br>MC_SD28, TC_SD13 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD04, BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>TC_SD04, TC_SD05,<br>TC_SD06 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, TC_SS03,<br>BBC_SD06 | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14,<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18 | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD29, TC_SS01,<br>TC_SS02, TC_SD07,<br>TC_SD08, TC_SD09,<br>TC_SD10, TC_SD11,<br>TC_SD12 | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>TC_SD02, A_STP_SS01,<br>A_STP_SS02, A_STP_SS03,<br>A_STP_SS04, A_STP_SS05,<br>A_STP_SS06, A_STP_SS07,<br>A_STP_SS08, A_STP_SS09 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD26, MC_SD27,<br>MC_SD28, TC_SD13 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD04, BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW04, | MC_SW11, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| MC_SW13, | MC_SW21, | | | | | | | |
| MC_SW24, | MC_SW25, | | | | | | | |
| TC_SW02, | TC_SW05, | | | | | | | |
| TC_SW06, | TC_SW12, | | | | | | | |
| TC_SW13 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW26, | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| MC_SW28 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW04, | MC_SW11, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| MC_SW13, | MC_SW21, | | | | | | | |
| MC_SW24, | MC_SW25, | | | | | | | |
| TC_SW02, | TC_SW05, | | | | | | | |
| TC_SW06, | TC_SW12, | | | | | | | |
| TC_SW13 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW26, | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| MC_SW28 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04,<br>MC_SW13,<br>MC_SW24,<br>TC_SW02,<br>TC_SW06,<br>TC_SW13 | MC_SW11,<br>MC_SW21,<br>MC_SW25,<br>TC_SW05,<br>TC_SW12, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26,<br>MC_SW28 | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04,<br>MC_SW13,<br>MC_SW24,<br>TC_SW02,<br>TC_SW06,<br>TC_SW13 | MC_SW11,<br>MC_SW21,<br>MC_SW25,<br>TC_SW05,<br>TC_SW12, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26,<br>MC_SW28 | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04, MC_SW11, MC_SW13, MC_SW21, MC_SW24, MC_SW25, TC_SW02, TC_SW05, TC_SW06, TC_SW12, TC_SW13 | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26, MC_SW27, MC_SW28 | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Moisture Content | EA055 | 7 | 68 | 10.29 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 6 | 60 | 10.00 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 60 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 60 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 60 | 5.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 25 | 4.00 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 25 | 8.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 25 | 8.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 25 | 0.00 | 5.00 | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111268**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : Split into ES2111280 | No. of samples received / analysed | : 92 / 66 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has been split into ES**
- **This work order has been split into ES2111280.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111268-001 | 13-Mar-2021 00:00 | MC_SD04 | | ✓ | ✓ |
| ES2111268-003 | 13-Mar-2021 00:00 | MC_SD07 | | ✓ | ✓ |
| ES2111268-004 | 13-Mar-2021 00:00 | MC_SD11 | | ✓ | ✓ |
| ES2111268-006 | 13-Mar-2021 00:00 | MC_SD12 | | ✓ | ✓ |
| ES2111268-007 | 13-Mar-2021 00:00 | MC_SD13 | | ✓ | ✓ |
| ES2111268-009 | 13-Mar-2021 00:00 | MC_SD14 | | ✓ | ✓ |
| ES2111268-010 | 13-Mar-2021 00:00 | MC_SD15 | | ✓ | ✓ |
| ES2111268-011 | 13-Mar-2021 00:00 | MC_SD16 | | ✓ | ✓ |
| ES2111268-012 | 13-Mar-2021 00:00 | MC_SD17 | | ✓ | ✓ |
| ES2111268-013 | 13-Mar-2021 00:00 | MC_SD18 | | ✓ | ✓ |
| ES2111268-014 | 13-Mar-2021 00:00 | MC_SD19 | | ✓ | ✓ |
| ES2111268-015 | 13-Mar-2021 00:00 | MC_SD20 | | ✓ | ✓ |
| ES2111268-016 | 13-Mar-2021 00:00 | MC_SD21 | | ✓ | ✓ |
| ES2111268-018 | 13-Mar-2021 00:00 | MC_SD22 | | ✓ | ✓ |
| ES2111268-019 | 13-Mar-2021 00:00 | MC_SD23 | | ✓ | ✓ |
| ES2111268-020 | 13-Mar-2021 00:00 | MC_SD24 | | ✓ | ✓ |
| ES2111268-022 | 13-Mar-2021 00:00 | MC_SD25 | | ✓ | ✓ |
| ES2111268-024 | 17-Mar-2021 00:00 | MC_SD26 | | ✓ | ✓ |
| ES2111268-026 | 17-Mar-2021 00:00 | MC_SD27 | | ✓ | ✓ |
| ES2111268-028 | 17-Mar-2021 00:00 | MC_SD28 | | ✓ | ✓ |
| ES2111268-030 | 15-Mar-2021 00:00 | MC_SD29 | | ✓ | ✓ |
| ES2111268-031 | 15-Mar-2021 00:00 | TC_SS01 | | ✓ | ✓ |
| ES2111268-032 | 15-Mar-2021 00:00 | TC_SS02 | | ✓ | ✓ |
| ES2111268-033 | 13-Mar-2021 00:00 | TC_SS03 | | ✓ | ✓ |
| ES2111268-034 | 16-Mar-2021 00:00 | TC_SD02 | | ✓ | ✓ |
| ES2111268-037 | 12-Mar-2021 00:00 | TC_SD04 | | ✓ | ✓ |
| ES2111268-039 | 12-Mar-2021 00:00 | TC_SD05 | | ✓ | ✓ |
| ES2111268-041 | 12-Mar-2021 00:00 | TC_SD06 | | ✓ | ✓ |
| ES2111268-043 | 15-Mar-2021 00:00 | TC_SD07 | | ✓ | ✓ |
| ES2111268-045 | 15-Mar-2021 00:00 | TC_SD08 | | ✓ | ✓ |
| ES2111268-046 | 15-Mar-2021 00:00 | TC_SD09 | | ✓ | ✓ |
| ES2111268-047 | 15-Mar-2021 00:00 | TC_SD10 | | ✓ | ✓ |
| ES2111268-048 | 15-Mar-2021 00:00 | TC_SD11 | | ✓ | ✓ |
| ES2111268-049 | 15-Mar-2021 00:00 | TC_SD12 | | ✓ | ✓ |
| ES2111268-051 | 17-Mar-2021 00:00 | TC_SD13 | | ✓ | ✓ |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111268-053 | 18-Mar-2021 00:00 | BBC_SD04 | | ✓ | ✓ |
| ES2111268-054 | 18-Mar-2021 00:00 | BBC_SD05 | | ✓ | ✓ |
| ES2111268-056 | 13-Mar-2021 00:00 | BBC_SD06 | | ✓ | ✓ |
| ES2111268-057 | 16-Mar-2021 00:00 | A_STP_SS01 | | ✓ | ✓ |
| ES2111268-058 | 16-Mar-2021 00:00 | A_STP_SS02 | | ✓ | ✓ |
| ES2111268-059 | 16-Mar-2021 00:00 | A_STP_SS03 | | ✓ | ✓ |
| ES2111268-060 | 16-Mar-2021 00:00 | A_STP_SS04 | | ✓ | ✓ |
| ES2111268-061 | 16-Mar-2021 00:00 | A_STP_SS05 | | ✓ | ✓ |
| ES2111268-062 | 16-Mar-2021 00:00 | A_STP_SS06 | | ✓ | ✓ |
| ES2111268-063 | 16-Mar-2021 00:00 | A_STP_SS07 | | ✓ | ✓ |
| ES2111268-064 | 16-Mar-2021 00:00 | A_STP_SS08 | | ✓ | ✓ |
| ES2111268-065 | 16-Mar-2021 00:00 | A_STP_SS09 | | ✓ | ✓ |
| ES2111268-066 | 16-Mar-2021 00:00 | A_STP_SS10 | ✓ | | |
| ES2111268-073 | 15-Mar-2021 00:00 | A_SS116 | ✓ | | |
| ES2111268-074 | 15-Mar-2021 00:00 | A_SS117 | ✓ | | |
| ES2111268-075 | 15-Mar-2021 00:00 | A_SS118 | ✓ | | |
| ES2111268-076 | 15-Mar-2021 00:00 | A_SS119 | ✓ | | |
| ES2111268-077 | 15-Mar-2021 00:00 | A_SS120 | ✓ | | |
| ES2111268-078 | 15-Mar-2021 00:00 | A_SS121 | ✓ | | |
| ES2111268-079 | 15-Mar-2021 00:00 | A_SS122 | ✓ | | |
| ES2111268-080 | 16-Mar-2021 00:00 | A_SS123 | ✓ | | |
| ES2111268-081 | 16-Mar-2021 00:00 | A_SS124 | ✓ | | |
| ES2111268-082 | 16-Mar-2021 00:00 | A_SS125 | ✓ | | |
| ES2111268-083 | 16-Mar-2021 00:00 | A_SS126 | ✓ | | |
| ES2111268-084 | 16-Mar-2021 00:00 | A_SS127 | ✓ | | |
| ES2111268-085 | 16-Mar-2021 00:00 | A_SS128 | ✓ | | |
| ES2111268-086 | 16-Mar-2021 00:00 | A_SS129 | ✓ | | |
| ES2111268-087 | 16-Mar-2021 00:00 | A_SS130 | ✓ | | |
| ES2111268-088 | 16-Mar-2021 00:00 | A_SS131 | ✓ | | |
| ES2111268-089 | 16-Mar-2021 00:00 | A_SS132 | ✓ | | |
| ES2111268-090 | 16-Mar-2021 00:00 | A_SS133 | ✓ | | |
| ES2111268-091 | 16-Mar-2021 00:00 | A_SS134 | ✓ | | |
| ES2111268-092 | 16-Mar-2021 00:00 | A_SS135 | ✓ | | |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111268-002 | 13-Mar-2021 00:00 | MC_SW04 | | ✓ |
| ES2111268-005 | 13-Mar-2021 00:00 | MC_SW11 | | ✓ |
| ES2111268-008 | 13-Mar-2021 00:00 | MC_SW13 | | ✓ |
| ES2111268-017 | 13-Mar-2021 00:00 | MC_SW21 | | ✓ |
| ES2111268-021 | 13-Mar-2021 00:00 | MC_SW24 | | ✓ |
| ES2111268-023 | 13-Mar-2021 00:00 | MC_SW25 | | ✓ |
| ES2111268-025 | 17-Mar-2021 00:00 | MC_SW26 | | ✓ |
| ES2111268-027 | 17-Mar-2021 00:00 | MC_SW27 | | ✓ |
| ES2111268-029 | 17-Mar-2021 00:00 | MC_SW28 | | ✓ |
| ES2111268-035 | 13-Mar-2021 00:00 | TC_SW02 | | ✓ |
| ES2111268-036 | 12-Mar-2021 00:00 | TC_SW03 | | ✓ |
| ES2111268-038 | 12-Mar-2021 00:00 | TC_SW04 | | ✓ |
| ES2111268-040 | 13-Mar-2021 00:00 | TC_SW05 | | ✓ |
| ES2111268-042 | 13-Mar-2021 00:00 | TC_SW06 | | ✓ |
| ES2111268-044 | 15-Mar-2021 00:00 | TC_SW07 | | ✓ |
| ES2111268-050 | 13-Mar-2021 00:00 | TC_SW12 | | ✓ |
| ES2111268-052 | 13-Mar-2021 00:00 | TC_SW13 | | ✓ |
| ES2111268-055 | 18-Mar-2021 00:00 | BBC_SW05 | | ✓ |
| ES2111268-067 | 16-Mar-2021 00:00 | A_STP_POND1 | ✓ | |
| ES2111268-068 | 16-Mar-2021 00:00 | A_STP_POND2 | ✓ | |
| ES2111268-069 | 16-Mar-2021 00:00 | A_STP_RAW_IN | ✓ | |
| ES2111268-070 | 16-Mar-2021 00:00 | A_STP_IN | ✓ | |
| ES2111268-071 | 16-Mar-2021 00:00 | A_STP_OUT | | ✓ |
| ES2111268-072 | 16-Mar-2021 00:00 | A_STP_POND3 | ✓ | |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Subcon / Forward Lab / Split WO
Lab / Analysis: Split into ES2111280
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| 1 | MC-SD04 | S | 13/3 | AM | PFAS | 1 | X |
| 2 | MC-SW04 | W | | | | 2 | X |
| 3 | MC-SD07 | S | | | | 1 | X |
| 4 | MC-SD11 | S | | | | 1 | X |
| 5 | MC-SW11 | W | | | | 2 | X |
| 6 | MC-SD12 | S | | | | 1 | X |
| 7 | MC-SD13 | S | | | | 1 | X |
| 8 | MC-SW13 | W | | | | 2 | X |
| 9 | MC-SD14 | S | | | | 1 | X |
| 10 | MC-SD15 | S | | | | 1 | X |
| 11 | MC-SD16 | S | | | | 1 | X |
| 12 | MC-SD17 | S | | | | 1 | X |
| 13 | MC-SD18 | S | | | | 1 | X |
| 14 | MC-SD19 | S | | | | 1 | X |
| 15 | MC-SD20 | S | | PM | | 1 | X |
| 16 | MC-SD21 | S | | | | 1 | X |
| 17 | MC-SW21 | W | | | | 2 | X |
| 18 | MC-SD22 | S | | | | 1 | X |
| 19 | MC-SD23 | S | | | | 1 | X |
| 20 | MC-SD24 | S | | | | 1 | X |
| Total | | | | | | | 0 |

Environmental Division Sydney
Work Order Reference
ES2111268

Telephone : +61-2-8784 8666

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 13 / 3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.7.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 2 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | MC-SW24 | W | 13/3 | PM | PFAS | 2 | X | | | | | | | | | | | |
| 22 | MC-SD25 | S | 13/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 23 | MC-SW25 | W | 13/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 24 | MC-SD26 | S | 17/3 | AM | ↓ | 1 | X | | | | | | | | | | | |
| 25 | MC-SW26 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 26 | MC-SD27 | S | 17/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 27 | MC-SW27 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 28 | MC-SD28 | S | 17/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 29 | MC-SW28 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 30 | MC-SD29 | S | 15/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 31 | TC-SS01 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 32 | TC-SS02 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 33 | TC-SS03 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 34 | TC-SD02 | S | 16/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 35 | TC-SW02 | W | 16/3 | PM | ↓ | 2 | X | | | | | | | | | | | |
| 36 | TC-SW03 | W | 12/3 | AM | ↓ | 2 | X | | | | | | | | | | | |
| 37 | TC-SD04 | S | 12/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 38 | TC-SW04 | W | 12/3 | PM | ↓ | 2 | X | | | | | | | | | | | |
| 39 | TC-SD05 | S | 12/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 40 | TC-SW05 | W | 12/3 | PM | ↓ | 4 | X | | | | | | | | | | | additional bottles due to turbidity. |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 3 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 41 | TC-SD06 | S | 12/3 | | | 1 | X | | | | | | | | | | |
| 42 | TC-SW06 | W | 12/3 | | | 2 | X | | | | | | | | | | |
| 43 | TC-SD07 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 44 | TC-SW07 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 45 | TC-SD08 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 46 | TC-SD09 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 47 | TC-SD10 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 48 | TC-SD11 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 49 | TC-SD12 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 50 | TC-SW12 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 51 | TC-SD13 | S | 17/3 | | | 1 | X | | | | | | | | | | |
| 52 | TC-SW13 | W | 17/3 | | | 2 | X | | | | | | | | | | |
| 53 | BBC-SD04 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 54 | BBC-SD05 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 55 | BBC-SW05 | W | 18/3 | | | 2 | X | | | | | | | | | | |
| 56 | BBC-SD06 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugoffs iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 4 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 57 | A-STP-SS01 | S | 16/3 | AM | PFAS | 1 | X | | | | | | | | | | | |
| 58 | A-STP-SS02 | S | ↓ | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 59 | A-STP-SS03 | S | | | | 1 | X | | | | | | | | | | | |
| 60 | A-STP-SS04 | S | | | | 1 | X | | | | | | | | | | | |
| 61 | A-STP-SS05 | S | | | | 1 | X | | | | | | | | | | | |
| 62 | A-STP-SS06 | S | | | | 1 | X | | | | | | | | | | | |
| 63 | A-STP-SS07 | S | | | | 1 | X | | | | | | | | | | | |
| 64 | A-STP-SS08 | S | | | | 1 | X | | | | | | | | | | | |
| 65 | A-STP-SS09 | S | | | | 1 | X | | | | | | | | | | | |
| 66 | A-STP-SS10 | S | | | | 1 | X | | | | | | | | | | | |
| 67 | A-STP-POND1 | SW | | | | 2 | | | | | | | | | | | X | * ↑ |
| 68 | A-STP-POND2 | W | | | | 2 | | | | | | | | | | | X | |
| 69 | A-STP-RAW-IN | W | | | | 2 | | | | | | | | | | | X | potential biohazard! |
| 70 | A-STP-IN | W | | | | 2 | | | | | | | | | | | X | ↓ |
| 71 | A-STP-OUT | W | | | | 2 | X | | | | | | | | | | | * |
| 72 | A-STP-POND3 | W | ↓ | ↓ | ↓ | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:** | **Sampler Name:** | **Signature:** | **Date:** |

| **Relinquished By:** | | **Method of Shipment (if applicable):** | **Received by:** | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 69 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 5 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 73 | A-SS116 | S | 15/3 | AM | PFAS | 1 | | | | | | | | | | | X | |
| 74 | A-SS117 | | | | | | | | | | | | | | | | X | |
| 75 | A-SS118 | | | | | | | | | | | | | | | | X | |
| 76 | A-SS119 | | | | | | | | | | | | | | | | X | |
| 77 | A-SS120 | | | | | | | | | | | | | | | | X | |
| 78 | A-SS121 | | | | | | | | | | | | | | | | X | |
| 79 | A-SS122 | | 15/3 | | | | | | | | | | | | | | X | |
| 80 | A-SS123 | | 16/3 | | | | | | | | | | | | | | X | |
| 81 | A-SS124 | | | | | | | | | | | | | | | | X | |
| 82 | A-SS125 | | | | | | | | | | | | | | | | X | |
| 83 | A-SS126 | | | | | | | | | | | | | | | | X | |
| 84 | A-SS127 | | | | | | | | | | | | | | | | X | |
| 85 | A-SS128 | | | | | | | | | | | | | | | | X | |
| 86 | A-SS129 | | | | | | | | | | | | | | | | X | |
| 87 | A-SS130 | | | | | | | | | | | | | | | | X | |
| 88 | A-SS131 | | | | | | | | | | | | | | | | X | |
| 89 | A-SS132 | | | | | | | | | | | | | | | | X | |
| 90 | A-SS133 | | | | | | | | | | | | | | | | X | |
| 91 | A-SS134 | | | | | | | | | | | | | | | | X | |
| 92 | A-SS135 | | 16/3 | | | | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 35 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 20-Apr-2021 11:28 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 92 | | |
| No. of samples analysed | : 79 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: LOR for particular sample#39 raised due to high moisture content.
- Amendment (12/04/2021): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X for samples #080 to #092.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD04 | MC_SD07 | MC_SD11 | MC_SD12 | MC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-001 | ES2111268-003 | ES2111268-004 | ES2111268-006 | ES2111268-007 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 70.1 | 21.6 | 45.8 | 51.7 | 36.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0011 | 0.0007 | 0.0012 | 0.0003 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0018 | 0.0008 | 0.0016 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0249 | 0.0104 | 0.0219 | 0.0058 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0030 | 0.0014 | 0.0034 | 0.0009 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.145 | 0.0885 | 0.192 | 0.0425 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0013 | 0.0009 | 0.0018 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0003 | 0.0006 | 0.0004 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0010 | 0.0015 | 0.0016 | 0.0003 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0003 | 0.0004 | 0.0004 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0011 | 0.0012 | 0.0013 | 0.0003 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0002 | 0.0005 | 0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0002 | 0.0002 | 0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0003 | 0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | <0.0002 | <0.0002 | 0.0003 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0004 | 0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD04 | MC_SD07 | MC_SD11 | MC_SD12 | MC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-001 | ES2111268-003 | ES2111268-004 | ES2111268-006 | ES2111268-007 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.416** | **0.180** | **0.108** | **0.227** | **0.0505** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.380** | **0.170** | **0.0989** | **0.214** | **0.0483** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.398** | **0.174** | **0.103** | **0.219** | **0.0492** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.0** | **83.5** | **104** | **112** | **124** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **99.0** | **106** | **102** | **116** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-009 | ES2111268-010 | ES2111268-011 | ES2111268-012 | ES2111268-013 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 52.7 | 19.7 | 50.8 | 75.7 | 78.6 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0011 | 0.0006 | 0.0010 | 0.0028 | 0.0019 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0016 | 0.0008 | 0.0013 | 0.0032 | 0.0019 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0253 | 0.0112 | 0.0167 | 0.0322 | 0.0233 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0033 | 0.0015 | 0.0021 | 0.0030 | 0.0032 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.176 | 0.103 | 0.119 | 0.138 | 0.233 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0024 | 0.0015 | 0.0011 | 0.0013 | 0.0017 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0003 | <0.0002 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0014 | 0.0004 | 0.0008 | 0.0044 | 0.0043 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0004 | <0.0002 | <0.0002 | 0.0013 | 0.0011 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0015 | 0.0007 | 0.0007 | 0.0028 | 0.0024 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0002 | 0.0002 | <0.0002 | 0.0008 | 0.0005 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD14 | MC_SD15 | MC_SD16 | MC_SD17 | MC_SD18 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-009 | ES2111268-010 | ES2111268-011 | ES2111268-012 | ES2111268-013 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.214** | **0.120** | **0.143** | **0.190** | **0.273** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.201** | **0.114** | **0.136** | **0.170** | **0.256** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.206** | **0.116** | **0.139** | **0.182** | **0.266** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **95.0** | **90.0** | **90.5** | **94.0** | **95.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **105** | **100** | **103** | **102** | **106** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-014 | ES2111268-015 | ES2111268-016 | ES2111268-018 | ES2111268-019 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 71.7 | 30.4 | 40.6 | 28.2 | 71.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0025 | 0.0012 | <0.0002 | 0.0004 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0008 | 0.0029 | 0.0013 | <0.0002 | 0.0003 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0117 | 0.0387 | 0.0128 | 0.0016 | 0.0029 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0017 | 0.0043 | 0.0011 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.175 | 0.423 | 0.0620 | 0.0075 | 0.0088 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0026 | <0.0002 | <0.0002 | 0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.002 | 0.003 | <0.001 | 0.001 | 0.002 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0026 | 0.0051 | 0.0005 | 0.0013 | 0.0010 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0048 | 0.0097 | 0.0022 | 0.0007 | 0.0009 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0010 | 0.0025 | 0.0006 | 0.0003 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0016 | 0.0098 | 0.0012 | 0.0004 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0005 | 0.0007 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD19 | MC_SD20 | MC_SD21 | MC_SD22 | MC_SD23 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-014 | ES2111268-015 | ES2111268-016 | ES2111268-018 | ES2111268-019 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.204** | **0.506** | **0.0829** | **0.0128** | **0.0165** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.187** | **0.462** | **0.0748** | **0.0091** | **0.0117** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.199** | **0.494** | **0.0805** | **0.0128** | **0.0160** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **102** | **88.0** | **93.0** | **91.5** | **90.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | **96.5** | **96.0** | **93.0** | **95.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-020 | ES2111268-022 | ES2111268-024 | ES2111268-026 | ES2111268-028 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 73.5 | 64.9 | 63.4 | 76.5 | 60.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0008 | 0.0002 | 0.0012 | 0.0027 | 0.0013 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0013 | <0.0002 | 0.0016 | 0.0038 | 0.0022 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0146 | 0.0028 | 0.0250 | 0.0533 | 0.0399 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0006 | <0.0002 | 0.0032 | 0.0064 | 0.0062 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0151 | 0.0080 | 0.170 | 0.471 | 0.383 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0025 | 0.0054 | 0.0026 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.005 | <0.001 | <0.001 | 0.002 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0075 | 0.0004 | 0.0004 | 0.0017 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0045 | 0.0004 | 0.0020 | 0.0051 | 0.0022 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0008 | <0.0002 | 0.0004 | 0.0012 | 0.0007 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0007 | <0.0002 | 0.0012 | 0.0030 | 0.0024 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0005 | 0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0006 | 0.0003 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0008 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0003 | 0.0020 | 0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | 0.0004 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.0002 | 0.0019 | 0.0009 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD24 | MC_SD25 | MC_SD26 | MC_SD27 | MC_SD28 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-020 | ES2111268-022 | ES2111268-024 | ES2111268-026 | ES2111268-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0509** | **0.0118** | **0.208** | **0.562** | **0.442** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0297** | **0.0108** | **0.195** | **0.524** | **0.423** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0490** | **0.0118** | **0.200** | **0.540** | **0.430** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **96.5** | **94.0** | **102** | **95.5** | **100** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.5** | **94.5** | **96.0** | **91.5** | **96.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD29 | TC_SS01 | TC_SS02 | TC_SS03 | TC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-030 | ES2111268-031 | ES2111268-032 | ES2111268-033 | ES2111268-034 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **21.0** | **23.0** | **40.2** | **40.7** | **64.7** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0006** | <0.0002 | **0.0038** | <0.0002 | **0.0050** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0005** | <0.0002 | **0.0004** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0120** | **0.0007** | **0.0096** | **0.0010** | **0.0067** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0010** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0007** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0014** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0011** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0009** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD29 | TC_SS01 | TC_SS02 | TC_SS03 | TC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-030 | ES2111268-031 | ES2111268-032 | ES2111268-033 | ES2111268-034 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0180** | **0.0007** | **0.0139** | **0.0010** | **0.0152** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0126** | **0.0007** | **0.0134** | **0.0010** | **0.0117** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0141** | **0.0007** | **0.0134** | **0.0010** | **0.0144** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.5** | **89.5** | **101** | **92.5** | **95.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **97.0** | **96.5** | **95.0** | **97.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-037 | ES2111268-039 | ES2111268-041 | ES2111268-043 | ES2111268-045 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **62.8** | **80.0** | **52.9** | **40.8** | **6.2** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0027** | **0.0007** | **0.0025** | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0002** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0048** | **0.0016** | **0.0050** | <0.0002 | <0.0002 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | **0.004** | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0008** | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD04 | TC_SD05 | TC_SD06 | TC_SD07 | TC_SD08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-037 | ES2111268-039 | ES2111268-041 | ES2111268-043 | ES2111268-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0006 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0098** | **0.0063** | **0.0083** | <0.0002 | <0.0002 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0075** | **0.0023** | **0.0075** | <0.0002 | <0.0002 |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0094** | **0.0063** | **0.0079** | <0.0002 | <0.0002 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **102** | **94.0** | **101** | **96.5** | **93.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **95.5** | **102** | **99.0** | **95.5** | **97.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD09 | TC_SD10 | TC_SD11 | TC_SD12 | TC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-046 | ES2111268-047 | ES2111268-048 | ES2111268-049 | ES2111268-051 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **Moisture Content** | ---- | 0.1 | % | **12.7** | **22.4** | **4.8** | **65.4** | **53.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | **0.0003** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0043** | **0.0049** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD09 | TC_SD10 | TC_SD11 | TC_SD12 | TC_SD13 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-046 | ES2111268-047 | ES2111268-048 | ES2111268-049 | ES2111268-051 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0047** | **0.0052** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **91.5** | **84.5** | **92.0** | **94.5** | **99.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.5** | **96.5** | **93.0** | **97.0** | **102** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD04 | BBC_SD05 | BBC_SD06 | A_STP_SS01 | A_STP_SS02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-053 | ES2111268-054 | ES2111268-056 | ES2111268-057 | ES2111268-058 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **14.5** | **34.6** | **33.1** | **8.1** | **18.5** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | **0.0006** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0024** | **0.0084** | **0.0014** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0010** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0008** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD04 | BBC_SD05 | BBC_SD06 | A_STP_SS01 | A_STP_SS02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-053 | ES2111268-054 | ES2111268-056 | ES2111268-057 | ES2111268-058 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0011** | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0135** | **0.0014** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0090** | **0.0014** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0013** | <0.0002 | **0.0026** | **0.0111** | **0.0014** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **99.0** | **99.0** | **91.0** | **90.5** | **93.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **104** | **101** | **98.0** | **100** | **101** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-059 | ES2111268-060 | ES2111268-061 | ES2111268-062 | ES2111268-063 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **22.7** | **24.4** | **17.9** | **14.9** | **8.4** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0009** | **0.0004** | **0.0016** | **0.0010** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0047** | **0.0036** | **0.0114** | **0.0080** | **0.0017** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | **0.0002** | **0.0002** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | **0.0003** | **0.0005** | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0003** | **0.0004** | **0.0005** | **0.0002** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS03 | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-059 | ES2111268-060 | ES2111268-061 | ES2111268-062 | ES2111268-063 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0068** | **0.0049** | **0.0144** | **0.0092** | **0.0017** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0056** | **0.0040** | **0.0130** | **0.0090** | **0.0017** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0062** | **0.0049** | **0.0142** | **0.0092** | **0.0017** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **85.0** | **89.0** | **84.5** | **91.5** | **86.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **96.0** | **99.5** | **97.5** | **103** | **95.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS08 | A_STP_SS09 | A_SS123 | A_SS124 | A_SS125 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-064 | ES2111268-065 | ES2111268-080 | ES2111268-081 | ES2111268-082 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **16.2** | **8.3** | **28.7** | **22.1** | **12.5** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0007** | **0.0003** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0212** | **0.0045** | **0.0008** | **0.0029** | **0.0146** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | **0.0003** | **0.0003** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0009** | **0.0003** | <0.0002 | <0.0002 | **0.0007** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0006** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0003** | **0.0002** | <0.0002 | <0.0002 | **0.0005** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS08 | A_STP_SS09 | A_SS123 | A_SS124 | A_SS125 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-064 | ES2111268-065 | ES2111268-080 | ES2111268-081 | ES2111268-082 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0247** | **0.0053** | **0.0008** | **0.0032** | **0.0176** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0219** | **0.0048** | **0.0008** | **0.0029** | **0.0146** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0241** | **0.0051** | **0.0008** | **0.0032** | **0.0163** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **96.0** | **92.0** | **97.5** | **98.5** | **103** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **101** | **102** | **95.5** | **103** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS126 | A_SS127 | A_SS128 | A_SS129 | A_SS130 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-083 | ES2111268-084 | ES2111268-085 | ES2111268-086 | ES2111268-087 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **22.8** | **25.0** | **27.6** | **27.9** | **10.8** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0002** | **0.0004** | **0.0009** | **0.0008** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0066** | **0.0044** | **0.0490** | **0.0291** | **0.0036** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0008** | **0.0003** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | **0.001** | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0010** | **0.0004** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0002** | **0.0003** | **0.0019** | **0.0008** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0009** | **0.0007** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0016** | **0.0016** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | **0.0004** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS126 | A_SS127 | A_SS128 | A_SS129 | A_SS130 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-083 | ES2111268-084 | ES2111268-085 | ES2111268-086 | ES2111268-087 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0070** | **0.0051** | **0.0581** | **0.0341** | **0.0036** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0068** | **0.0048** | **0.0499** | **0.0299** | **0.0036** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0070** | **0.0051** | **0.0563** | **0.0334** | **0.0036** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **102** | **100** | **106** | **99.5** | **99.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **101** | **95.5** | **96.5** | **102** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS131 | A_SS132 | A_SS133 | A_SS134 | A_SS135 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-088 | ES2111268-089 | ES2111268-090 | ES2111268-091 | ES2111268-092 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **24.4** | **30.4** | **23.9** | **14.8** | **21.8** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0014** | <0.0002 | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0022** | **0.0020** | **0.0400** | **0.0017** | **0.0272** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | <0.0002 | **0.0008** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | **0.001** | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0014** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0010** | <0.0002 | **0.0002** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0013** | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0036** | <0.0002 | **0.0007** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0026** | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0045** | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0036** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0044** | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0010** | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | **0.0006** | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS131 | A_SS132 | A_SS133 | A_SS134 | A_SS135 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-088 | ES2111268-089 | ES2111268-090 | ES2111268-091 | ES2111268-092 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | **0.0036** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0022** | **0.0020** | **0.0707** | **0.0017** | **0.0292** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0022** | **0.0020** | **0.0414** | **0.0017** | **0.0275** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0022** | **0.0020** | **0.0533** | **0.0017** | **0.0284** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **97.5** | **99.5** | **103** | **94.5** | **100** |
| 13C8-PFOA | ---- | 0.0002 | % | **99.0** | **99.5** | **103** | **98.5** | **102** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW04 | MC_SW11 | MC_SW13 | MC_SW21 | MC_SW24 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-002 | ES2111268-005 | ES2111268-008 | ES2111268-017 | ES2111268-021 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.52** | **0.52** | **0.48** | **1.69** | **0.04** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.27** | **0.58** | **0.45** | **2.49** | **0.03** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.88** | **4.51** | **3.48** | **15.9** | **0.14** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.02** | **0.24** | **0.17** | **1.42** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.38** | **4.01** | **3.53** | **24.0** | **0.03** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | **0.1** | **0.1** | **0.1** | **0.3** | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.14** | **0.17** | **0.13** | **0.46** | **0.03** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.40** | **0.67** | **0.52** | **2.05** | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.02** | **0.11** | **0.08** | **0.41** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | **0.23** | **0.15** | **0.92** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW04 | MC_SW11 | MC_SW13 | MC_SW21 | MC_SW24 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-002 | ES2111268-005 | ES2111268-008 | ES2111268-017 | ES2111268-021 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **2.75** | **11.1** | **9.09** | **49.6** | **0.30** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **1.26** | **8.52** | **7.01** | **39.9** | **0.17** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.46** | **10.3** | **8.47** | **45.7** | **0.27** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **93.0** | **91.9** | **88.7** | **86.5** | **94.1** |
| 13C8-PFOA | ---- | 0.02 | % | **95.6** | **90.5** | **92.0** | **91.2** | **91.7** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | TC_SW02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-023 | ES2111268-025 | ES2111268-027 | ES2111268-029 | ES2111268-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.04** | **0.74** | **0.60** | **0.50** | **0.06** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.04** | **0.64** | **0.53** | **0.56** | **0.04** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.17** | **4.82** | **4.08** | **4.07** | **0.23** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | **0.28** | **0.26** | **0.26** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.05** | **4.23** | **5.85** | **5.52** | **0.07** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.1** | **0.1** | **0.1** | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.05** | **0.17** | **0.16** | **0.17** | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.04** | **0.70** | **0.64** | **0.70** | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.12** | **0.11** | **0.11** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.24** | **0.24** | **0.25** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | MC_SW25 | MC_SW26 | MC_SW27 | MC_SW28 | TC_SW02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-023 | ES2111268-025 | ES2111268-027 | ES2111268-029 | ES2111268-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.39** | **12.0** | **12.6** | **12.2** | **0.43** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.22** | **9.05** | **9.93** | **9.59** | **0.30** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.35** | **11.1** | **11.8** | **11.4** | **0.39** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **96.0** | **90.4** | **93.0** | **89.6** | **89.3** |
| 13C8-PFOA | ---- | 0.02 | % | **93.7** | **90.3** | **94.0** | **94.3** | **91.3** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-036 | ES2111268-038 | ES2111268-040 | ES2111268-042 | ES2111268-044 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | **0.07** | <0.02 | **0.11** | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **0.06** | <0.02 | **0.14** | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.10** | **0.40** | **0.03** | **0.85** | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.02** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.03** | **0.15** | **0.01** | **0.29** | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **0.05** | <0.02 | **0.12** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.01** | <0.01 | **0.02** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW03 | TC_SW04 | TC_SW05 | TC_SW06 | TC_SW07 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111268-036 | ES2111268-038 | ES2111268-040 | ES2111268-042 | ES2111268-044 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.13** | **0.74** | **0.04** | **1.58** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.13** | **0.55** | **0.04** | **1.14** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.13** | **0.68** | **0.04** | **1.42** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **91.5** | **94.6** | **87.2** | **90.0** | **87.3** |
| 13C8-PFOA | ---- | 0.02 | % | **95.4** | **93.8** | **91.8** | **93.1** | **89.0** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW12 | TC_SW13 | BBC_SW05 | A_STP_OUT | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 18-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-050 | ES2111268-052 | ES2111268-055 | ES2111268-071 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | <0.02 | **0.03** | <0.02 | **0.08** | ---- |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **0.04** | **0.10** | <0.01 | **0.16** | ---- |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | ---- |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | ---- |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.01** | ---- |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | TC_SW12 | TC_SW13 | BBC_SW05 | A_STP_OUT | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 18-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | ES2111268-050 | ES2111268-052 | ES2111268-055 | ES2111268-071 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.28** | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.24** | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.04** | **0.13** | <0.01 | **0.28** | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **94.1** | **90.2** | **88.5** | **91.0** | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **94.7** | **93.5** | **92.3** | **94.7** | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 21 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 20-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 92 | | |
| No. of samples analysed | : 79 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3591911)** | | | | | | | | | |
| ES2111268-032 | TC_SS02 | EA055: Moisture Content | ---- | 0.1 | % | 40.2 | 38.3 | 5.01 | 0% - 20% |
| ES2111280-012 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 14.9 | 14.6 | 2.23 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3592983)** | | | | | | | | | |
| ES2111268-058 | A_STP_SS02 | EA055: Moisture Content | ---- | 0.1 | % | 18.5 | 18.4 | 0.00 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593874)** | | | | | | | | | |
| ES2110780-007 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 54.6 | 55.4 | 1.52 | 0% - 20% |
| ES2111268-011 | MC_SD16 | EA055: Moisture Content | ---- | 0.1 | % | 50.8 | 53.2 | 4.55 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593875)** | | | | | | | | | |
| ES2111268-022 | MC_SD25 | EA055: Moisture Content | ---- | 0.1 | % | 64.9 | 66.1 | 1.87 | 0% - 20% |
| ES2111268-056 | BBC_SD06 | EA055: Moisture Content | ---- | 0.1 | % | 33.1 | 34.9 | 5.22 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3627708)** | | | | | | | | | |
| ES2111268-082 | A_SS125 | EA055: Moisture Content | ---- | 0.1 | % | 12.5 | 12.7 | 1.84 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3628268)** | | | | | | | | | |
| ES2111268-084 | A_SS127 | EA055: Moisture Content | ---- | 0.1 | % | 25.0 | 24.5 | 1.98 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0061 | 0.0056 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0082 | 0.0080 | 2.47 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0924 | 0.0924 | 0.00 | 0% - 20% |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111268-001 | MC_SD04 | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0075 | 0.0072 | 3.19 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.288 | 0.313 | 8.36 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0020 | 0.0022 | 4.76 | 0% - 50% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0008 | 0.0007 | 18.6 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0117 | 0.0109 | 6.91 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0017 | 0.0017 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.175 | 0.150 | 15.8 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0006 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0120 | 0.0132 | 9.73 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0047 | 0.0056 | 17.6 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3617330)** | | | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0008 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-090 | A_SS133 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0014 | 0.0015 | 7.74 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3617330) - continued** | | | | | | | | | |
| ES2111268-090 | A_SS133 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0400 | 0.0443 | 10.2 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0018 | 0.0019 | 7.14 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0055 | 0.0053 | 3.39 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0027 | 0.0028 | 4.20 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0026 | 0.0024 | 8.39 | 0% - 50% |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0048 | 0.0049 | 0.00 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0016 | 0.0016 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0005 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.002 | 0.002 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600194) - continued** | | | | | | | | | |
| ES2111268-030 | MC_SD29 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0006 | 0.0007 | 18.9 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0011 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3617330)** | | | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3617330) - continued** | | | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-090 | A_SS133 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0014 | 0.0016 | 7.41 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0010 | 0.0012 | 10.7 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0013 | 0.0015 | 11.5 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0036 | 0.0041 | 13.4 | 0% - 20% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0026 | 0.0029 | 9.27 | 0% - 50% |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0045 | 0.0054 | 18.4 | 0% - 20% |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0036 | 0.0041 | 10.9 | 0% - 20% |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0044 | 0.0047 | 7.18 | 0% - 20% |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0010 | 0.0012 | 18.8 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | 0.0006 | 0.0008 | 16.8 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.001 | 0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593352)** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-059 | A_STP_SS03 | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3617330)** | | | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-090 | A_SS133 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593352) - continued** | | | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-001 | MC_SD04 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600194)** | | | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-030 | MC_SD29 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | A_STP_SS03 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3617330)** | | | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-090 | A_SS133 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | 0.0036 | 0.0041 | 13.4 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.01 | 0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3606063) - continued** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3606063)** | | | | | | | | | |
| ES2111268-040 | TC_SW05 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.04 | 0.05 | 22.2 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.2 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.0 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.8 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3617330)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 114 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 72.0 | 129 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352) - continued** | | | | | | | | |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 96.4 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.6 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 97.9 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 127 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3617330)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 120 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 114 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 64.0 | 136 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3617330) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 111 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 94.2 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 115 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 101 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 106 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 100 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 108 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 117 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 130 | 61.0 | 139 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3617330)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 101 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 108 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600194)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 91.6 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 85.2 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 98.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 90.8 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 114 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 125 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 124 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3617330)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 110 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 114 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 115 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 118 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.2 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606063) - continued** | | | | | | | | |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 129 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.6 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 106 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 125 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 99.7 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 117 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 117 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 97.0 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 117 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 122 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606063)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 103 | 62.6 | 147 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606063) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 100 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.9 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 101 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3606063)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 117 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 118 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 104 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 116 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 103 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593352) - continued** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 93.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 120 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 106 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 89.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 95.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 71.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 99.6 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 118 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 110 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 120 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 121 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 122 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 109 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 124 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3617330)** | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 102 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 120 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 119 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 106 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 118 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 99.2 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 104 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 100 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 116 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 122 | 69.0 | 135 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593352) - continued** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 115 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 91.2 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 105 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 109 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 108 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 110 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 124 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 111 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 114 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 108 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 102 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 110 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 116 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 127 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 128 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 128 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 112 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 116 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 108 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3617330)** | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 127 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 120 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 123 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 112 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 112 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 112 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 113 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 117 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 119 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 109 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 92.1 | 69.0 | 133 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 110 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 91.3 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 114 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 125 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 116 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 99.8 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 106 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 107 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 99.0 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 108 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 108 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 115 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 107 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 107 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 120 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 117 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3617330)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3617330) - continued** | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 93.2 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 91.0 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 94.4 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 109 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 99.8 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 108 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 119 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593352)** | | | | | | | |
| ES2111257-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 88.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 128 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600194)** | | | | | | | |
| ES2111268-014 | MC_SD19 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 80.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 98.4 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 112 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 82.4 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | TC_SD09 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 116 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 126 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3617330)** | | | | | | | |
| ES2111268-080 | A_SS123 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 87.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 116 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 116 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 106 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | Page | : 1 of 14 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 20-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 92 |
| Order number | : ---- | No. of samples analysed | : 79 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111268--014 | MC_SD19 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

### Regular Sample Surrogates

Sub-Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Samples Submitted** | | | | | | | |
| EP231S: PFAS Surrogate | ES2111268-007 | MC_SD13 | **13C4-PFOS** | ---- | 124 % | 60.0-120 % | **Recovery greater than upper data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| TC_SD04, TC_SD06 | TC_SD05, | ---- | ---- | ---- | 30-Mar-2021 | 26-Mar-2021 | **4** |
| **HDPE Soil Jar** | | | | | | | |
| MC_SD04, MC_SD11, MC_SD13, MC_SD15, MC_SD17, MC_SD19, MC_SD21, MC_SD23, MC_SD25, BBC_SD06 | MC_SD07, MC_SD12, MC_SD14, MC_SD16, MC_SD18, MC_SD20, MC_SD22, MC_SD24, TC_SS03, | ---- | ---- | ---- | 30-Mar-2021 | 27-Mar-2021 | **3** |
| **HDPE Soil Jar** | | | | | | | |
| A_SS124, A_SS129, A_SS132, | A_SS125, A_SS130, A_SS134 | ---- | ---- | ---- | 18-Apr-2021 | 30-Mar-2021 | **19** |
| **HDPE Soil Jar** | | | | | | | |
| A_SS123, A_SS127, A_SS131, A_SS135 | A_SS126, A_SS128, A_SS133, | ---- | ---- | ---- | 19-Apr-2021 | 30-Mar-2021 | **20** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 1 | 25 | 4.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 25 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / ***Container*** / *Client Sample ID(s)* | | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 26-Mar-2021 | × |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 27-Mar-2021 | × |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18, | | | | | | | |
| MC_SD19, | MC_SD20, | | | | | | | |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 29-Mar-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 30-Mar-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C) - Continued** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS124, | A_SS125, | **16-Mar-2021** | **----** | ---- | ---- | **18-Apr-2021** | 30-Mar-2021 | × |
| A_SS129, | A_SS130, | | | | | | | |
| A_SS132, | A_SS134 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS123, | A_SS126, | **16-Mar-2021** | **----** | ---- | ---- | **19-Apr-2021** | 30-Mar-2021 | × |
| A_SS127, | A_SS128, | | | | | | | |
| A_SS131, | A_SS133, | | | | | | | |
| A_SS135 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 31-Mar-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 01-Apr-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SS123, | A_SS124, | **16-Mar-2021** | **13-Apr-2021** | 12-Sep-2021 | ✓ | **14-Apr-2021** | 23-May-2021 | ✓ |
| A_SS125, | A_SS126, | | | | | | | |
| A_SS127, | A_SS128, | | | | | | | |
| A_SS129, | A_SS130, | | | | | | | |
| A_SS131, | A_SS132, | | | | | | | |
| A_SS133, | A_SS134, | | | | | | | |
| A_SS135 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SS123, | A_SS124, | **16-Mar-2021** | **13-Apr-2021** | 12-Sep-2021 | ✓ | **14-Apr-2021** | 23-May-2021 | ✓ |
| A_SS125, | A_SS126, | | | | | | | |
| A_SS127, | A_SS128, | | | | | | | |
| A_SS129, | A_SS130, | | | | | | | |
| A_SS131, | A_SS132, | | | | | | | |
| A_SS133, | A_SS134, | | | | | | | |
| A_SS135 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>TC_SD04, TC_SD05,<br>TC_SD06 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, TC_SS03,<br>BBC_SD06 | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14,<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18 | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD29, TC_SS01,<br>TC_SS02, TC_SD07,<br>TC_SD08, TC_SD09,<br>TC_SD10, TC_SD11,<br>TC_SD12 | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>TC_SD02, A_STP_SS01,<br>A_STP_SS02, A_STP_SS03,<br>A_STP_SS04, A_STP_SS05,<br>A_STP_SS06, A_STP_SS07,<br>A_STP_SS08, A_STP_SS09 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135 | **16-Mar-2021** | **13-Apr-2021** | 12-Sep-2021 | ✓ | **14-Apr-2021** | 23-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD26, MC_SD27,<br>MC_SD28, TC_SD13 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD04, BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD04, | TC_SD05, | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD19, | MC_SD20, | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD21, | MC_SD22, | | | | | | | |
| MC_SD23, | MC_SD24, | | | | | | | |
| MC_SD25, | TC_SS03, | | | | | | | |
| BBC_SD06 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD04, | MC_SD07, | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| MC_SD11, | MC_SD12, | | | | | | | |
| MC_SD13, | MC_SD14, | | | | | | | |
| MC_SD15, | MC_SD16, | | | | | | | |
| MC_SD17, | MC_SD18 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD29, | TC_SS01, | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| TC_SS02, | TC_SD07, | | | | | | | |
| TC_SD08, | TC_SD09, | | | | | | | |
| TC_SD10, | TC_SD11, | | | | | | | |
| TC_SD12 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| TC_SD02, | A_STP_SS01, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_STP_SS02, | A_STP_SS03, | | | | | | | |
| A_STP_SS04, | A_STP_SS05, | | | | | | | |
| A_STP_SS06, | A_STP_SS07, | | | | | | | |
| A_STP_SS08, | A_STP_SS09 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SS123, | A_SS124, | **16-Mar-2021** | **13-Apr-2021** | 12-Sep-2021 | ✓ | **14-Apr-2021** | 23-May-2021 | ✓ |
| A_SS125, | A_SS126, | | | | | | | |
| A_SS127, | A_SS128, | | | | | | | |
| A_SS129, | A_SS130, | | | | | | | |
| A_SS131, | A_SS132, | | | | | | | |
| A_SS133, | A_SS134, | | | | | | | |
| A_SS135 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| MC_SD26, | MC_SD27, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| MC_SD28, | TC_SD13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD04, | BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>TC_SD04, TC_SD05,<br>TC_SD06 | **12-Mar-2021** | **01-Apr-2021** | 08-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, TC_SS03,<br>BBC_SD06 | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14,<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18 | **13-Mar-2021** | **30-Mar-2021** | 09-Sep-2021 | ✓ | **30-Mar-2021** | 09-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD29, TC_SS01,<br>TC_SS02, TC_SD07,<br>TC_SD08, TC_SD09,<br>TC_SD10, TC_SD11,<br>TC_SD12 | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>TC_SD02, A_STP_SS01,<br>A_STP_SS02, A_STP_SS03,<br>A_STP_SS04, A_STP_SS05,<br>A_STP_SS06, A_STP_SS07,<br>A_STP_SS08, A_STP_SS09 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135 | **16-Mar-2021** | **13-Apr-2021** | 12-Sep-2021 | ✓ | **14-Apr-2021** | 23-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>MC_SD26, MC_SD27,<br>MC_SD28, TC_SD13 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD04, BBC_SD05 | **18-Mar-2021** | **01-Apr-2021** | 14-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW04, | MC_SW11, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| MC_SW13, | MC_SW21, | | | | | | | |
| MC_SW24, | MC_SW25, | | | | | | | |
| TC_SW02, | TC_SW05, | | | | | | | |
| TC_SW06, | TC_SW12, | | | | | | | |
| TC_SW13 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW26, | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| MC_SW28 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW03, | TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW04, | MC_SW11, | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| MC_SW13, | MC_SW21, | | | | | | | |
| MC_SW24, | MC_SW25, | | | | | | | |
| TC_SW02, | TC_SW05, | | | | | | | |
| TC_SW06, | TC_SW12, | | | | | | | |
| TC_SW13 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| TC_SW07 | | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_STP_OUT | | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| MC_SW26, | MC_SW27, | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| MC_SW28 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| BBC_SW05 | | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04, MC_SW11, MC_SW13, MC_SW21, MC_SW24, MC_SW25, TC_SW02, TC_SW05, TC_SW06, TC_SW12, TC_SW13 | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26, MC_SW27, MC_SW28 | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04, MC_SW11, MC_SW13, MC_SW21, MC_SW24, MC_SW25, TC_SW02, TC_SW05, TC_SW06, TC_SW12, TC_SW13 | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26, MC_SW27, MC_SW28 | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW03, TC_SW04 | **12-Mar-2021** | **07-Apr-2021** | 08-Sep-2021 | ✓ | **08-Apr-2021** | 08-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW04, MC_SW11, MC_SW13, MC_SW21, MC_SW24, MC_SW25, TC_SW02, TC_SW05, TC_SW06, TC_SW12, TC_SW13 | **13-Mar-2021** | **07-Apr-2021** | 09-Sep-2021 | ✓ | **08-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SW07 | **15-Mar-2021** | **07-Apr-2021** | 11-Sep-2021 | ✓ | **08-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_STP_OUT | **16-Mar-2021** | **07-Apr-2021** | 12-Sep-2021 | ✓ | **08-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SW26, MC_SW27, MC_SW28 | **17-Mar-2021** | **07-Apr-2021** | 13-Sep-2021 | ✓ | **08-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>BBC_SW05 | **18-Mar-2021** | **07-Apr-2021** | 14-Sep-2021 | ✓ | **08-Apr-2021** | 14-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 9 | 81 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 8 | 73 | **10.96** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 73 | **5.48** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 73 | **5.48** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 73 | **5.48** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 25 | **4.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 25 | **8.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 25 | **8.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 25 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111268** | | |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 12-Apr-2021 |
| Client Requested Due Date | : 19-Apr-2021 | Scheduled Reporting Date | : **19-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : Split into ES2111280 | No. of samples received / analysed | : 92 / 79 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has been split into ES**
- **This work order has been split into ES2111280.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111268-001 | 13-Mar-2021 00:00 | MC_SD04 | | ✓ | ✓ |
| ES2111268-003 | 13-Mar-2021 00:00 | MC_SD07 | | ✓ | ✓ |
| ES2111268-004 | 13-Mar-2021 00:00 | MC_SD11 | | ✓ | ✓ |
| ES2111268-006 | 13-Mar-2021 00:00 | MC_SD12 | | ✓ | ✓ |
| ES2111268-007 | 13-Mar-2021 00:00 | MC_SD13 | | ✓ | ✓ |
| ES2111268-009 | 13-Mar-2021 00:00 | MC_SD14 | | ✓ | ✓ |
| ES2111268-010 | 13-Mar-2021 00:00 | MC_SD15 | | ✓ | ✓ |
| ES2111268-011 | 13-Mar-2021 00:00 | MC_SD16 | | ✓ | ✓ |
| ES2111268-012 | 13-Mar-2021 00:00 | MC_SD17 | | ✓ | ✓ |
| ES2111268-013 | 13-Mar-2021 00:00 | MC_SD18 | | ✓ | ✓ |
| ES2111268-014 | 13-Mar-2021 00:00 | MC_SD19 | | ✓ | ✓ |
| ES2111268-015 | 13-Mar-2021 00:00 | MC_SD20 | | ✓ | ✓ |
| ES2111268-016 | 13-Mar-2021 00:00 | MC_SD21 | | ✓ | ✓ |
| ES2111268-018 | 13-Mar-2021 00:00 | MC_SD22 | | ✓ | ✓ |
| ES2111268-019 | 13-Mar-2021 00:00 | MC_SD23 | | ✓ | ✓ |
| ES2111268-020 | 13-Mar-2021 00:00 | MC_SD24 | | ✓ | ✓ |
| ES2111268-022 | 13-Mar-2021 00:00 | MC_SD25 | | ✓ | ✓ |
| ES2111268-024 | 17-Mar-2021 00:00 | MC_SD26 | | ✓ | ✓ |
| ES2111268-026 | 17-Mar-2021 00:00 | MC_SD27 | | ✓ | ✓ |
| ES2111268-028 | 17-Mar-2021 00:00 | MC_SD28 | | ✓ | ✓ |
| ES2111268-030 | 15-Mar-2021 00:00 | MC_SD29 | | ✓ | ✓ |
| ES2111268-031 | 15-Mar-2021 00:00 | TC_SS01 | | ✓ | ✓ |
| ES2111268-032 | 15-Mar-2021 00:00 | TC_SS02 | | ✓ | ✓ |
| ES2111268-033 | 13-Mar-2021 00:00 | TC_SS03 | | ✓ | ✓ |
| ES2111268-034 | 16-Mar-2021 00:00 | TC_SD02 | | ✓ | ✓ |
| ES2111268-037 | 12-Mar-2021 00:00 | TC_SD04 | | ✓ | ✓ |
| ES2111268-039 | 12-Mar-2021 00:00 | TC_SD05 | | ✓ | ✓ |
| ES2111268-041 | 12-Mar-2021 00:00 | TC_SD06 | | ✓ | ✓ |
| ES2111268-043 | 15-Mar-2021 00:00 | TC_SD07 | | ✓ | ✓ |
| ES2111268-045 | 15-Mar-2021 00:00 | TC_SD08 | | ✓ | ✓ |
| ES2111268-046 | 15-Mar-2021 00:00 | TC_SD09 | | ✓ | ✓ |
| ES2111268-047 | 15-Mar-2021 00:00 | TC_SD10 | | ✓ | ✓ |
| ES2111268-048 | 15-Mar-2021 00:00 | TC_SD11 | | ✓ | ✓ |
| ES2111268-049 | 15-Mar-2021 00:00 | TC_SD12 | | ✓ | ✓ |
| ES2111268-051 | 17-Mar-2021 00:00 | TC_SD13 | | ✓ | ✓ |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111268-053 | 18-Mar-2021 00:00 | BBC_SD04 | | ✓ | ✓ |
| ES2111268-054 | 18-Mar-2021 00:00 | BBC_SD05 | | ✓ | ✓ |
| ES2111268-056 | 13-Mar-2021 00:00 | BBC_SD06 | | ✓ | ✓ |
| ES2111268-057 | 16-Mar-2021 00:00 | A_STP_SS01 | | ✓ | ✓ |
| ES2111268-058 | 16-Mar-2021 00:00 | A_STP_SS02 | | ✓ | ✓ |
| ES2111268-059 | 16-Mar-2021 00:00 | A_STP_SS03 | | ✓ | ✓ |
| ES2111268-060 | 16-Mar-2021 00:00 | A_STP_SS04 | | ✓ | ✓ |
| ES2111268-061 | 16-Mar-2021 00:00 | A_STP_SS05 | | ✓ | ✓ |
| ES2111268-062 | 16-Mar-2021 00:00 | A_STP_SS06 | | ✓ | ✓ |
| ES2111268-063 | 16-Mar-2021 00:00 | A_STP_SS07 | | ✓ | ✓ |
| ES2111268-064 | 16-Mar-2021 00:00 | A_STP_SS08 | | ✓ | ✓ |
| ES2111268-065 | 16-Mar-2021 00:00 | A_STP_SS09 | | ✓ | ✓ |
| ES2111268-066 | 16-Mar-2021 00:00 | A_STP_SS10 | ✓ | | |
| ES2111268-073 | 15-Mar-2021 00:00 | A_SS116 | ✓ | | |
| ES2111268-074 | 15-Mar-2021 00:00 | A_SS117 | ✓ | | |
| ES2111268-075 | 15-Mar-2021 00:00 | A_SS118 | ✓ | | |
| ES2111268-076 | 15-Mar-2021 00:00 | A_SS119 | ✓ | | |
| ES2111268-077 | 15-Mar-2021 00:00 | A_SS120 | ✓ | | |
| ES2111268-078 | 15-Mar-2021 00:00 | A_SS121 | ✓ | | |
| ES2111268-079 | 15-Mar-2021 00:00 | A_SS122 | ✓ | | |
| ES2111268-080 | 16-Mar-2021 00:00 | A_SS123 | | ✓ | ✓ |
| ES2111268-081 | 16-Mar-2021 00:00 | A_SS124 | | ✓ | ✓ |
| ES2111268-082 | 16-Mar-2021 00:00 | A_SS125 | | ✓ | ✓ |
| ES2111268-083 | 16-Mar-2021 00:00 | A_SS126 | | ✓ | ✓ |
| ES2111268-084 | 16-Mar-2021 00:00 | A_SS127 | | ✓ | ✓ |
| ES2111268-085 | 16-Mar-2021 00:00 | A_SS128 | | ✓ | ✓ |
| ES2111268-086 | 16-Mar-2021 00:00 | A_SS129 | | ✓ | ✓ |
| ES2111268-087 | 16-Mar-2021 00:00 | A_SS130 | | ✓ | ✓ |
| ES2111268-088 | 16-Mar-2021 00:00 | A_SS131 | | ✓ | ✓ |
| ES2111268-089 | 16-Mar-2021 00:00 | A_SS132 | | ✓ | ✓ |
| ES2111268-090 | 16-Mar-2021 00:00 | A_SS133 | | ✓ | ✓ |
| ES2111268-091 | 16-Mar-2021 00:00 | A_SS134 | | ✓ | ✓ |
| ES2111268-092 | 16-Mar-2021 00:00 | A_SS135 | | ✓ | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111268-002 | 13-Mar-2021 00:00 | MC_SW04 | | ✓ |
| ES2111268-005 | 13-Mar-2021 00:00 | MC_SW11 | | ✓ |
| ES2111268-008 | 13-Mar-2021 00:00 | MC_SW13 | | ✓ |
| ES2111268-017 | 13-Mar-2021 00:00 | MC_SW21 | | ✓ |
| ES2111268-021 | 13-Mar-2021 00:00 | MC_SW24 | | ✓ |
| ES2111268-023 | 13-Mar-2021 00:00 | MC_SW25 | | ✓ |
| ES2111268-025 | 17-Mar-2021 00:00 | MC_SW26 | | ✓ |
| ES2111268-027 | 17-Mar-2021 00:00 | MC_SW27 | | ✓ |
| ES2111268-029 | 17-Mar-2021 00:00 | MC_SW28 | | ✓ |
| ES2111268-035 | 13-Mar-2021 00:00 | TC_SW02 | | ✓ |
| ES2111268-036 | 12-Mar-2021 00:00 | TC_SW03 | | ✓ |
| ES2111268-038 | 12-Mar-2021 00:00 | TC_SW04 | | ✓ |
| ES2111268-040 | 13-Mar-2021 00:00 | TC_SW05 | | ✓ |
| ES2111268-042 | 13-Mar-2021 00:00 | TC_SW06 | | ✓ |
| ES2111268-044 | 15-Mar-2021 00:00 | TC_SW07 | | ✓ |
| ES2111268-050 | 13-Mar-2021 00:00 | TC_SW12 | | ✓ |
| ES2111268-052 | 13-Mar-2021 00:00 | TC_SW13 | | ✓ |
| ES2111268-055 | 18-Mar-2021 00:00 | BBC_SW05 | | ✓ |
| ES2111268-067 | 16-Mar-2021 00:00 | A_STP_POND1 | ✓ | |
| ES2111268-068 | 16-Mar-2021 00:00 | A_STP_POND2 | ✓ | |
| ES2111268-069 | 16-Mar-2021 00:00 | A_STP_RAW_IN | ✓ | |
| ES2111268-070 | 16-Mar-2021 00:00 | A_STP_IN | ✓ | |
| ES2111268-071 | 16-Mar-2021 00:00 | A_STP_OUT | | ✓ |
| ES2111268-072 | 16-Mar-2021 00:00 | A_STP_POND3 | ✓ | |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Subcon / Forward Lab / Split WO
Lab / Analysis: Split into ES2111280
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| 1 | MC-SD04 | S | 13/3 | AM | PFAS | 1 | X |
| 2 | MC-SW04 | W | | | | 2 | X |
| 3 | MC-SD07 | S | | | | 1 | X |
| 4 | MC-SD11 | S | | | | 1 | X |
| 5 | MC-SW11 | W | | | | 2 | X |
| 6 | MC-SD12 | S | | | | 1 | X |
| 7 | MC-SD13 | S | | | | 1 | X |
| 8 | MC-SW13 | W | | | | 2 | X |
| 9 | MC-SD14 | S | | | | 1 | X |
| 10 | MC-SD15 | S | | | | 1 | X |
| 11 | MC-SD16 | S | | | | 1 | X |
| 12 | MC-SD17 | S | | | | 1 | X |
| 13 | MC-SD18 | S | | | | 1 | X |
| 14 | MC-SD19 | S | | | | 1 | X |
| 15 | MC-SD20 | S | | PM | | 1 | X |
| 16 | MC-SD21 | S | | | | 1 | X |
| 17 | MC-SW21 | W | | | | 2 | X |
| 18 | MC-SD22 | S | | | | 1 | X |
| 19 | MC-SD23 | S | | | | 1 | X |
| 20 | MC-SD24 | S | | | | 1 | X |
| Total | | | | | | | 0 |

Environmental Division Sydney
Work Order Reference
ES2111268

Telephone : +61-2-8784 8666

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 13 / 3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.7.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 2 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | MC-SW24 | W | 13/3 | PM | PFAS | 2 | X | | | | | | | | | | | |
| 22 | MC-SD25 | S | 13/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 23 | MC-SW25 | W | 13/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 24 | MC-SD26 | S | 17/3 | AM | ↓ | 1 | X | | | | | | | | | | | |
| 25 | MC-SW26 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 26 | MC-SD27 | S | 17/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 27 | MC-SW27 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 28 | MC-SD28 | S | 17/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 29 | MC-SW28 | W | 17/3 | ↓ | ↓ | 2 | X | | | | | | | | | | | |
| 30 | MC-SD29 | S | 15/3 | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 31 | TC-SS01 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 32 | TC-SS02 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 33 | TC-SS03 | S | 15/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 34 | TC-SD02 | S | 16/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 35 | TC-SW02 | W | 16/3 | PM | ↓ | 2 | X | | | | | | | | | | | |
| 36 | TC-SW03 | W | 12/3 | AM | ↓ | 2 | X | | | | | | | | | | | |
| 37 | TC-SD04 | S | 12/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 38 | TC-SW04 | W | 12/3 | PM | ↓ | 2 | X | | | | | | | | | | | |
| 39 | TC-SD05 | S | 12/3 | PM | ↓ | 1 | X | | | | | | | | | | | |
| 40 | TC-SW05 | W | 12/3 | PM | ↓ | 4 | X | | | | | | | | | | | additional bottles due to turbidity. |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 3 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 41 | TC-SD06 | S | 12/3 | | | 1 | X | | | | | | | | | | |
| 42 | TC-SW06 | W | 12/3 | | | 2 | X | | | | | | | | | | |
| 43 | TC-SD07 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 44 | TC-SW07 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 45 | TC-SD08 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 46 | TC-SD09 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 47 | TC-SD10 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 48 | TC-SD11 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 49 | TC-SD12 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 50 | TC-SW12 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 51 | TC-SD13 | S | 17/3 | | | 1 | X | | | | | | | | | | |
| 52 | TC-SW13 | W | 17/3 | | | 2 | X | | | | | | | | | | |
| 53 | BBC-SD04 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 54 | BBC-SD05 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 55 | BBC-SW05 | W | 18/3 | | | 2 | X | | | | | | | | | | |
| 56 | BBC-SD06 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugoffs iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 4 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 57 | A-STP-SS01 | S | 16/3 | AM | PFAS | 1 | X | | | | | | | | | | | |
| 58 | A-STP-SS02 | S | ↓ | ↓ | ↓ | 1 | X | | | | | | | | | | | |
| 59 | A-STP-SS03 | S | | | | 1 | X | | | | | | | | | | | |
| 60 | A-STP-SS04 | S | | | | 1 | X | | | | | | | | | | | |
| 61 | A-STP-SS05 | S | | | | 1 | X | | | | | | | | | | | |
| 62 | A-STP-SS06 | S | | | | 1 | X | | | | | | | | | | | |
| 63 | A-STP-SS07 | S | | | | 1 | X | | | | | | | | | | | |
| 64 | A-STP-SS08 | S | | | | 1 | X | | | | | | | | | | | |
| 65 | A-STP-SS09 | S | | | | 1 | X | | | | | | | | | | | |
| 66 | A-STP-SS10 | S | | | | 1 | X | | | | | | | | | | | |
| 67 | A-STP-POND1 | SW | | | | 2 | | | | | | | | | | | X | * ↑ |
| 68 | A-STP-POND2 | W | | | | 2 | | | | | | | | | | | X | |
| 69 | A-STP-RAW-IN | W | | | | 2 | | | | | | | | | | | X | potential biohazard! |
| 70 | A-STP-IN | W | | | | 2 | | | | | | | | | | | X | ↓ |
| 71 | A-STP-OUT | W | | | | 2 | X | | | | | | | | | | | * |
| 72 | A-STP-POND3 | W | ↓ | ↓ | ↓ | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:** | **Sampler Name:** | **Signature:** | **Date:** |

| **Relinquished By:** | | **Method of Shipment (if applicable):** | **Received by:** | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 69 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 5 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 73 | A-SS116 | S | 15/3 | AM | PFAS | 1 | | | | | | | | | | | X | |
| 74 | A-SS117 | | | | | | | | | | | | | | | | X | |
| 75 | A-SS118 | | | | | | | | | | | | | | | | X | |
| 76 | A-SS119 | | | | | | | | | | | | | | | | X | |
| 77 | A-SS120 | | | | | | | | | | | | | | | | X | |
| 78 | A-SS121 | | | | | | | | | | | | | | | | X | |
| 79 | A-SS122 | | 15/3 | | | | | | | | | | | | | | X | |
| 80 | A-SS123 | | 16/3 | | | | | | | | | | | | | | X | |
| 81 | A-SS124 | | | | | | | | | | | | | | | | X | |
| 82 | A-SS125 | | | | | | | | | | | | | | | | X | |
| 83 | A-SS126 | | | | | | | | | | | | | | | | X | |
| 84 | A-SS127 | | | | | | | | | | | | | | | | X | |
| 85 | A-SS128 | | | | | | | | | | | | | | | | X | |
| 86 | A-SS129 | | | | | | | | | | | | | | | | X | |
| 87 | A-SS130 | | | | | | | | | | | | | | | | X | |
| 88 | A-SS131 | | | | | | | | | | | | | | | | X | |
| 89 | A-SS132 | | | | | | | | | | | | | | | | X | |
| 90 | A-SS133 | | | | | | | | | | | | | | | | X | |
| 91 | A-SS134 | | | | | | | | | | | | | | | | X | |
| 92 | A-SS135 | | 16/3 | | | | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8555

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: EP231X - PFAS Full Suite (28 compounds)

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Subcont / Forward Lab / Split WO
Lab / Analysis: Split into ES2111280
Organised By / Date:
Relinquished By / Date:
Courier / Courier:
WO No:
Attached By PO / Internal Sheet

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X |
|---|---|---|---|---|---|---|---|
| 1 | MC-SD04 | S | 13/3 | AM | PFAS | 1 | X |
| 2 | MC-SW04 | W | | | | 2 | X |
| 3 | MC-SD07 | S | | | | 1 | X |
| 4 | MC-SD11 | S | | | | 1 | X |
| 5 | MC-SW11 | W | | | | 2 | X |
| 6 | MC-SD12 | S | | | | 1 | X |
| 7 | MC-SD13 | S | | | | 1 | X |
| 8 | MC-SW13 | W | | | | 2 | X |
| 9 | MC-SD14 | S | | | | 1 | X |
| 10 | MC-SD15 | S | | | | 1 | X |
| 11 | MC-SD16 | S | | | | 1 | X |
| 12 | MC-SD17 | S | | | | 1 | X |
| 13 | MC-SD18 | S | | | | 1 | X |
| 14 | MC-SD19 | S | | | | 1 | X |
| 15 | MC-SD20 | S | | PM | | 1 | X |
| 16 | MC-SD21 | S | | | | 1 | X |
| 17 | MC-SW21 | W | | | | 2 | X |
| 18 | MC-SD22 | S | | | | 1 | X |
| 19 | MC-SD23 | S | | | | 1 | X |
| 20 | MC-SD24 | S | | | | 1 | X |
| Total | | | | | | 0 | |

Environmental Division Sydney
Work Order Reference
ES2111268

Telephone : + 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 13 / 3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 2 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | MC-SW24 | W | 13/3 | PM | PFAS | 2 | X | | | | | | | | | | | |
| 22 | MC-SD25 | S | 13/3 | | | 1 | X | | | | | | | | | | | |
| 23 | MC-SW25 | W | 13/3 | | | 2 | X | | | | | | | | | | | |
| 24 | MC-SD26 | S | 17/3 | AM | | 1 | X | | | | | | | | | | | |
| 25 | MC-SW26 | W | 17/3 | | | 2 | X | | | | | | | | | | | |
| 26 | MC-SD27 | S | 17/3 | | | 1 | X | | | | | | | | | | | |
| 27 | MC-SW27 | W | 17/3 | | | 2 | X | | | | | | | | | | | |
| 28 | MC-SD28 | S | 17/3 | | | 1 | X | | | | | | | | | | | |
| 29 | MC-SW28 | W | 17/3 | | | 2 | X | | | | | | | | | | | |
| 30 | MC-SD29 | S | 15/3 | | | 1 | X | | | | | | | | | | | |
| 31 | TC-SS01 | S | 15/3 | PM | | 1 | X | | | | | | | | | | | |
| 32 | TC-SS02 | S | 15/3 | PM | | 1 | X | | | | | | | | | | | |
| 33 | TC-SS03 | S | 15/3 | PM | | 1 | X | | | | | | | | | | | |
| 34 | TC-SD02 | S | 16/3 | PM | | 1 | X | | | | | | | | | | | |
| 35 | TC-SW02 | W | 16/3 | PM | | 2 | X | | | | | | | | | | | |
| 36 | TC-SW03 | W | 12/3 | AM | | 2 | X | | | | | | | | | | | |
| 37 | TC-SD04 | S | 12/3 | PM | | 1 | X | | | | | | | | | | | |
| 38 | TC-SW04 | W | 12/3 | PM | | 2 | X | | | | | | | | | | | |
| 39 | TC-SD05 | S | 12/3 | PM | | 1 | X | | | | | | | | | | | |
| 40 | TC-SW05 | W | 12/3 | PM | | 4 | X | | | | | | | | | | | additional bottles due to turbidity. |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 69 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-18 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 3 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; unusual LORs etc. |
| 41 | TC-SD06 | S | 12/3 | | | 1 | X | | | | | | | | | | |
| 42 | TC-SW06 | W | 12/3 | | | 2 | X | | | | | | | | | | |
| 43 | TC-SD07 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 44 | TC-SW07 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 45 | TC-SD08 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 46 | TC-SD09 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 47 | TC-SD10 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 48 | TC-SD11 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 49 | TC-SD12 | S | 15/3 | | | 1 | X | | | | | | | | | | |
| 50 | TC-SW12 | W | 15/3 | | | 2 | X | | | | | | | | | | |
| 51 | TC-SD13 | S | 17/3 | | | 1 | X | | | | | | | | | | |
| 52 | TC-SW13 | W | 17/3 | | | 2 | X | | | | | | | | | | |
| 53 | BBC-SD04 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 54 | BBC-SD05 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| 55 | BBC-SW05 | W | 18/3 | | | 2 | X | | | | | | | | | | |
| 56 | BBC-SD06 | S | 18/3 | | | 1 | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYNE WILLIAMS Signature: Date: 18/3

| Relinquished By: | | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-668-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 4 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 57 | A-STP-SS01 | S | 16/3 | Any | PFAS | 1 | X | | | | | | | | | | |
| 58 | A-STP-SS02 | S | | | | 1 | X | | | | | | | | | | |
| 59 | A-STP-SS03 | S | | | | 1 | X | | | | | | | | | | |
| 60 | A-STP-SS04 | S | | | | 1 | X | | | | | | | | | | |
| 61 | A-STP-SS05 | S | | | | 1 | X | | | | | | | | | | |
| 62 | A-STP-SS06 | S | | | | 1 | X | | | | | | | | | | |
| 63 | A-STP-SS07 | S | | | | 1 | X | | | | | | | | | | |
| 64 | A-STP-SS08 | S | | | | 1 | X | | | | | | | | | | |
| 65 | A-STP-SS09 | S | | | | 1 | X | | | | | | | | | | |
| 66 | A-STP-SS10 | S | | | | 1 | X | | | | | | | | | | |
| 67 | A-STP-POND1 | W | | | | 2 | | | | | | | | | | X | * ↑ |
| 68 | A-STP-POND2 | W | | | | 2 | | | | | | | | | | X | |
| 69 | A-STP-RAW-IN | W | | | | 2 | | | | | | | | | | X | potential biohazard! |
| 70 | A-STP-IN | W | | | | 2 | | | | | | | | | | X | ↓ |
| 71 | A-STP-OUT | W | | | | 2 | X | | | | | | | | | | * |
| 72 | A-STP-POND3 | W | ↓ | ↓ | ↓ | 2 | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date:

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-666-18 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 5 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0461 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| 73 | A-SS116 | S | 15/3 | AM | PFAS | 1 | ~~X~~ | | | | | | | | | | X | |
| 74 | A-SS117 | ↓ | ↓ | ↓ | ↓ | ↓ | ~~X~~ | | | | | | | | | | X | |
| 75 | A-SS118 | | | | | | | | | | | | | | | | X | |
| 76 | A-SS119 | | | | | | | | | | | | | | | | X | |
| 77 | A-SS120 | | | | | | | | | | | | | | | | X | |
| 78 | A-SS121 | | ↓ | | | | | | | | | | | | | | X | |
| 79 | A-SS122 | | 15/3 | | | | | | | | | | | | | | X | |
| 80 | A-SS123 | | 16/3 | | | | X | | | | | | | | | | X | |
| 81 | A-SS124 | | | | | | X | | | | | | | | | | X | |
| 82 | A-SS125 | | | | | | X | | | | | | | | | | X | |
| 83 | A-SS126 | | | | | | X | | | | | | | | | | X | |
| 84 | A-SS127 | | | | | | X | | | | | | | | | | X | |
| 85 | A-SS128 | | | | | | X | | | | | | | | | | X | |
| 86 | A-SS129 | | | | | | X | | | | | | | | | | X | |
| 87 | A-SS130 | | | | | | X | | | | | | | | | | X | |
| 88 | A-SS131 | | | | | | X | | | | | | | | | | X | |
| 89 | A-SS132 | | | | | | X | | | | | | | | | | X | |
| 90 | A-SS133 | | ↓ | | | | X | | | | | | | | | | X | |
| 91 | A-SS134 | | | | | | X | | | | | | | | | | X | |
| 92 | A-SS135 | ↓ | 16/3 | ↓ | ↓ | ↓ | X | | | | | | | | | | X | |
| Total: | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; LeLugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111275** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:19 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID004_TANK | ID004_TAP1 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111275-001 | ES2111275-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID004_TANK | ID004_TAP1 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111275-001 | ES2111275-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **90.5** | **95.2** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **95.3** | **92.7** | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111275** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111275** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 2 |
| Order number | : ---- | No. of samples analysed | : 2 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID004_TANK, ID004_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID004_TANK, ID004_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID004_TANK, ID004_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID004_TANK, ID004_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID004_TANK, ID004_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111275**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 2 / 2 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111275-001 | 11-Mar-2021 00:00 | ID004_TANK | ✓ |
| ES2111275-002 | 11-Mar-2021 00:00 | ID004_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division Sydney
Work Order Reference
ES2111275

Telephone : +61-2-8784 8555

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | |
| 1 | 10004_TANK | W | 11/3 | | | 2 | X |
| 2 | 10004_TAP1 | W | 11/3 | | | 2 | X |
| Total | | | | | | | 0 |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: Carlyn Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: Mgaw | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111276** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:19 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | CHAP_TAP1 | CHAP_TAP2 | QC30 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111276-001 | ES2111276-002 | ES2111276-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | CHAP_TAP1 | CHAP_TAP2 | QC30 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111276-001 | ES2111276-002 | ES2111276-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **86.1** | **91.8** | **99.5** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **93.4** | **92.1** | **94.3** | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111276** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111276** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 3 |
| Order number | : ---- | No. of samples analysed | : 3 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| CHAP_TAP1, | CHAP_TAP2, | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| QC30 | | | | | | | | |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| CHAP_TAP1, | CHAP_TAP2, | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| QC30 | | | | | | | | |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| CHAP_TAP1, | CHAP_TAP2, | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| QC30 | | | | | | | | |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| CHAP_TAP1, | CHAP_TAP2, | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| QC30 | | | | | | | | |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| CHAP_TAP1, | CHAP_TAP2, | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| QC30 | | | | | | | | |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111276**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 3 / 3 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC31 has been forwarded to Eurofins for testing.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111276-001 | 11-Mar-2021 00:00 | CHAP_TAP1 | ✓ |
| ES2111276-002 | 11-Mar-2021 00:00 | CHAP_TAP2 | ✓ |
| ES2111276-003 | 11-Mar-2021 00:00 | QC30 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Container Information: Type / Code | Container Information: Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CHAP_TAP1 | W | 11/3 | PM | | 2 | X | | | | | | | | | | |
| 2 | CHAP_TAP2 | W | 11/3 | PM | | 2 | X | | | | | | | | | | |
| 3 | QC30 | W | 11/3 | PM | | 2 | X | | | | | | | | | | |
| [illegible] | QC31 | W | 11/3 | PM | | 2 | X | | | | | | | | | | please forward to eurofins |
| Total | | | | | | | | | | | | | | | | | |

Subcon / For: [illegible]
Lab / Analysis: Eurofins / QC31
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2111276

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams | Signature: [signature] | Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 3:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111277** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 11:20 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID009_WELL | ID009_TAP1 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111277-001 | ES2111277-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | ID009_WELL | ID009_TAP1 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111277-001 | ES2111277-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 86.9 | 99.1 | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 87.7 | 92.0 | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111277** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111277** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 2 |
| Order number | : ---- | No. of samples analysed | : 2 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 19 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID009_WELL, ID009_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID009_WELL, ID009_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID009_WELL, ID009_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID009_WELL, ID009_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID009_WELL, ID009_TAP1 | **11-Mar-2021** | **01-Apr-2021** | 07-Sep-2021 | ✓ | **01-Apr-2021** | 07-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 19 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111277**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 2 / 2 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111277-001 | 11-Mar-2021 00:00 | ID009_WELL | ✓ |
| ES2111277-002 | 11-Mar-2021 00:00 | ID009_TAP1 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | |
| 1 | 1D009_WELL | W | 11/3 | | | 2 | X | |
| 2 | 1D009_TAP1 | W | 11/3 | | | 2 | X | |
| Total | | | | | | | 0 | |

Environmental Division
Sydney
Work Order Reference
ES2111277
Telephone +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: | Date: 26-3-21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 14:11 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 83 | | |
| No. of samples analysed | : 5 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFOS results for samples #76 and #77 confirmed by re-extraction and re-analysis.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TANK1 | A_TANK3 | A_TAP1 | A_TAP2 | AIRPORT_BORE |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-073 | ES2111278-075 | ES2111278-076 | ES2111278-077 | ES2111278-078 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.13** |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.35** |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **7.68** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.69** |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.02** | **0.01** | **17.2** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | **0.2** |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.30** |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.32** |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.29** |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.68** |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TANK1 | A_TANK3 | A_TAP1 | A_TAP2 | AIRPORT_BORE |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-073 | ES2111278-075 | ES2111278-076 | ES2111278-077 | ES2111278-078 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | **0.02** | **0.01** | **30.8** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.02** | **0.01** | **24.9** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | **0.02** | **0.01** | **28.8** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **111** | **104** | **106** | **106** |
| 13C8-PFOA | ---- | 0.02 | % | **108** | **102** | **108** | **109** | **107** |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 83 | | |
| No. of samples analysed | : 5 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 95.6 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 104 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 122 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.2 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 105 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.2 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.2 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 99.0 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595626) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 96.0 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 01-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 83 |
| Order number | : ---- | No. of samples analysed | : 5 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 5 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 5 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* Date extracted | Due for extraction | Evaluation | *Analysis* Date analysed | Due for analysis | Evaluation |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 5 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 5 | **20.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 5 | **20.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 5 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111278**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 30-Mar-2021 |
| Client Requested Due Date | : 01-Apr-2021 | Scheduled Reporting Date | : **01-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 82 / 5 |
| | | No. of samples NOT collected | 1 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Sample QC26 was not received due to the following reason: SNR
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) SOIL No analysis requested |
|---|---|---|---|
| ES2111278-001 | 11-Mar-2021 00:00 | DEPOT_SS01 | ✓ |
| ES2111278-002 | 11-Mar-2021 00:00 | DEPOT_SS02 | ✓ |
| ES2111278-003 | 11-Mar-2021 00:00 | DEPOT_SS03 | ✓ |
| ES2111278-004 | 11-Mar-2021 00:00 | DEPOT_SS04 | ✓ |
| ES2111278-005 | 11-Mar-2021 00:00 | DEPOT_SS05 | ✓ |
| ES2111278-006 | 11-Mar-2021 00:00 | DEPOT_SS06 | ✓ |
| ES2111278-007 | 11-Mar-2021 00:00 | DEPOT_SS07 | ✓ |
| ES2111278-008 | 11-Mar-2021 00:00 | DEPOT_SS08 | ✓ |
| ES2111278-009 | 11-Mar-2021 00:00 | DEPOT_SS09 | ✓ |
| ES2111278-010 | 11-Mar-2021 00:00 | DEPOT_SS10 | ✓ |
| ES2111278-011 | 11-Mar-2021 00:00 | DEPOT_SS11 | ✓ |
| ES2111278-012 | 11-Mar-2021 00:00 | DEPOT_SS12 | ✓ |
| ES2111278-013 | 11-Mar-2021 00:00 | DEPOT_SS13 | ✓ |
| ES2111278-014 | 11-Mar-2021 00:00 | DEPOT_SS14 | ✓ |
| ES2111278-015 | 11-Mar-2021 00:00 | DEPOT_SS15 | ✓ |
| ES2111278-016 | 11-Mar-2021 00:00 | DEPOT_SS16 | ✓ |
| ES2111278-021 | 09-Mar-2021 00:00 | A_SS64 | ✓ |
| ES2111278-022 | 09-Mar-2021 00:00 | A_SS65 | ✓ |
| ES2111278-023 | 09-Mar-2021 00:00 | A_SS66 | ✓ |
| ES2111278-024 | 09-Mar-2021 00:00 | A_SS67 | ✓ |
| ES2111278-025 | 09-Mar-2021 00:00 | A_SS68 | ✓ |
| ES2111278-026 | 09-Mar-2021 00:00 | A_SS69 | ✓ |
| ES2111278-027 | 09-Mar-2021 00:00 | A_SS70 | ✓ |
| ES2111278-028 | 09-Mar-2021 00:00 | A_SS71 | ✓ |
| ES2111278-029 | 09-Mar-2021 00:00 | A_SS72 | ✓ |
| ES2111278-030 | 09-Mar-2021 00:00 | A_SS73 | ✓ |
| ES2111278-031 | 09-Mar-2021 00:00 | A_SS74 | ✓ |
| ES2111278-032 | 09-Mar-2021 00:00 | A_SS75 | ✓ |
| ES2111278-033 | 09-Mar-2021 00:00 | A_SS76 | ✓ |
| ES2111278-034 | 09-Mar-2021 00:00 | A_SS77 | ✓ |
| ES2111278-035 | 09-Mar-2021 00:00 | A_SS78 | ✓ |
| ES2111278-036 | 09-Mar-2021 00:00 | A_SS79 | ✓ |
| ES2111278-037 | 09-Mar-2021 00:00 | A_SS80 | ✓ |
| ES2111278-038 | 09-Mar-2021 00:00 | A_SS81 | ✓ |
| ES2111278-039 | 09-Mar-2021 00:00 | A_SS82 | ✓ |

| | | | (On Hold) SOIL No analysis requested |
|---|---|---|---|
| ES2111278-040 | 10-Mar-2021 00:00 | A_SS83 | ✓ |
| ES2111278-041 | 10-Mar-2021 00:00 | A_SS84 | ✓ |
| ES2111278-042 | 10-Mar-2021 00:00 | A_SS85 | ✓ |
| ES2111278-043 | 10-Mar-2021 00:00 | A_SS86 | ✓ |
| ES2111278-044 | 10-Mar-2021 00:00 | A_SS87 | ✓ |
| ES2111278-045 | 10-Mar-2021 00:00 | A_SS88 | ✓ |
| ES2111278-046 | 09-Mar-2021 00:00 | A_SS89 | ✓ |
| ES2111278-047 | 09-Mar-2021 00:00 | A_SS90 | ✓ |
| ES2111278-048 | 09-Mar-2021 00:00 | A_SS91 | ✓ |
| ES2111278-049 | 09-Mar-2021 00:00 | A_SS92 | ✓ |
| ES2111278-050 | 09-Mar-2021 00:00 | A_SS93 | ✓ |
| ES2111278-051 | 09-Mar-2021 00:00 | A_SS94 | ✓ |
| ES2111278-052 | 09-Mar-2021 00:00 | A_SS95 | ✓ |
| ES2111278-053 | 09-Mar-2021 00:00 | A_SS96 | ✓ |
| ES2111278-054 | 09-Mar-2021 00:00 | A_SS97 | ✓ |
| ES2111278-055 | 10-Mar-2021 00:00 | A_SS98 | ✓ |
| ES2111278-056 | 10-Mar-2021 00:00 | A_SS99 | ✓ |
| ES2111278-057 | 10-Mar-2021 00:00 | A_SS100 | ✓ |
| ES2111278-058 | 10-Mar-2021 00:00 | A_SS101 | ✓ |
| ES2111278-059 | 10-Mar-2021 00:00 | A_SS102 | ✓ |
| ES2111278-060 | 10-Mar-2021 00:00 | A_SS103 | ✓ |
| ES2111278-061 | 10-Mar-2021 00:00 | A_SS104 | ✓ |
| ES2111278-062 | 10-Mar-2021 00:00 | A_SS105 | ✓ |
| ES2111278-063 | 10-Mar-2021 00:00 | A_SS106 | ✓ |
| ES2111278-064 | 10-Mar-2021 00:00 | A_SS107 | ✓ |
| ES2111278-065 | 10-Mar-2021 00:00 | A_SS108 | ✓ |
| ES2111278-066 | 10-Mar-2021 00:00 | A_SS109 | ✓ |
| ES2111278-067 | 10-Mar-2021 00:00 | A_SS110 | ✓ |
| ES2111278-068 | 10-Mar-2021 00:00 | A_SS111 | ✓ |
| ES2111278-069 | 10-Mar-2021 00:00 | A_SS112 | ✓ |
| ES2111278-070 | 10-Mar-2021 00:00 | A_SS113 | ✓ |
| ES2111278-071 | 10-Mar-2021 00:00 | A_SS114 | ✓ |
| ES2111278-072 | 10-Mar-2021 00:00 | A_SS115 | ✓ |
| ES2111278-079 | 10-Mar-2021 00:00 | QC19 | ✓ |
| ES2111278-080 | 18-Mar-2021 00:00 | QC68 | ✓ |
| ES2111278-081 | 18-Mar-2021 00:00 | QC64 | ✓ |
| ES2111278-082 | 18-Mar-2021 00:00 | QC65 | ✓ |
| ES2111278-083 | 18-Mar-2021 00:00 | QC66 | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111278-017 | 11-Mar-2021 00:00 | DEPOT_TANK3 | ✓ | |
| ES2111278-018 | 11-Mar-2021 00:00 | DEPOT_SW01 | ✓ | |
| ES2111278-019 | 11-Mar-2021 00:00 | DEPOT_TAP1 | ✓ | |
| ES2111278-073 | 09-Mar-2021 00:00 | A_TANK1 | | ✓ |
| ES2111278-074 | 09-Mar-2021 00:00 | A_TANK2 | ✓ | |
| ES2111278-075 | 09-Mar-2021 00:00 | A_TANK3 | | ✓ |
| ES2111278-076 | 09-Mar-2021 00:00 | A_TAP1 | | ✓ |
| ES2111278-077 | 09-Mar-2021 00:00 | A_TAP2 | | ✓ |
| ES2111278-078 | 09-Mar-2021 00:00 | AIRPORT_BORE | | ✓ |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

1/4

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111279
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| | DEPOT_SS01 | S | 11/3 | | | | |
| | DEPOT_SS02 | | | | | | |
| | DEPOT_SS03 | | | | | | |
| | DEPOT_SS04 | | | | | | |
| | DEPOT_SS05 | | | | | | |
| | DEPOT_SS06 | | | | | | |
| | DEPOT_SS07 | | | | | | |
| | DEPOT_SS08 | | | | | | |
| | DEPOT_SS09 | | | | | | |
| | DEPOT_SS10 | | | | | | |
| | DEPOT_SS11 | | | | | | |
| | DEPOT_SS12 | | | | | | |
| | DEPOT_SS13 | | | | | | |
| | DEPOT_SS14 | | | | | | |
| | DEPOT_SS15 | | | | | | |
| | DEPOT_SS16 | | | | | | |
| | DEPOT_TANK3 | W | | | | | |
| | DEPOT_SW01 | | | | | | |
| | DEPOT_TAP1 | | | | | | |
| | QC26 | S | | | | | |
| Total | | | | | | | 0 |

Environmental Division
Sydney
Work Order Reference
ES2111278
Telephone : - 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | A_SS64 | S | 9/3 | | | 1 | | |
| | A_SS65 | S | 9/3 | | | | | |
| | A_SS66 | S | 9/3 | | | | | |
| | A_SS67 | S | 9/3 | | | | | |
| | A_SS68 | S | 9/3 | | | | | |
| | A_SS69 | S | 9/3 | | | | | |
| | A_SS70 | S | 9/3 | | | | | |
| | A_SS71 | S | 9/3 | | | | | |
| | A_SS72 | S | 9/3 | | | | | |
| | A_SS73 | S | 9/3 | | | | | |
| | A_SS74 | S | 9/3 | | | | | |
| | A_SS75 | S | 9/3 | | | | | |
| | A_SS76 | S | 9/3 | | | | | |
| | A_SS77 | S | 9/3 | | | | | |
| | A_SS78 | S | 9/3 | | | | | |
| | A_SS79 | S | 9/3 | | | | | |
| | A_SS80 | S | 9/3 | | | | | |
| | A_SS81 | S | 9/3 | | | | | |
| | A_SS82 | S | 9/3 | | | | | |
| | A_SS83 | S | 10/3 | | | | | |
| Total | | | | | | | 0 | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

**Senversa Pty Ltd**
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 9 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | A-SS84 | S | 10/3 | | | 1 | | | | | | | | | | | |
| | A-SS85 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS86 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS87 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS88 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS89 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS90 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS91 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS92 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS93 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS94 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS95 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS96 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS97 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS98 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS99 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS100 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS101 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS102 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS103 | | 10/3 | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | |

**Sampler:** I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

**Sampler Name:**

**Signature:**

**Date:** 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MBrown | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: EP231X - PFAS Full Suite (28 compounds); HOLD

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD |
| | A_SS104 | S | 10/3 | | | 1 | | |
| | A_SS105 | ↓ | 10/3 | | | ↓ | | |
| | A_SS106 | ↓ | 10/3 | | | ↓ | | |
| | A_SS107 | ↓ | 10/3 | | | ↓ | | |
| | A_SS108 | ↓ | 10/3 | | | ↓ | | |
| | A_SS109 | ↓ | 10/3 | | | ↓ | | |
| | A_SS110 | ↓ | 10/3 | | | ↓ | | |
| | A_SS111 | ↓ | 10/3 | | | ↓ | | |
| | A_SS112 | ↓ | 10/3 | | | ↓ | | |
| | A_SS113 | ↓ | 10/3 | | | ↓ | | |
| | A_SS114 | ↓ | 10/3 | | | ↓ | | |
| | A_SS115 | ↓ | 10/3 | | | ↓ | | |
| | A_TANK1 | W | 9/3 | | | 2 | X | |
| | A_TANK2 | ↓ | 9/3 | | | ↓ | X | X |
| | A_TANK3 | ↓ | 9/3 | | | ↓ | X | |
| | A_TAP1 | ↓ | 9/3 | | | ↓ | X | |
| | A_TAP2 | ↓ | 9/3 | | | ↓ | X | |
| | AIRPORT_BORE | ↓ | 9/3 | | | ↓ | X | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | | | | | | 0 | |

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: M Good | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Biosecurity Direction

Movement Allowed
To specified location

AEKM7GCXN
*AEKM7GCXN*

**To the Importer or any person having possession or custody of the Goods**

**Legal Notes:**
A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The Goods (lines) identified below are subject to Biosecurity control
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

| | | | |
|---|---|---|---|
| **Brokerage Name:** | BELL TOTAL LOGISTICS PTY LTD | **Importer Name:** | ALS EIRONMENTAL |
| **Brokerage Branch:** | BTL SYDNEY | **Importer Branch Name:** | None |
| **Brokers Reference:** | B00127446/1 | | |
| **Container Numbers:** | None | | |
| **Commercial Bills:** | (MAWB:00070008525, HAWB:085251) | | |
| **Arrival Date:** | 12 Mar 2021 | **Flight No:** | |
| **Airline:** | | | |
| **This notice is given by:** | Chris VLANGOS<br>Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015* | **Date:** | 24 Mar 2021 4:46 PM |

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out:
**Movement Allowed: To specified location** in accordance with the *Biosecurity Act 2015*

**Carry Out Biosecurity Activity at:** Australian Laboratory Services Pty Ltd [Q2314]

**Address:** 2 Byth Street
STAFFORD QLD 4053

**Timeframe:** Please ensure that the listed Direction is carried out prior to 07 Apr 2021. Please supply any requested information/documentation to your regional office.

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES GOING FOR TESTING | S 128(1) (a) (i) (i) | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Samples are to be directed to the AA site specified as below:

Australian Laboratory Services Pty Ltd (Q2314)
2 Byth Street
STAFFORD QLD 4053
Permit Number: OK - 0004700510

**Printing Officer Name:** Chris VLANGOS **Date Of Print:** 24 Mar 2021 4:50 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2015 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Entry Finalised
## To Remain Under Biosecurity Control

AEKNPNFPX
*AEKNPNFPX*

**To the importer or any person having possession or custody of the Goods**

**Legal Notes:** A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The goods (lines) identified below are still under Biosecurity control but the entry has been finalised.
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

**Brokerage Name:** BELL TOTAL LOGISTICS PTY LTD
**Importer Name:** ALS ENVIRONMENTAL
**Brokerage Branch:** BTL SYDNEY
**Importer Branch Name:** None

**Brokers Reference:** B00127476/1

**Container Numbers:** None
**Commercial Bills:** (MAWB:00070008551, HAWB:085511)
**Arrival Date:** 19 Mar 2021
**Flight No:**
**Airline:**

**This notice is given by:** Carol Tomes
**Date:** 22 Mar 2021 3:28 PM
Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015*

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out: **Final Directives: Subject to Permit Conditions** in accordance with the *Biosecurity Act 2015*

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES FOR TESTING | | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Goods and their derivatives to be used and disposed of as per import permit 0004700510
Permit Number: OK - 0004700510

**Printing Officer Name:** Carol Tomes
**Date Of Print:** 22 Mar 2021 3:28 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2015 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

When lodging goods in ICS, include an accurate description of the goods.
For composite products, search BICON for all ingredients to determine conditions. Visit agriculture.gov.au/bicon.

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 37 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 21-Apr-2021 15:41 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 83 | | |
| No. of samples analysed | : 79 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFOS results for samples #76 and #77 confirmed by re-extraction and re-analysis.
- EP231X: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231X: Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- Amendment (12/04/2021): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X: PFAS for multiple samples.
- EP231X: Poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS01 | DEPOT_SS02 | DEPOT_SS03 | DEPOT_SS04 | DEPOT_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-001 | ES2111278-002 | ES2111278-003 | ES2111278-004 | ES2111278-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **7.5** | **10.3** | **4.8** | **14.1** | **9.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0038** | **0.0002** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0076** | **0.0006** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0552** | **0.0079** | **0.0018** | **0.0009** | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0045** | **0.0012** | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.155** | **0.0464** | **0.0142** | **0.0113** | **0.0040** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0016** | **0.0004** | **0.0002** | **0.0003** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0028** | **0.0005** | <0.0002 | **0.0003** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0028** | **0.0006** | <0.0002 | **0.0002** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0021** | **0.0004** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0004** | **0.0003** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS01 | DEPOT_SS02 | DEPOT_SS03 | DEPOT_SS04 | DEPOT_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-001 | ES2111278-002 | ES2111278-003 | ES2111278-004 | ES2111278-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.237** | **0.0585** | **0.0164** | **0.0130** | **0.0043** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.210** | **0.0543** | **0.0160** | **0.0122** | **0.0043** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.221** | **0.0556** | **0.0160** | **0.0127** | **0.0043** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **100** | **101** | **83.5** | **76.0** | **78.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **66.0** | **90.5** | **92.5** | **94.0** | **92.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS06 | DEPOT_SS07 | DEPOT_SS08 | DEPOT_SS09 | DEPOT_SS10 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-006 | ES2111278-007 | ES2111278-008 | ES2111278-009 | ES2111278-010 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **14.5** | **10.7** | **16.2** | **16.6** | **18.0** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0003** | **0.0009** | <0.0002 | **0.0004** | **0.0004** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0088** | **0.0084** | **0.0020** | **0.0014** | **0.0123** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | **0.001** | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS06 | DEPOT_SS07 | DEPOT_SS08 | DEPOT_SS09 | DEPOT_SS10 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-006 | ES2111278-007 | ES2111278-008 | ES2111278-009 | ES2111278-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0093** | **0.0093** | **0.0022** | **0.0028** | **0.0136** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0091** | **0.0093** | **0.0020** | **0.0018** | **0.0127** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0093** | **0.0093** | **0.0020** | **0.0028** | **0.0136** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **80.0** | **91.0** | **75.0** | **85.0** | **80.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **90.0** | **94.5** | **81.5** | **91.0** | **91.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS11 | DEPOT_SS12 | DEPOT_SS13 | DEPOT_SS14 | DEPOT_SS15 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-011 | ES2111278-012 | ES2111278-013 | ES2111278-014 | ES2111278-015 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **11.3** | **8.2** | **15.3** | **43.8** | **7.2** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | **0.0003** | **0.0004** | **0.0004** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0046** | **0.0026** | **0.0044** | **0.0033** | **0.0028** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0012** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0010** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | **0.0003** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS11 | DEPOT_SS12 | DEPOT_SS13 | DEPOT_SS14 | DEPOT_SS15 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-011 | ES2111278-012 | ES2111278-013 | ES2111278-014 | ES2111278-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0046** | **0.0029** | **0.0048** | **0.0068** | **0.0031** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0046** | **0.0029** | **0.0048** | **0.0037** | **0.0028** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0046** | **0.0029** | **0.0048** | **0.0061** | **0.0028** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **90.0** | **86.0** | **96.0** | **95.0** | **95.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **67.0** | **60.0** | **60.5** | **60.5** | **60.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS16 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-016 | ES2111278-021 | ES2111278-022 | ES2111278-023 | ES2111278-024 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **14.7** | **19.3** | **22.9** | **20.7** | **8.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | **0.0005** | **0.0034** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0027** | **0.0085** | **0.0092** | **0.0269** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0009** | **0.0005** | **0.0067** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | **0.001** | **0.001** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | **0.0009** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0005** | **0.0016** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0005** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | **0.0015** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | **0.0016** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | **0.0004** | <0.0002 | <0.0002 | **0.0011** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | DEPOT_SS16 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-016 | ES2111278-021 | ES2111278-022 | ES2111278-023 | ES2111278-024 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0013** | **0.0031** | **0.0097** | **0.0125** | **0.0466** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0027** | **0.0088** | **0.0097** | **0.0303** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0010** | **0.0027** | **0.0088** | **0.0118** | **0.0360** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **75.5** | **78.0** | **72.0** | **81.0** | **85.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **61.0** | **63.5** | **62.0** | **60.5** | **64.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-025 | ES2111278-026 | ES2111278-027 | ES2111278-028 | ES2111278-029 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **11.7** | **22.0** | **27.6** | **28.3** | **25.0** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | **0.0003** | <0.0002 | <0.0002 | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0012** | **0.0099** | **0.0248** | **0.0192** | **0.0138** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0005** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | **0.0004** | **0.0002** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | **0.0004** | **0.0013** | **0.0006** | **0.0007** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | **0.0005** | **0.0003** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | **0.0003** | **0.0011** | **0.0008** | **0.0004** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0005** | **0.0005** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | **0.0002** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-025 | ES2111278-026 | ES2111278-027 | ES2111278-028 | ES2111278-029 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0012** | **0.0109** | **0.0301** | **0.0222** | **0.0157** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0012** | **0.0102** | **0.0248** | **0.0192** | **0.0141** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0012** | **0.0109** | **0.0284** | **0.0215** | **0.0157** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **83.0** | **87.0** | **79.5** | **75.5** | **87.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **91.5** | **90.0** | **89.0** | **87.5** | **87.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-030 | ES2111278-031 | ES2111278-032 | ES2111278-033 | ES2111278-034 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **24.6** | **28.2** | **21.0** | **18.8** | **28.8** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0008** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0069** | **0.0004** | **0.0010** | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0010** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0536** | **0.0168** | **0.0440** | **0.0032** | **0.0132** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0071** | <0.0002 | **0.0029** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0003** | **0.0004** | **0.0003** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0004** | **0.0005** | **0.0009** | **0.0002** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | <0.0002 | **0.0008** | **0.0003** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0006** | **0.0004** | **0.0017** | **0.0006** | **0.0004** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0006** | <0.0002 | **0.0010** | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0007** | <0.0002 | **0.0004** | **0.0006** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0011** | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0010** | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-030 | ES2111278-031 | ES2111278-032 | ES2111278-033 | ES2111278-034 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0758** | **0.0185** | **0.0533** | **0.0051** | **0.0136** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0605** | **0.0172** | **0.0450** | **0.0032** | **0.0132** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0628** | **0.0185** | **0.0487** | **0.0043** | **0.0136** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **78.5** | **90.5** | **88.0** | **87.5** | **88.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **91.5** | **89.0** | **92.0** | **92.0** | **91.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-035 | ES2111278-036 | ES2111278-037 | ES2111278-038 | ES2111278-039 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **32.0** | **32.0** | **30.3** | **32.2** | **8.1** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0005** | **0.0004** | **0.0003** | <0.0002 | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0158** | **0.0157** | **0.0220** | **0.0151** | **0.0042** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | **0.0002** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0002** | **0.0006** | **0.0006** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0006** | **0.0013** | **0.0016** | **0.0006** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | **0.0005** | **0.0006** | **0.0004** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0006** | **0.0007** | **0.0012** | **0.0008** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | **0.0003** | **0.0004** | **0.0003** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-035 | ES2111278-036 | ES2111278-037 | ES2111278-038 | ES2111278-039 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0183** | **0.0195** | **0.0269** | **0.0172** | **0.0047** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0163** | **0.0161** | **0.0223** | **0.0151** | **0.0045** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0180** | **0.0192** | **0.0263** | **0.0169** | **0.0045** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **85.0** | **83.0** | **82.0** | **86.5** | **89.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **91.0** | **94.0** | **93.0** | **89.0** | **96.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-040 | ES2111278-041 | ES2111278-042 | ES2111278-043 | ES2111278-044 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **24.3** | **22.6** | **23.0** | **14.6** | **24.1** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0010** | **0.0007** | **0.0006** | **0.0006** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0084** | **0.0119** | **0.0231** | **0.0201** | **0.0029** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | **0.0004** | **0.0002** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | **0.0004** | **0.0003** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | **0.0006** | **0.0006** | **0.0004** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0002** | **0.0005** | **0.0004** | **0.0005** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-040 | ES2111278-041 | ES2111278-042 | ES2111278-043 | ES2111278-044 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0103** | **0.0145** | **0.0252** | **0.0216** | **0.0029** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0094** | **0.0126** | **0.0237** | **0.0207** | **0.0029** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0103** | **0.0141** | **0.0250** | **0.0216** | **0.0029** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **81.5** | **80.5** | **82.5** | **87.0** | **88.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **97.0** | **91.0** | **92.0** | **92.5** | **92.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-045 | ES2111278-046 | ES2111278-047 | ES2111278-048 | ES2111278-049 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 27.2 | 23.4 | 19.9 | 21.7 | 29.2 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0002 | 0.0009 | 0.0003 | 0.0006 | 0.0050 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0006 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0037 | 0.0427 | 0.0169 | 0.0107 | 0.0750 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.0062 | 0.0006 | 0.0004 | 0.0142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.001 | 0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.0006 | 0.0004 | 0.0002 | 0.0004 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0002 | 0.0006 | 0.0004 | 0.0006 | 0.0005 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.0011 | 0.0004 | 0.0003 | 0.0006 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0025 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0053 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0003 | <0.0002 | <0.0002 | 0.0045 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0007 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0018 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-045 | ES2111278-046 | ES2111278-047 | ES2111278-048 | ES2111278-049 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0018** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0041** | **0.0557** | **0.0200** | **0.0128** | **0.114** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0039** | **0.0436** | **0.0172** | **0.0113** | **0.0800** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0041** | **0.0472** | **0.0194** | **0.0124** | **0.0840** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **87.5** | **94.5** | **100** | **90.0** | **83.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.5** | **101** | **101** | **96.0** | **99.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-050 | ES2111278-051 | ES2111278-052 | ES2111278-053 | ES2111278-054 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **20.9** | **17.6** | **12.1** | **17.8** | **36.9** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0003** | **0.0005** | **0.0003** | **0.0005** | **0.0037** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0006** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0040** | **0.0031** | **0.0276** | **0.0026** | **0.183** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | **0.0162** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | **0.001** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | **0.0004** | **0.0003** | <0.0002 | **0.0016** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0022** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0035** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | **0.0064** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0094** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0121** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0102** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0086** |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0017** |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0017** |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0008** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-050 | ES2111278-051 | ES2111278-052 | ES2111278-053 | ES2111278-054 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0026** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0012** |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0043** | **0.0040** | **0.0288** | **0.0031** | **0.267** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0043** | **0.0036** | **0.0279** | **0.0031** | **0.187** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0043** | **0.0040** | **0.0285** | **0.0031** | **0.204** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **92.5** | **88.0** | **89.5** | **85.5** | **85.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **97.5** | **95.5** | **102** | **98.0** | **95.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-055 | ES2111278-056 | ES2111278-057 | ES2111278-058 | ES2111278-059 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **29.7** | **28.7** | **19.2** | **15.8** | **18.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | **0.0011** | **0.0042** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0013** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0056** | **0.0021** | **0.0004** | **0.0126** | **0.717** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | **0.0047** | <0.0002 | **0.0002** | **0.0095** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | **0.0009** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0011** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0024** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0026** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0060** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0031** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0017** |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0002** |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0016** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-055 | ES2111278-056 | ES2111278-057 | ES2111278-058 | ES2111278-059 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0304** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0058** | **0.0068** | **0.0004** | **0.0141** | **0.782** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0058** | **0.0021** | **0.0004** | **0.0137** | **0.721** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0058** | **0.0021** | **0.0004** | **0.0139** | **0.756** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **84.5** | **83.5** | **89.5** | **82.0** | **88.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **99.0** | **96.5** | **101** | **97.5** | **100** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-060 | ES2111278-061 | ES2111278-062 | ES2111278-063 | ES2111278-064 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 17.3 | 12.8 | 18.8 | 20.3 | 19.6 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.0005 | <0.0002 | <0.0002 | 0.0005 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0003 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0019 | 0.0372 | 0.0011 | <0.0002 | 0.0012 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0016 | 0.0024 | 0.0007 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.946 | 0.388 | 0.0416 | 0.0116 | 0.0024 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0041 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.006 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0010 | 0.0091 | <0.0002 | <0.0002 | 0.0005 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0005 | 0.0035 | <0.0002 | <0.0002 | 0.0009 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0005 | 0.0031 | 0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0030 | 0.0235 | 0.0008 | 0.0014 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0166 | 0.0078 | 0.0009 | 0.0008 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0504 | 0.0012 | 0.0012 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0114 | 0.0006 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0097 | 0.0010 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0017 | 0.0003 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | 0.0017 | 0.0008 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0010 | 0.0011 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-060 | ES2111278-061 | ES2111278-062 | ES2111278-063 | ES2111278-064 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | **0.0016** | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0444** | **0.0512** | **0.0209** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | **0.0017** | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **1.10** | **0.540** | **0.0682** | **0.0138** | **0.0058** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.948** | **0.425** | **0.0427** | **0.0116** | **0.0036** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.997** | **0.524** | **0.0646** | **0.0130** | **0.0055** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **81.0** | **92.5** | **85.5** | **84.5** | **89.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **99.0** | **100** | **98.5** | **98.5** | **104** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-065 | ES2111278-066 | ES2111278-067 | ES2111278-068 | ES2111278-069 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 18.6 | 17.6 | 11.4 | 16.3 | 21.7 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0079 | 0.0016 | 0.0038 | 0.0030 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0005 | 0.0037 | 0.0006 | 0.0156 | 0.0027 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0082 | 0.0429 | 0.0064 | 0.872 | 0.0439 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0010 | 0.0108 | 0.0014 | 0.270 | 0.0092 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.354 | 9.09 | 2.14 | 1.84 | 0.572 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0108 | 0.0112 | 0.0245 | 0.0018 | 0.0038 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.008 | 0.008 | 0.003 | 0.004 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0010 | 0.0149 | 0.0145 | 0.0054 | 0.0063 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0018 | 0.0416 | 0.0191 | 0.0170 | 0.0132 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0022 | 0.0014 | 0.0046 | 0.0089 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0038 | 0.0052 | 0.0038 | 0.0938 | 0.0302 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0022 | 0.0010 | 0.0043 | 0.0016 | 0.0065 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0080 | 0.0006 | 0.0073 | <0.0002 | 0.0040 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0068 | <0.0005 | 0.0026 | <0.0002 | 0.0016 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0064 | <0.0005 | 0.0031 | <0.0002 | 0.0006 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0010 | <0.0005 | 0.0006 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | 0.0008 | <0.0012 | 0.0007 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0025 | 0.0342 | 0.0062 | 0.0011 | 0.0006 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0012 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-065 | ES2111278-066 | ES2111278-067 | ES2111278-068 | ES2111278-069 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0012 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0012 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0012 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0005 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | **0.0008** | **0.0003** | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0006** | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0414** | **0.0011** | **0.0346** | **0.0008** | **0.0030** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | **0.0018** | <0.0005 | **0.0009** | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.454** | **9.28** | **2.28** | **3.13** | **0.714** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.362** | **9.13** | **2.15** | **2.71** | **0.616** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.412** | **9.21** | **2.23** | **2.84** | **0.684** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **94.0** | **80.0** | **80.5** | **69.0** | **89.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | **100** | **97.5** | **98.5** | **99.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS113 | A_SS114 | A_SS115 | QC19 | QC65 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 18-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-070 | ES2111278-071 | ES2111278-072 | ES2111278-079 | ES2111278-082 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **20.3** | **17.0** | **17.6** | **17.3** | **41.1** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0024** | **0.0010** | **0.0017** | **0.0016** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0007** | <0.0002 | **0.0004** | **0.0014** | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0320** | **0.0467** | **0.230** | **0.726** | <0.0002 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | **0.0015** | **0.0031** | **0.0038** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0005** | **0.0003** | **0.0003** | **0.0009** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0005** | **0.0005** | **0.0011** | **0.0004** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0004** | **0.0004** | <0.0002 | **0.0004** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0019** | **0.0009** | **0.0013** | **0.0022** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0015** | **0.0004** | <0.0002 | **0.0140** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0012** | **0.0005** | <0.0002 | **0.0474** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0004** | **0.0002** | <0.0002 | **0.0107** | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0003** | **0.0002** | <0.0002 | **0.0089** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0015** | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0014** | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | **0.0008** | **0.0002** | **0.0009** | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS113 | A_SS114 | A_SS115 | QC19 | QC65 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 18-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-070 | ES2111278-071 | ES2111278-072 | ES2111278-079 | ES2111278-082 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0016** | **0.0063** | <0.0005 | **0.0432** | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0015** | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0434** | **0.0597** | **0.238** | **0.866** | <0.0002 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0344** | **0.0477** | **0.232** | **0.728** | <0.0002 |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0393** | **0.0561** | **0.234** | **0.775** | <0.0002 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **87.0** | **88.0** | **82.0** | **87.0** | **84.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **101** | **98.0** | **94.5** | **97.5** | **99.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC66 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111278-083 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **Moisture Content** | ---- | 0.1 | % | **34.1** | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.001 | mg/kg | <0.001 | ---- | ---- | ---- | ---- |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC66 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111278-083 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **90.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **98.5** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | DEPOT_TANK3 | DEPOT_SW01 | DEPOT_TAP1 | A_TANK1 | A_TANK3 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-017 | ES2111278-018 | ES2111278-019 | ES2111278-073 | ES2111278-075 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | DEPOT_TANK3 | DEPOT_SW01 | DEPOT_TAP1 | A_TANK1 | A_TANK3 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111278-017 | ES2111278-018 | ES2111278-019 | ES2111278-073 | ES2111278-075 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **89.0** | **90.0** | **101** | **104** | **111** |
| 13C8-PFOA | ---- | 0.02 | % | **82.2** | **75.3** | **71.2** | **108** | **102** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP1 | A_TAP2 | AIRPORT_BORE | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111278-076 | ES2111278-077 | ES2111278-078 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | **1.13** | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | **1.35** | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | **7.68** | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | **0.69** | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.01** | **17.2** | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | **0.2** | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | **0.30** | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | **1.32** | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | **0.29** | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.68** | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP1 | A_TAP2 | AIRPORT_BORE | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111278-076 | ES2111278-077 | ES2111278-078 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.01** | **30.8** | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.01** | **24.9** | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.01** | **28.8** | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **106** | **106** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **108** | **109** | **107** | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 21 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 21-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 83 | | |
| No. of samples analysed | : 79 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3619576)** | | | | | | | | | |
| ES2111278-003 | DEPOT_SS03 | EA055: Moisture Content | ---- | 0.1 | % | 4.8 | 4.8 | 2.23 | 0% - 20% |
| ES2111278-014 | DEPOT_SS14 | EA055: Moisture Content | ---- | 0.1 | % | 43.8 | 42.1 | 3.87 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3619577)** | | | | | | | | | |
| ES2111278-027 | A_SS70 | EA055: Moisture Content | ---- | 0.1 | % | 27.6 | 27.6 | 0.00 | 0% - 20% |
| ES2111278-038 | A_SS81 | EA055: Moisture Content | ---- | 0.1 | % | 32.2 | 32.2 | 0.00 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3619578)** | | | | | | | | | |
| ES2111278-047 | A_SS90 | EA055: Moisture Content | ---- | 0.1 | % | 19.9 | 19.8 | 0.00 | 0% - 20% |
| ES2111278-059 | A_SS102 | EA055: Moisture Content | ---- | 0.1 | % | 18.3 | 17.3 | 5.59 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3619579)** | | | | | | | | | |
| ES2111278-067 | A_SS110 | EA055: Moisture Content | ---- | 0.1 | % | 11.4 | 11.7 | 2.76 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3625236)** | | | | | | | | | |
| ES2111278-079 | QC19 | EA055: Moisture Content | ---- | 0.1 | % | 17.3 | 18.1 | 4.17 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625993)** | | | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0038 | # 0.0010 | 115 | 0% - 50% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0076 | # 0.0022 | 109 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0552 | # 0.0270 | 68.6 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0045 | 0.0047 | 5.63 | 0% - 20% |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.155 | 0.176 | 12.6 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0016 | 0.0018 | 9.38 | No Limit |
| ES2111278-011 | DEPOT_SS11 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0046 | 0.0052 | 12.3 | 0% - 20% |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625993) - continued** | | | | | | | | | |
| ES2111278-011 | DEPOT_SS11 | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625994)** | | | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0012 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111278-035 | A_SS78 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0005 | 0.0004 | 21.9 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0158 | 0.0167 | 5.24 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3626189)** | | | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0037 | 0.0037 | 0.00 | 0% - 50% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111278-055 | A_SS98 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0002 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0056 | 0.0056 | 0.00 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3626194)** | | | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0007 | 0.0007 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0005 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0082 | 0.0076 | 7.84 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0010 | 0.0009 | 15.0 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.354 | 0.324 | 8.80 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0108 | 0.0104 | 3.76 | 0% - 20% |
| ES2111278-083 | QC66 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625993)** | | | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0004 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0028 | 0.0023 | 20.4 | 0% - 50% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0007 | 0.0010 | 36.5 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0028 | 0.0035 | 24.0 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | <0.0002 | 45.8 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0021 | # 0.0012 | 51.9 | 0% - 50% |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0004 | 0.0006 | 48.6 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111278-011 | DEPOT_SS11 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625994)** | | | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111278-035 | A_SS78 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0006 | 0.0007 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0003 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625994) - continued** | | | | | | | | | |
| ES2111278-035 | A_SS78 | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3626189)** | | | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111278-055 | A_SS98 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3626194)** | | | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0018 | 0.0017 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0038 | 0.0036 | 5.97 | 0% - 50% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0022 | 0.0023 | 0.00 | 0% - 50% |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0080 | 0.0076 | 5.21 | 0% - 20% |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0068 | 0.0068 | 0.00 | 0% - 20% |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0064 | 0.0057 | 11.5 | 0% - 20% |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0010 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | 0.0008 | 0.0008 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3626194) - continued** | | | | | | | | | |
| ES2111278-083 | QC66 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625993)** | | | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-011 | DEPOT_SS11 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625994)** | | | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625994) - continued** | | | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-035 | A_SS78 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3626189)** | | | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-055 | A_SS98 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3626189) - continued** | | | | | | | | | |
| ES2111278-055 | A_SS98 | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3626194)** | | | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0025 | 0.0025 | 0.00 | 0% - 50% |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-083 | QC66 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625993)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625993) - continued** | | | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-011 | DEPOT_SS11 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625994)** | | | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-035 | A_SS78 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3626189)** | | | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3626189) - continued** | | | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111278-055 | A_SS98 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3626194)** | | | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | 0.0414 | 0.0376 | 9.48 | 0% - 20% |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | 0.0018 | 0.0018 | 0.00 | No Limit |
| ES2111278-083 | QC66 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625993)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.0 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.2 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 82.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.6 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625994)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 81.6 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 81.2 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.8 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 84.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3626189)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 75.6 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 84.8 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 81.2 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.2 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 87.6 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.4 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3626194)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.2 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.8 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.8 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.6 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.8 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625993)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 88.5 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.4 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.0 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 72.0 | 129 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625993) - continued** | | | | | | | | |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.4 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.4 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 95.5 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625994)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 83.8 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.2 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.6 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.4 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 87.2 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 89.6 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 89.3 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626189)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 90.2 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.8 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.8 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.6 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.8 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.8 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 91.5 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626194)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 97.1 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.8 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 97.2 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 64.0 | 136 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626194) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 94.9 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625993)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.4 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 101 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 97.6 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 119 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625994)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 88.5 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 80.4 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 92.1 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.4 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.4 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3626189)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.4 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 103 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 95.4 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 96.0 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 94.6 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.2 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 89.2 | 61.0 | 139 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3626194)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.8 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 106 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 107 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 103 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.6 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625993)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 89.2 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 94.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 109 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 109 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625994)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 93.2 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 88.8 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 94.4 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 110 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3626189)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 82.0 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 82.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 88.4 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 87.6 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3626194)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 83.2 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 88.8 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 87.6 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 102 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 68.0 | 131 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595626) - continued** | | | | | | | | |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 95.6 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3624353)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 85.4 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.8 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 78.2 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.8 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 104 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 122 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3624353)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 92.8 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 108 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 85.4 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 87.6 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 90.6 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.8 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 109 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595626)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.2 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 105 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.2 | 62.6 | 147 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595626) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.2 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 99.0 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3624353)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 90.2 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 83.0 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.9 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 92.7 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 88.6 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595626)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 96.0 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3624353)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.6 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 93.2 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 118 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625993)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625993) - continued** | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | # Not Determined | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | # Not Determined | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | # Not Determined | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | # Not Determined | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | # 19.2 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625994)** | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 78.8 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 90.4 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 77.6 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 88.8 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 87.6 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 108 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3626189)** | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 79.6 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 86.4 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 88.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 91.6 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 95.6 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 105 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3626194)** | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 78.0 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 82.8 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | # Not Determined | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 90.8 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | # Not Determined | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625993)** | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 85.4 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 84.4 | 69.0 | 132 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625993) - continued** | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | # Not Determined | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | # 67.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | # Not Determined | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 90.4 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | # 56.0 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 98.0 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 114 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 102 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 103 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625994)** | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 85.8 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 94.8 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 94.8 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 89.6 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 93.6 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 95.2 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 94.0 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 97.2 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 91.6 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 84.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 90.1 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626189)** | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 96.5 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 96.0 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 101 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 95.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 97.6 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 95.2 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 112 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 104 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 99.2 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 88.8 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 94.9 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626194)** | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 99.1 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 99.2 | 69.0 | 132 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3626194) - continued** | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 109 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 102 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 98.4 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 98.4 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | # Not Determined | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | # Not Determined | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | # Not Determined | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 92.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 104 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625993)** | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 98.4 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 95.2 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 108 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 112 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 120 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 118 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 125 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625994)** | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 92.0 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 93.8 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 80.0 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 99.4 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 104 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 98.8 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 93.6 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3626189)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3626189) - continued** | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 98.4 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 110 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 101 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 97.9 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 101 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 95.2 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3626194)** | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 86.4 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 106 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 105 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 95.5 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 103 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 103 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 100 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625993)** | | | | | | | |
| ES2111278-001 | DEPOT_SS01 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 99.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 95.2 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 93.2 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 78.0 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625994)** | | | | | | | |
| ES2111278-025 | A_SS68 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 95.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 82.8 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 102 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 104 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3626189)** | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 93.6 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 92.0 | 64.0 | 140 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3626189) - continued** | | | | | | | |
| ES2111278-045 | A_SS88 | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 87.6 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 73.6 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3626194)** | | | | | | | |
| ES2111278-065 | A_SS108 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 117 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 95.6 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | # Not Determined | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 88.4 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111278** | Page | : 1 of 19 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 21-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 83 |
| Order number | : ---- | No. of samples analysed | : 79 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Duplicate (DUP) RPDs** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 115 % | 0% - 50% | **RPD exceeds LOR based limits** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 109 % | 0% - 20% | **RPD exceeds LOR based limits** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 68.6 % | 0% - 20% | **RPD exceeds LOR based limits** |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 51.9 % | 0% - 50% | **RPD exceeds LOR based limits** |
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--065 | A_SS108 | **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--065 | A_SS108 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 19.2 % | 59.0-134% | **Recovery less than lower data quality objective** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111278--065 | A_SS108 | **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 67.2 % | 71.0-131% | **Recovery less than lower data quality objective** |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--001 | DEPOT_SS01 | **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 56.0 % | 69.0-133% | **Recovery less than lower data quality objective** |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--065 | A_SS108 | **Perfluorodecanoic acid (PFDA)** | 335-76-2 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries - Continued** | | | | | | | |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--065 | A_SS108 | **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2111278--065 | A_SS108 | **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2111278--065 | A_SS108 | **8:2 Fluorotelomer sulfonic acid (8:2 FTS)** | 39108-34-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## *Outliers : Analysis Holding Time Compliance*

Matrix: **SOIL**

| *Method* | | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| **Container** / Client Sample ID(s) | | *Date extracted* | *Due for extraction* | ***Days overdue*** | *Date analysed* | *Due for analysis* | ***Days overdue*** |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| A_SS64, | A_SS65, | ---- | ---- | ---- | 14-Apr-2021 | 23-Mar-2021 | **22** |
| A_SS66, | A_SS67, | | | | | | |
| A_SS68, | A_SS69, | | | | | | |
| A_SS70, | A_SS71, | | | | | | |
| A_SS72, | A_SS73, | | | | | | |
| A_SS74, | A_SS75, | | | | | | |
| A_SS76, | A_SS77, | | | | | | |
| A_SS78, | A_SS79, | | | | | | |
| A_SS80, | A_SS81, | | | | | | |
| A_SS82, | A_SS89, | | | | | | |
| A_SS90, | A_SS91, | | | | | | |
| A_SS92, | A_SS93, | | | | | | |
| A_SS94, | A_SS95, | | | | | | |
| A_SS96, | A_SS97 | | | | | | |

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C) - Analysis Holding Time Compliance** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| A_SS83, | A_SS84, | ---- | ---- | ---- | 14-Apr-2021 | 24-Mar-2021 | **21** |
| A_SS85, | A_SS86, | | | | | | |
| A_SS87, | A_SS88, | | | | | | |
| A_SS98, | A_SS99, | | | | | | |
| A_SS100, | A_SS101, | | | | | | |
| A_SS102, | A_SS103, | | | | | | |
| A_SS104, | A_SS105, | | | | | | |
| A_SS106, | A_SS107, | | | | | | |
| A_SS108, | A_SS109, | | | | | | |
| A_SS110, | A_SS111, | | | | | | |
| A_SS112, | A_SS113, | | | | | | |
| A_SS114, | A_SS115 | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| QC19 | | ---- | ---- | ---- | 16-Apr-2021 | 24-Mar-2021 | **23** |
| **HDPE Soil Jar** | | | | | | | |
| DEPOT_SS01, | DEPOT_SS02, | ---- | ---- | ---- | 14-Apr-2021 | 25-Mar-2021 | **20** |
| DEPOT_SS03, | DEPOT_SS04, | | | | | | |
| DEPOT_SS05, | DEPOT_SS06, | | | | | | |
| DEPOT_SS07, | DEPOT_SS08, | | | | | | |
| DEPOT_SS09, | DEPOT_SS10, | | | | | | |
| DEPOT_SS11, | DEPOT_SS12, | | | | | | |
| DEPOT_SS13, | DEPOT_SS14, | | | | | | |
| DEPOT_SS15, | DEPOT_SS16 | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| QC65, | QC66 | ---- | ---- | ---- | 16-Apr-2021 | 01-Apr-2021 | **15** |

## *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 8 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 8 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS64, | A_SS65, | **09-Mar-2021** | **----** | ---- | ---- | **14-Apr-2021** | 23-Mar-2021 | × |
| A_SS66, | A_SS67, | | | | | | | |
| A_SS68, | A_SS69, | | | | | | | |
| A_SS70, | A_SS71, | | | | | | | |
| A_SS72, | A_SS73, | | | | | | | |
| A_SS74, | A_SS75, | | | | | | | |
| A_SS76, | A_SS77, | | | | | | | |
| A_SS78, | A_SS79, | | | | | | | |
| A_SS80, | A_SS81, | | | | | | | |
| A_SS82, | A_SS89, | | | | | | | |
| A_SS90, | A_SS91, | | | | | | | |
| A_SS92, | A_SS93, | | | | | | | |
| A_SS94, | A_SS95, | | | | | | | |
| A_SS96, | A_SS97 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS83, | A_SS84, | **10-Mar-2021** | **----** | ---- | ---- | **14-Apr-2021** | 24-Mar-2021 | × |
| A_SS85, | A_SS86, | | | | | | | |
| A_SS87, | A_SS88, | | | | | | | |
| A_SS98, | A_SS99, | | | | | | | |
| A_SS100, | A_SS101, | | | | | | | |
| A_SS102, | A_SS103, | | | | | | | |
| A_SS104, | A_SS105, | | | | | | | |
| A_SS106, | A_SS107, | | | | | | | |
| A_SS108, | A_SS109, | | | | | | | |
| A_SS110, | A_SS111, | | | | | | | |
| A_SS112, | A_SS113, | | | | | | | |
| A_SS114, | A_SS115 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| QC19 | | **10-Mar-2021** | **----** | ---- | ---- | **16-Apr-2021** | 24-Mar-2021 | × |
| **HDPE Soil Jar (EA055)** | | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C) - Continued** | | | | | | | | |
| DEPOT_SS01, | DEPOT_SS02, | **11-Mar-2021** | **----** | ---- | ---- | **14-Apr-2021** | 25-Mar-2021 | ✘ |
| DEPOT_SS03, | DEPOT_SS04, | | | | | | | |
| DEPOT_SS05, | DEPOT_SS06, | | | | | | | |
| DEPOT_SS07, | DEPOT_SS08, | | | | | | | |
| DEPOT_SS09, | DEPOT_SS10, | | | | | | | |
| DEPOT_SS11, | DEPOT_SS12, | | | | | | | |
| DEPOT_SS13, | DEPOT_SS14, | | | | | | | |
| DEPOT_SS15, | DEPOT_SS16 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| QC65, | QC66 | **18-Mar-2021** | **----** | ---- | ---- | **16-Apr-2021** | 01-Apr-2021 | ✘ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS83, A_SS84, A_SS85, A_SS86, A_SS87 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC19 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>DEPOT_SS01, DEPOT_SS02, DEPOT_SS03, DEPOT_SS04, DEPOT_SS05, DEPOT_SS06, DEPOT_SS07, DEPOT_SS08, DEPOT_SS09, DEPOT_SS10, DEPOT_SS11, DEPOT_SS12, DEPOT_SS13, DEPOT_SS14, DEPOT_SS15, DEPOT_SS16 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids - Continued** | | | | | | | |
| QC65, QC66 | **18-Mar-2021** | **16-Apr-2021** | 14-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS83, A_SS84, A_SS85, A_SS86, A_SS87 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC19 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>DEPOT_SS01, DEPOT_SS02, DEPOT_SS03, DEPOT_SS04, DEPOT_SS05, DEPOT_SS06, DEPOT_SS07, DEPOT_SS08, DEPOT_SS09, DEPOT_SS10, DEPOT_SS11, DEPOT_SS12, DEPOT_SS13, DEPOT_SS14, DEPOT_SS15, DEPOT_SS16 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids - Continued** | | | | | | | |
| QC65, QC66 | **18-Mar-2021** | **16-Apr-2021** | 14-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS83, A_SS84, A_SS85, A_SS86, A_SS87 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC19 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>DEPOT_SS01, DEPOT_SS02, DEPOT_SS03, DEPOT_SS04, DEPOT_SS05, DEPOT_SS06, DEPOT_SS07, DEPOT_SS08, DEPOT_SS09, DEPOT_SS10, DEPOT_SS11, DEPOT_SS12, DEPOT_SS13, DEPOT_SS14, DEPOT_SS15, DEPOT_SS16 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | |
| QC65, QC66 | **18-Mar-2021** | **16-Apr-2021** | 14-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS83, A_SS84, A_SS85, A_SS86, A_SS87 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC19 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>DEPOT_SS01, DEPOT_SS02, DEPOT_SS03, DEPOT_SS04, DEPOT_SS05, DEPOT_SS06, DEPOT_SS07, DEPOT_SS08, DEPOT_SS09, DEPOT_SS10, DEPOT_SS11, DEPOT_SS12, DEPOT_SS13, DEPOT_SS14, DEPOT_SS15, DEPOT_SS16 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued** | | | | | | | |
| QC65, QC66 | 18-Mar-2021 | 16-Apr-2021 | 14-Sep-2021 | ✓ | 19-Apr-2021 | 26-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97 | **09-Mar-2021** | **16-Apr-2021** | 05-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS83, A_SS84, A_SS85, A_SS86, A_SS87 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC19 | **10-Mar-2021** | **16-Apr-2021** | 06-Sep-2021 | ✓ | **19-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>DEPOT_SS01, DEPOT_SS02, DEPOT_SS03, DEPOT_SS04, DEPOT_SS05, DEPOT_SS06, DEPOT_SS07, DEPOT_SS08, DEPOT_SS09, DEPOT_SS10, DEPOT_SS11, DEPOT_SS12, DEPOT_SS13, DEPOT_SS14, DEPOT_SS15, DEPOT_SS16 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **16-Apr-2021** | 26-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums - Continued** | | | | | | | | |
| QC65, | QC66 | 18-Mar-2021 | 16-Apr-2021 | 14-Sep-2021 | ✓ | 19-Apr-2021 | 26-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TANK1, A_TAP1, AIRPORT_BORE | A_TANK3, A_TAP2, | 09-Mar-2021 | 31-Mar-2021 | 05-Sep-2021 | ✓ | 31-Mar-2021 | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| DEPOT_TANK3, DEPOT_TAP1 | DEPOT_SW01, | 11-Mar-2021 | 16-Apr-2021 | 07-Sep-2021 | ✓ | 19-Apr-2021 | 07-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TANK1, A_TAP1, AIRPORT_BORE | A_TANK3, A_TAP2, | 09-Mar-2021 | 31-Mar-2021 | 05-Sep-2021 | ✓ | 31-Mar-2021 | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| DEPOT_TANK3, DEPOT_TAP1 | DEPOT_SW01, | 11-Mar-2021 | 16-Apr-2021 | 07-Sep-2021 | ✓ | 19-Apr-2021 | 07-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TANK1, A_TAP1, AIRPORT_BORE | A_TANK3, A_TAP2, | 09-Mar-2021 | 31-Mar-2021 | 05-Sep-2021 | ✓ | 31-Mar-2021 | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| DEPOT_TANK3, DEPOT_TAP1 | DEPOT_SW01, | 11-Mar-2021 | 16-Apr-2021 | 07-Sep-2021 | ✓ | 19-Apr-2021 | 07-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TANK1, A_TAP1, AIRPORT_BORE | A_TANK3, A_TAP2, | 09-Mar-2021 | 31-Mar-2021 | 05-Sep-2021 | ✓ | 31-Mar-2021 | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| DEPOT_TANK3, DEPOT_TAP1 | DEPOT_SW01, | 11-Mar-2021 | 16-Apr-2021 | 07-Sep-2021 | ✓ | 19-Apr-2021 | 07-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_TANK1, A_TANK3, A_TAP1, A_TAP2, AIRPORT_BORE | **09-Mar-2021** | **31-Mar-2021** | 05-Sep-2021 | ✓ | **31-Mar-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>DEPOT_TANK3, DEPOT_SW01, DEPOT_TAP1 | **11-Mar-2021** | **16-Apr-2021** | 07-Sep-2021 | ✓ | **19-Apr-2021** | 07-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Moisture Content | EA055 | 8 | 71 | 11.27 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 8 | 71 | 11.27 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 71 | 5.63 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 71 | 5.63 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 71 | 5.63 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 8 | 0.00 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 8 | 25.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 8 | 25.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 8 | 0.00 | 5.00 | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111278**
**Amendment** : **1**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 5 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 12-Apr-2021 |
| Client Requested Due Date | : 16-Apr-2021 | Scheduled Reporting Date | : **16-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 82 / 76 |
| | | No. of samples NOT collected | 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the new scheduled release date for this work order following addition of PFAS analysis.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Sample QC26 was not received due to the following reason: SNR
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111278-001 | 11-Mar-2021 00:00 | DEPOT_SS01 | | ✓ | ✓ |
| ES2111278-002 | 11-Mar-2021 00:00 | DEPOT_SS02 | | ✓ | ✓ |
| ES2111278-003 | 11-Mar-2021 00:00 | DEPOT_SS03 | | ✓ | ✓ |
| ES2111278-004 | 11-Mar-2021 00:00 | DEPOT_SS04 | | ✓ | ✓ |
| ES2111278-005 | 11-Mar-2021 00:00 | DEPOT_SS05 | | ✓ | ✓ |
| ES2111278-006 | 11-Mar-2021 00:00 | DEPOT_SS06 | | ✓ | ✓ |
| ES2111278-007 | 11-Mar-2021 00:00 | DEPOT_SS07 | | ✓ | ✓ |
| ES2111278-008 | 11-Mar-2021 00:00 | DEPOT_SS08 | | ✓ | ✓ |
| ES2111278-009 | 11-Mar-2021 00:00 | DEPOT_SS09 | | ✓ | ✓ |
| ES2111278-010 | 11-Mar-2021 00:00 | DEPOT_SS10 | | ✓ | ✓ |
| ES2111278-011 | 11-Mar-2021 00:00 | DEPOT_SS11 | | ✓ | ✓ |
| ES2111278-012 | 11-Mar-2021 00:00 | DEPOT_SS12 | | ✓ | ✓ |
| ES2111278-013 | 11-Mar-2021 00:00 | DEPOT_SS13 | | ✓ | ✓ |
| ES2111278-014 | 11-Mar-2021 00:00 | DEPOT_SS14 | | ✓ | ✓ |
| ES2111278-015 | 11-Mar-2021 00:00 | DEPOT_SS15 | | ✓ | ✓ |
| ES2111278-016 | 11-Mar-2021 00:00 | DEPOT_SS16 | | ✓ | ✓ |
| ES2111278-021 | 09-Mar-2021 00:00 | A_SS64 | | ✓ | ✓ |
| ES2111278-022 | 09-Mar-2021 00:00 | A_SS65 | | ✓ | ✓ |
| ES2111278-023 | 09-Mar-2021 00:00 | A_SS66 | | ✓ | ✓ |
| ES2111278-024 | 09-Mar-2021 00:00 | A_SS67 | | ✓ | ✓ |
| ES2111278-025 | 09-Mar-2021 00:00 | A_SS68 | | ✓ | ✓ |
| ES2111278-026 | 09-Mar-2021 00:00 | A_SS69 | | ✓ | ✓ |
| ES2111278-027 | 09-Mar-2021 00:00 | A_SS70 | | ✓ | ✓ |
| ES2111278-028 | 09-Mar-2021 00:00 | A_SS71 | | ✓ | ✓ |
| ES2111278-029 | 09-Mar-2021 00:00 | A_SS72 | | ✓ | ✓ |
| ES2111278-030 | 09-Mar-2021 00:00 | A_SS73 | | ✓ | ✓ |
| ES2111278-031 | 09-Mar-2021 00:00 | A_SS74 | | ✓ | ✓ |
| ES2111278-032 | 09-Mar-2021 00:00 | A_SS75 | | ✓ | ✓ |
| ES2111278-033 | 09-Mar-2021 00:00 | A_SS76 | | ✓ | ✓ |
| ES2111278-034 | 09-Mar-2021 00:00 | A_SS77 | | ✓ | ✓ |
| ES2111278-035 | 09-Mar-2021 00:00 | A_SS78 | | ✓ | ✓ |
| ES2111278-036 | 09-Mar-2021 00:00 | A_SS79 | | ✓ | ✓ |
| ES2111278-037 | 09-Mar-2021 00:00 | A_SS80 | | ✓ | ✓ |
| ES2111278-038 | 09-Mar-2021 00:00 | A_SS81 | | ✓ | ✓ |
| ES2111278-039 | 09-Mar-2021 00:00 | A_SS82 | | ✓ | ✓ |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111278-040 | 10-Mar-2021 00:00 | A_SS83 | | ✓ | ✓ |
| ES2111278-041 | 10-Mar-2021 00:00 | A_SS84 | | ✓ | ✓ |
| ES2111278-042 | 10-Mar-2021 00:00 | A_SS85 | | ✓ | ✓ |
| ES2111278-043 | 10-Mar-2021 00:00 | A_SS86 | | ✓ | ✓ |
| ES2111278-044 | 10-Mar-2021 00:00 | A_SS87 | | ✓ | ✓ |
| ES2111278-045 | 10-Mar-2021 00:00 | A_SS88 | | ✓ | ✓ |
| ES2111278-046 | 09-Mar-2021 00:00 | A_SS89 | | ✓ | ✓ |
| ES2111278-047 | 09-Mar-2021 00:00 | A_SS90 | | ✓ | ✓ |
| ES2111278-048 | 09-Mar-2021 00:00 | A_SS91 | | ✓ | ✓ |
| ES2111278-049 | 09-Mar-2021 00:00 | A_SS92 | | ✓ | ✓ |
| ES2111278-050 | 09-Mar-2021 00:00 | A_SS93 | | ✓ | ✓ |
| ES2111278-051 | 09-Mar-2021 00:00 | A_SS94 | | ✓ | ✓ |
| ES2111278-052 | 09-Mar-2021 00:00 | A_SS95 | | ✓ | ✓ |
| ES2111278-053 | 09-Mar-2021 00:00 | A_SS96 | | ✓ | ✓ |
| ES2111278-054 | 09-Mar-2021 00:00 | A_SS97 | | ✓ | ✓ |
| ES2111278-055 | 10-Mar-2021 00:00 | A_SS98 | | ✓ | ✓ |
| ES2111278-056 | 10-Mar-2021 00:00 | A_SS99 | | ✓ | ✓ |
| ES2111278-057 | 10-Mar-2021 00:00 | A_SS100 | | ✓ | ✓ |
| ES2111278-058 | 10-Mar-2021 00:00 | A_SS101 | | ✓ | ✓ |
| ES2111278-059 | 10-Mar-2021 00:00 | A_SS102 | | ✓ | ✓ |
| ES2111278-060 | 10-Mar-2021 00:00 | A_SS103 | | ✓ | ✓ |
| ES2111278-061 | 10-Mar-2021 00:00 | A_SS104 | | ✓ | ✓ |
| ES2111278-062 | 10-Mar-2021 00:00 | A_SS105 | | ✓ | ✓ |
| ES2111278-063 | 10-Mar-2021 00:00 | A_SS106 | | ✓ | ✓ |
| ES2111278-064 | 10-Mar-2021 00:00 | A_SS107 | | ✓ | ✓ |
| ES2111278-065 | 10-Mar-2021 00:00 | A_SS108 | | ✓ | ✓ |
| ES2111278-066 | 10-Mar-2021 00:00 | A_SS109 | | ✓ | ✓ |
| ES2111278-067 | 10-Mar-2021 00:00 | A_SS110 | | ✓ | ✓ |
| ES2111278-068 | 10-Mar-2021 00:00 | A_SS111 | | ✓ | ✓ |
| ES2111278-069 | 10-Mar-2021 00:00 | A_SS112 | | ✓ | ✓ |
| ES2111278-070 | 10-Mar-2021 00:00 | A_SS113 | | ✓ | ✓ |
| ES2111278-071 | 10-Mar-2021 00:00 | A_SS114 | | ✓ | ✓ |
| ES2111278-072 | 10-Mar-2021 00:00 | A_SS115 | | ✓ | ✓ |
| ES2111278-079 | 10-Mar-2021 00:00 | QC19 | ✓ | | |
| ES2111278-080 | 18-Mar-2021 00:00 | QC68 | ✓ | | |
| ES2111278-081 | 18-Mar-2021 00:00 | QC64 | ✓ | | |
| ES2111278-082 | 18-Mar-2021 00:00 | QC65 | ✓ | | |
| ES2111278-083 | 18-Mar-2021 00:00 | QC66 | ✓ | | |

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111278-017 | 11-Mar-2021 00:00 | DEPOT_TANK3 | | ✓ |
| ES2111278-018 | 11-Mar-2021 00:00 | DEPOT_SW01 | | ✓ |
| ES2111278-019 | 11-Mar-2021 00:00 | DEPOT_TAP1 | | ✓ |
| ES2111278-073 | 09-Mar-2021 00:00 | A_TANK1 | | ✓ |
| ES2111278-074 | 09-Mar-2021 00:00 | A_TANK2 | ✓ | |
| ES2111278-075 | 09-Mar-2021 00:00 | A_TANK3 | | ✓ |
| ES2111278-076 | 09-Mar-2021 00:00 | A_TAP1 | | ✓ |
| ES2111278-077 | 09-Mar-2021 00:00 | A_TAP2 | | ✓ |
| ES2111278-078 | 09-Mar-2021 00:00 | AIRPORT_BORE | | ✓ |

## *Proactive Holding Time Report*

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / Client Sample ID(s) | Container | Due for extraction | Due for analysis | Samples Received Date | Samples Received Evaluation | Instructions Received Date | Instructions Received Evaluation |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content** | | | | | | | |
| A_SS100 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS101 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS102 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS103 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS104 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS105 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS106 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS107 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS108 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS109 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS110 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS111 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS112 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS113 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS114 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS115 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS64 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS65 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS66 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS67 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS68 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS69 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS70 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS71 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS72 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS73 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS74 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS75 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS76 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS77 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SS78 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A_SS79 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS80 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS81 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS82 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS83 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS84 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS85 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS86 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS87 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS88 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS89 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS90 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS91 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS92 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS93 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS94 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS95 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS96 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS97 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS98 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| A_SS99 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS01 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS02 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS03 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS04 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS05 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS06 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS07 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS08 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS09 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS10 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS11 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS12 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS13 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS14 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS15 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |
| DEPOT_SS16 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | ✘ | ---- | ---- |

## *Requested Deliverables*

**CARLYN WILLIAMS**

- *AU Certificate of Analysis - NATA (COA) — Email — carlyn.williams@senversa.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email — carlyn.williams@senversa.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email — carlyn.williams@senversa.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email — carlyn.williams@senversa.com.au
- Chain of Custody (CoC) (COC) — Email — carlyn.williams@senversa.com.au
- EDI Format - ENMRG (ENMRG) — Email — carlyn.williams@senversa.com.au
- EDI Format - ESDAT (ESDAT) — Email — carlyn.williams@senversa.com.au
- EDI Format - XTab (XTAB) — Email — carlyn.williams@senversa.com.au

**LUCINDA TRICKEY**

- A4 - AU Tax Invoice (INV) — Email — lucinda.trickey@senversa.com.au

1/4

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111279
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
|---|---|---|---|---|---|---|---|
| | DEPOT_SS01 | S | 11/3 | | | | |
| | DEPOT_SS02 | | | | | | |
| | DEPOT_SS03 | | | | | | |
| | DEPOT_SS04 | | | | | | |
| | DEPOT_SS05 | | | | | | |
| | DEPOT_SS06 | | | | | | |
| | DEPOT_SS07 | | | | | | |
| | DEPOT_SS08 | | | | | | |
| | DEPOT_SS09 | | | | | | |
| | DEPOT_SS10 | | | | | | |
| | DEPOT_SS11 | | | | | | |
| | DEPOT_SS12 | | | | | | |
| | DEPOT_SS13 | | | | | | |
| | DEPOT_SS14 | | | | | | |
| | DEPOT_SS15 | | | | | | |
| | DEPOT_SS16 | | | | | | |
| | DEPOT_TANK3 | W | | | | | |
| | DEPOT_SW01 | | | | | | |
| | DEPOT_TAP1 | | | | | | |
| | QC26 | S | | | | | |
| Total | | | | | | | 0 |

Environmental Division
Sydney
Work Order Reference
ES2111278
Telephone : - 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | A_SS64 | S | 9/3 | | | 1 | | |
| | A_SS65 | S | 9/3 | | | | | |
| | A_SS66 | S | 9/3 | | | | | |
| | A_SS67 | S | 9/3 | | | | | |
| | A_SS68 | S | 9/3 | | | | | |
| | A_SS69 | S | 9/3 | | | | | |
| | A_SS70 | S | 9/3 | | | | | |
| | A_SS71 | S | 9/3 | | | | | |
| | A_SS72 | S | 9/3 | | | | | |
| | A_SS73 | S | 9/3 | | | | | |
| | A_SS74 | S | 9/3 | | | | | |
| | A_SS75 | S | 9/3 | | | | | |
| | A_SS76 | S | 9/3 | | | | | |
| | A_SS77 | S | 9/3 | | | | | |
| | A_SS78 | S | 9/3 | | | | | |
| | A_SS79 | S | 9/3 | | | | | |
| | A_SS80 | S | 9/3 | | | | | |
| | A_SS81 | S | 9/3 | | | | | |
| | A_SS82 | S | 9/3 | | | | | |
| | A_SS83 | S | 10/3 | | | | | |
| Total | | | | | | | 0 | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

**Senversa Pty Ltd**
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 9 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | A-SS84 | S | 10/3 | | | 1 | | | | | | | | | | | |
| | A-SS85 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS86 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS87 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS88 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS89 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS90 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS91 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS92 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS93 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS94 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS95 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS96 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS97 | | 9/3 | | | | | | | | | | | | | | |
| | A-SS98 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS99 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS100 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS101 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS102 | | 10/3 | | | | | | | | | | | | | | |
| | A-SS103 | | 10/3 | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | |

**Sampler:** I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

**Sampler Name:**

**Signature:**

**Date:** 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MBrown | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: EP231X - PFAS Full Suite (28 compounds); HOLD

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD |
| | A_SS104 | S | 10/3 | | | 1 | | |
| | A_SS105 | ↓ | 10/3 | | | ↓ | | |
| | A_SS106 | ↓ | 10/3 | | | ↓ | | |
| | A_SS107 | ↓ | 10/3 | | | ↓ | | |
| | A_SS108 | ↓ | 10/3 | | | ↓ | | |
| | A_SS109 | ↓ | 10/3 | | | ↓ | | |
| | A_SS110 | ↓ | 10/3 | | | ↓ | | |
| | A_SS111 | ↓ | 10/3 | | | ↓ | | |
| | A_SS112 | ↓ | 10/3 | | | ↓ | | |
| | A_SS113 | ↓ | 10/3 | | | ↓ | | |
| | A_SS114 | ↓ | 10/3 | | | ↓ | | |
| | A_SS115 | ↓ | 10/3 | | | ↓ | | |
| | A_TANK1 | W | 9/3 | | | 2 | X | |
| | A_TANK2 | ↓ | 9/3 | | | ↓ | X | X |
| | A_TANK3 | ↓ | 9/3 | | | ↓ | X | |
| | A_TAP1 | ↓ | 9/3 | | | ↓ | X | |
| | A_TAP2 | ↓ | 9/3 | | | ↓ | X | |
| | AIRPORT_BORE | ↓ | 9/3 | | | ↓ | X | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | | | | | | 0 | |

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: M Good | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Biosecurity Direction

Movement Allowed
To specified location

AEKM7GCXN
*AEKM7GCXN*

**To the Importer or any person having possession or custody of the Goods**

**Legal Notes:**
A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The Goods (lines) identified below are subject to Biosecurity control
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

| | | | |
|---|---|---|---|
| **Brokerage Name:** | BELL TOTAL LOGISTICS PTY LTD | **Importer Name:** | ALS EIRONMENTAL |
| **Brokerage Branch:** | BTL SYDNEY | **Importer Branch Name:** | None |
| **Brokers Reference:** | B00127446/1 | | |
| **Container Numbers:** | None | | |
| **Commercial Bills:** | (MAWB:00070008525, HAWB:085251) | | |
| **Arrival Date:** | 12 Mar 2021 | **Flight No:** | |
| **Airline:** | | | |
| **This notice is given by:** | Chris VLANGOS<br>Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015* | **Date:** | 24 Mar 2021 4:46 PM |

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out:
**Movement Allowed: To specified location** in accordance with the *Biosecurity Act 2015*

**Carry Out Biosecurity Activity at:** Australian Laboratory Services Pty Ltd [Q2314]

**Address:** 2 Byth Street
STAFFORD QLD 4053

**Timeframe:** Please ensure that the listed Direction is carried out prior to 07 Apr 2021. Please supply any requested information/documentation to your regional office.

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES GOING FOR TESTING | S 128(1) (a) (i) (i) | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Samples are to be directed to the AA site specified as below:

Australian Laboratory Services Pty Ltd (Q2314)
2 Byth Street
STAFFORD QLD 4053
Permit Number: OK - 0004700510

**Printing Officer Name:** Chris VLANGOS **Date Of Print:** 24 Mar 2021 4:50 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2015 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Entry Finalised
## To Remain Under Biosecurity Control

AEKNPNFPX
*AEKNPNFPX*

**To the importer or any person having possession or custody of the Goods**

**Legal Notes:** A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The goods (lines) identified below are still under Biosecurity control but the entry has been finalised.
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

**Brokerage Name:** BELL TOTAL LOGISTICS PTY LTD
**Importer Name:** ALS ENVIRONMENTAL
**Brokerage Branch:** BTL SYDNEY
**Importer Branch Name:** None

**Brokers Reference:** B00127476/1

**Container Numbers:** None
**Commercial Bills:** (MAWB:00070008551, HAWB:085511)
**Arrival Date:** 19 Mar 2021
**Flight No:**
**Airline:**

**This notice is given by:** Carol Tomes
**Date:** 22 Mar 2021 3:28 PM
Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015*

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out: **Final Directives: Subject to Permit Conditions** in accordance with the *Biosecurity Act 2015*

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES FOR TESTING | | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Goods and their derivatives to be used and disposed of as per import permit 0004700510
Permit Number: OK - 0004700510

**Printing Officer Name:** Carol Tomes
**Date Of Print:** 22 Mar 2021 3:28 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2015 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

When lodging goods in ICS, include an accurate description of the goods.
For composite products, search BICON for all ingredients to determine conditions. Visit agriculture.gov.au/bicon.

Updated Analysis Rec 31/3

1/4

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-885-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Sample / Forward Lab / Split WO
Lab / Analysis: Split from ES2111279
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | MP231K - PFAS Full Suite (28 Compounds) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DEPOT_SS01 | S | 11/3 | | | | X | | | | | | | | | | | |
| | DEPOT_SS02 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS03 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS04 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS05 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS06 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS07 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS08 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS09 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS10 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS11 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS12 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS13 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS14 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS15 | | | | | | X | | | | | | | | | | | |
| | DEPOT_SS16 | | | | | | X | | | | | | | | | | | |
| | DEPOT_TANK3 | W | | | | | X | | | | | | | | | | | |
| | DEPOT_SW02 | | | | | | X | | | | | | | | | | | |
| | DEPOT_TAP2 | | | | | | X | | | | | | | | | | | |
| | QC25 | S | | | | | | | | | | | | | | | X | |

Environmental Division
Sydney
Work Order Reference
ES2111278
Telephone : + 61-2-8784 8555

| | | | |
|---|---|---|---|
| Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples: | Sampler Name: | Signature: | Date: 11/3 |

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | OSI | Quote No: | SY-885-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: SP231X - PFAS Full Suite (28 Compounds)

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Sample Information | | | | | Container Information | | |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix* | Date | Time | Type / Code | Total Bottles | SP231X - PFAS Full Suite (28 Compounds) |
| | A_5564 | S | 9/3 | | | 1 | X |
| | A_5565 | S | 9/3 | | | | X |
| | A_5566 | S | 9/3 | | | | X |
| | A_5567 | S | 9/3 | | | | X |
| | A_5568 | S | 9/3 | | | | X |
| | A_5569 | S | 9/3 | | | | X |
| | A_5570 | S | 9/3 | | | | X |
| | A_5571 | S | 9/3 | | | | X |
| | A_5572 | S | 9/3 | | | | X |
| | A_5573 | S | 9/3 | | | | X |
| | A_5574 | S | 9/3 | | | | X |
| | A_5575 | S | 9/3 | | | | X |
| | A_5576 | S | 9/3 | | | | X |
| | A_5577 | S | 9/3 | | | | X |
| | A_5578 | S | 9/3 | | | | X |
| | A_5579 | S | 9/3 | | | | X |
| | A_5580 | S | 9/3 | | | | X |
| | A_5581 | S | 9/3 | | | | X |
| | A_5582 | S | 9/3 | | | | X |
| | A_5583 | S | 10/3 | | | | X |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 389

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Caitlyn Williams | Page: | 9 of 10 |
| Email Report To: | caitlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 Compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | A-SS84 | S | 10/3 | | | 1 | X | | | | | | | | | | | |
| | A-SS85 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS86 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS87 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS88 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS89 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS90 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS91 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS92 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS93 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS94 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS95 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS96 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS97 | | 9/3 | | | | X | | | | | | | | | | | |
| | A-SS98 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS99 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS100 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS101 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS102 | | 10/3 | | | | X | | | | | | | | | | | |
| | A-SS103 | | 10/3 | | | | X | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: | Signature: | Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 60 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hoog
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-685-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | HP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A_SS104 | S | 10/3 | | | 1 | X | | | | | | | | | | |
| | A_SS105 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS106 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS107 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS108 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS109 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS110 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS111 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS112 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS113 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS114 | | 10/3 | | | | X | | | | | | | | | | |
| | A_SS115 | | 10/3 | | | | X | | | | | | | | | | |
| | A_TANK1 | W | 9/3 | | | 2 | X | | | | | | | | | | |
| | A_TANK2 | | 9/3 | | | | [illegible] | | | | | | | | | X | |
| | A_TANK3 | | 9/3 | | | | X | | | | | | | | | | |
| | A_TAP1 | | 9/3 | | | | X | | | | | | | | | | |
| | A_TAP2 | | 9/3 | | | | X | | | | | | | | | | |
| | AIRPORT_BORE | | 9/3 | | | | X | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Biosecurity Direction

Movement Allowed
To specified location

AEKM7GCXN
*AEKM7GCXN*

**To the Importer or any person having possession or custody of the Goods**

**Legal Notes:**
A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The Goods (lines) identified below are subject to Biosecurity control
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

**Brokerage Name:** BELL TOTAL LOGISTICS PTY LTD
**Importer Name:** ALS EIRONMENTAL
**Brokerage Branch:** BTL SYDNEY
**Importer Branch Name:** None

**Brokers Reference:** B00127446/1

**Container Numbers:** None
**Commercial Bills:** (MAWB:00070008525, HAWB:085251)
**Arrival Date:** 12 Mar 2021
**Flight No:**
**Airline:**

**This notice is given by:** Chris VLANGOS
**Date:** 24 Mar 2021 4:46 PM
Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015*

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out:
**Movement Allowed: To specified location** in accordance with the *Biosecurity Act 2015*

**Carry Out Biosecurity Activity at:** Australian Laboratory Services Pty Ltd [Q2314]
**Address:** 2 Byth Street
STAFFORD QLD 4053

**Timeframe:** Please ensure that the listed Direction is carried out prior to 07 Apr 2021. Please supply any requested information/documentation to your regional office.

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES GOING FOR TESTING | S 128(1) (a) (i) (i) | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Samples are to be directed to the AA site specified as below:

Australian Laboratory Services Pty Ltd (Q2314)
2 Byth Street
STAFFORD QLD 4053
Permit Number: OK - 0004700510

**Printing Officer Name:** Chris VLANGOS
**Date Of Print:** 24 Mar 2021 4:50 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2016 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

**Australian Government**
**Department of Agriculture, Water and the Environment**
ABN 34 190 894 983

# Entry Finalised
## To Remain Under Biosecurity Control

AEKNPNFPX
*AEKNPNFPX*

**To the Importer or any person having possession or custody of the Goods**

**Legal Notes:** A contravention of this direction constitutes a contravention of the *Biosecurity Act 2015*.
The goods (lines) identified below are still under Biosecurity control but the entry has been finalised.
The goods must not be moved, dealt with or interfered with unless otherwise stated in this direction.
Where movement is required to carry out the Biosecurity Activity, the goods must be moved directly to the required location (*Biosecurity Act 2015*).
This copy is to accompany the goods to the destination indicated.
All times stated on this document are in Australian Eastern Standard Time

**Brokerage Name:** BELL TOTAL LOGISTICS PTY LTD
**Importer Name:** ALS ENVIRONMENTAL
**Brokerage Branch:** BTL SYDNEY
**Importer Branch Name:** None

**Brokers Reference:** B00127476/1

**Container Numbers:** None
**Commercial Bills:** (MAWB:00070008551, HAWB:085511)
**Arrival Date:** 19 Mar 2021
**Flight No:**
**Airline:**

**This notice is given by:** Carol Tomes
**Date:** 22 Mar 2021 3:28 PM
Biosecurity Officer appointed under Section 545 of the *Biosecurity Act 2015*

**Direction:** The goods (lines) listed below must have the following Biosecurity Activity carried out: **Final Directives: Subject to Permit Conditions** in accordance with the *Biosecurity Act 2015*

| Lines | Legal Refs | Quantity | Package | Country |
|---|---|---|---|---|
| 1 SAMPLES FOR TESTING | | 0.00 | | NORFOLK ISLAND |

**Additional Comments:** Goods and their derivatives to be used and disposed of as per import permit 0004700510
Permit Number: OK - 0004700510

**Printing Officer Name:** Carol Tomes
**Date Of Print:** 22 Mar 2021 3:28 PM

Additional Information: Goods that become subject to Biosecurity control continue to be subject to Biosecurity control until released from Biosecurity control. The importer and/or owner of the goods, subject to Biosecurity control are liable to pay any expenses connected with the examination, transportation, storage, maintenance, treatment, movement, removal, disposal or destruction of the goods. In addition the Master, owner and/or agent of any conveyance under Biosecurity control, or ordered to be treated are liable to pay the cost of piloting or towing the conveyance, removing things from the conveyance and treating the conveyance and goods on the conveyance or removed from it. If at the end of a period for which any goods have been isolated, a Director of Biosecurity is of the opinion that the goods cannot be released without an unacceptable high level of biosecurity risk, he or she may direct that the goods be secured in such a manner and for such further period as stated in the direction. A person is guilty of a criminal offence if he or she contravenes a Biosecurity officer's direction. If goods are moved or otherwise interfered with in contravention of the *Biosecurity Act 2015* they may be taken into control of the Commonwealth. The Commonwealth does not accept liability for damage which may occur as a result of any necessary treatment. If the owner or agent of goods has been notified that treatment may damage the goods, and the owner or agent does not, before the end of 30 days after the day on which the owner or agent receives the notice, give written notice to a Director of Biosecurity stating that they agree to the treatment, the goods may be taken into control of the Commonwealth. A cost recovery charge that is due and payable to the Commonwealth under the Biosecurity Act 2015 may be recovered as a debt due to the Commonwealth by action in a relevant court [section 596].

To query information contained in this document, contact the department on 1800 900 090

When lodging goods in ICS, include an accurate description of the goods.
For composite products, search BICON for all ingredients to determine conditions. Visit agriculture.gov.au/bicon.

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111279** | Page | : 1 of 29 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 09-Apr-2021 16:18 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 104 | | |
| No. of samples analysed | : 59 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Alex Rossi | Organic Chemist | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Sample ES2111279_079 required dilution due to sample matrix . LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 | A_SB03_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-001 | ES2111279-002 | ES2111279-005 | ES2111279-006 | ES2111279-009 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 16.4 | 19.8 | 26.2 | 19.8 | 23.4 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0005 | <0.0002 | <0.0002 | <0.0002 | 0.0004 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0008 | 0.0004 | 0.0004 | <0.0002 | 0.0005 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0135 | 0.0121 | 0.0080 | 0.0055 | 0.0061 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0024 | 0.0056 | 0.0007 | 0.0013 | 0.0011 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.277 | 3.28 | 0.0827 | 0.506 | 0.789 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.224 | 0.0493 | 0.0307 | 0.0050 | 0.0833 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.002 | <0.001 | 0.002 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0017 | 0.0009 | 0.0020 | 0.0009 | 0.0015 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0014 | 0.0011 | 0.0020 | 0.0008 | 0.0016 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0014 | 0.0016 | 0.0010 | 0.0003 | 0.0024 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0043 | 0.0080 | 0.0023 | 0.0016 | 0.0034 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0028 | 0.0034 | 0.0015 | 0.0004 | 0.0032 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0047 | 0.0042 | 0.0007 | <0.0002 | 0.0416 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0051 | 0.0008 | 0.0010 | <0.0002 | 0.0217 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0055 | 0.0005 | 0.0012 | <0.0002 | 0.0133 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0018 | <0.0002 | 0.0004 | <0.0002 | 0.0023 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0029 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0173 | 0.0219 | 0.0018 | 0.0022 | 0.0205 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | 0.0014 | 0.0012 | <0.0005 | <0.0005 | 0.0014 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 | A_SB03_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-001 | ES2111279-002 | ES2111279-005 | ES2111279-006 | ES2111279-009 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | **0.0004** |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0043** | **0.0162** | <0.0005 | <0.0005 | **0.132** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | **0.0006** | <0.0005 | <0.0005 | <0.0005 | **0.0110** |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.573** | **3.41** | **0.138** | **0.524** | **1.14** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.290** | **3.29** | **0.0907** | **0.512** | **0.795** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.306** | **3.32** | **0.100** | **0.515** | **0.936** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **97.5** | **116** | **95.5** | **88.5** | **93.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **103** | **102** | **99.0** | **96.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB05_0.1 | A_SB05_0.4 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-010 | ES2111279-011 | ES2111279-012 | ES2111279-016 | ES2111279-017 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 20.8 | 17.8 | 19.2 | 14.3 | 16.4 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0004 | 0.0007 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0004 | 0.0010 | <0.0002 | 0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0041 | 0.0158 | 0.0019 | 0.0046 | 0.0006 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0008 | 0.0019 | 0.0008 | 0.0006 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.846 | 0.348 | 0.506 | 0.140 | 0.139 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0987 | 0.146 | 0.0347 | 0.0323 | 0.0140 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.004 | <0.001 | 0.003 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0009 | 0.0039 | 0.0004 | 0.0028 | 0.0005 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0010 | 0.0024 | 0.0004 | 0.0013 | 0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0015 | 0.0010 | 0.0003 | 0.0010 | 0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0020 | 0.0041 | 0.0010 | 0.0024 | 0.0005 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0019 | 0.0011 | <0.0002 | 0.0030 | 0.0008 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0260 | 0.0011 | 0.0008 | 0.0023 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0176 | 0.0018 | <0.0002 | 0.0012 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0120 | 0.0024 | 0.0003 | 0.0010 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0017 | 0.0004 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | 0.0015 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0389 | 0.0610 | 0.0111 | 0.0042 | 0.0012 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | 0.0018 | 0.0017 | <0.0005 | 0.0012 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB05_0.1 | A_SB05_0.4 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-010 | ES2111279-011 | ES2111279-012 | ES2111279-016 | ES2111279-017 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.201** | <0.0005 | **0.0011** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | **0.0092** | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **1.27** | **0.598** | **0.559** | **0.201** | **0.157** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.850** | **0.364** | **0.508** | **0.145** | **0.140** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **1.06** | **0.380** | **0.511** | **0.155** | **0.141** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **94.0** | **88.5** | **98.0** | **93.5** | **98.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **94.0** | **98.0** | **99.5** | **98.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB06_0.1 | A_SB06_0.5 | A_SB07_0.1 | A_SB07_0.4 | A_SB08_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-021 | ES2111279-022 | ES2111279-025 | ES2111279-026 | ES2111279-029 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 5.1 | 13.2 | 12.9 | 5.4 | 12.0 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0003 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0015 | 0.0006 | 0.0027 | 0.0006 | 0.0035 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0002 | 0.0003 | 0.0003 | <0.0002 | 0.0004 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0683 | 0.161 | 0.0774 | 0.0813 | 0.0470 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0328 | 0.0049 | 0.0248 | 0.0054 | 0.0332 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0009 | 0.0004 | 0.0007 | 0.0003 | 0.0007 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0008 | 0.0002 | 0.0007 | <0.0002 | 0.0006 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0008 | <0.0002 | 0.0006 | <0.0002 | 0.0006 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0014 | 0.0006 | 0.0011 | 0.0004 | 0.0010 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0010 | <0.0002 | 0.0012 | 0.0006 | 0.0008 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0007 | <0.0002 | 0.0014 | 0.0002 | 0.0031 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0004 | <0.0002 | 0.0010 | <0.0002 | 0.0045 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0005 | <0.0002 | 0.0007 | <0.0002 | 0.0034 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0005 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0011 | 0.0046 | 0.0017 | 0.0005 | 0.0030 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB06_0.1 | A_SB06_0.5 | A_SB07_0.1 | A_SB07_0.4 | A_SB08_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-021 | ES2111279-022 | ES2111279-025 | ES2111279-026 | ES2111279-029 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0014** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.111** | **0.173** | **0.114** | **0.0893** | **0.104** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0698** | **0.162** | **0.0801** | **0.0819** | **0.0505** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0747** | **0.163** | **0.0832** | **0.0826** | **0.0551** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **98.5** | **90.5** | **88.5** | **95.5** | **85.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **97.0** | **97.5** | **93.5** | **101** | **94.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB08_0.4 | A_SB09_0.1 | A_SB09_0.5 | A_SB10_0.1 | A_SB10_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-030 | ES2111279-033 | ES2111279-034 | ES2111279-036 | ES2111279-037 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **32.8** | **20.8** | **30.2** | **23.9** | **29.9** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0013** | **0.0014** | **0.0012** | **0.0073** | **0.0033** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | **0.0002** | **0.0002** | **0.0008** | **0.0006** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0622** | **0.0472** | **0.234** | **0.132** | **0.282** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0343** | **0.0356** | **0.0102** | **0.0209** | **0.0003** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | **0.0003** | **0.0003** | **0.0012** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | **0.0004** | **0.0002** | **0.0032** | **0.0003** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0003** | **0.0003** | <0.0002 | **0.0007** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0006** | **0.0005** | **0.0005** | **0.0026** | **0.0004** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0006** | **0.0005** | **0.0006** | **0.0007** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0026** | **0.0008** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0004** | **0.0005** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0004** | **0.0006** | <0.0002 | **0.0002** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | **0.0086** | **0.0019** | **0.0039** | **0.0028** | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB08_0.4 | A_SB09_0.1 | A_SB09_0.5 | A_SB10_0.1 | A_SB10_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-030 | ES2111279-033 | ES2111279-034 | ES2111279-036 | ES2111279-037 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0005** | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.112** | **0.0902** | **0.251** | **0.173** | **0.287** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0635** | **0.0486** | **0.235** | **0.139** | **0.285** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0656** | **0.0501** | **0.236** | **0.147** | **0.286** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **97.0** | **94.0** | **86.0** | **90.5** | **87.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | **94.5** | **100** | **97.5** | **97.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB11_0.1 | A_SB11_0.5 | A_SB12_0.1 | A_SB12_0.5 | A_SB13_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-039 | ES2111279-040 | ES2111279-043 | ES2111279-044 | ES2111279-047 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **25.7** | **23.6** | **18.9** | **25.5** | **19.6** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0126** | **0.0044** | **0.0003** | **0.0003** | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | **0.0027** | **0.0011** | **0.0002** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.339** | **0.160** | **0.0249** | **0.0006** | **0.0037** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0374** | **0.0036** | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | **0.006** | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0077** | **0.0023** | **0.0008** | **0.0005** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0034** | **0.0010** | **0.0004** | **0.0003** | **0.0002** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0035** | **0.0017** | **0.0010** | **0.0003** | **0.0002** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0245** | **0.0043** | **0.0041** | **0.0012** | **0.0005** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0207** | **0.0007** | **0.0054** | <0.0002 | **0.0002** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0075** | **0.0002** | **0.0020** | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0038** | <0.0002 | **0.0012** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0037** | <0.0002 | **0.0017** | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | **0.0007** | <0.0002 | **0.0006** | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | **0.0007** | <0.0005 | **0.0011** | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | **0.0080** | **0.0016** | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | **0.0023** | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB11_0.1 | A_SB11_0.5 | A_SB12_0.1 | A_SB12_0.5 | A_SB13_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-039 | ES2111279-040 | ES2111279-043 | ES2111279-044 | ES2111279-047 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0295** | <0.0005 | **0.0030** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | **0.0008** | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.516** | **0.181** | **0.0467** | **0.0032** | **0.0051** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.352** | **0.164** | **0.0252** | **0.0009** | **0.0040** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.427** | **0.174** | **0.0345** | **0.0032** | **0.0049** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **91.5** | **93.0** | **92.0** | **104** | **110** |
| 13C8-PFOA | ---- | 0.0002 | % | **102** | **99.0** | **94.5** | **85.5** | **86.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB13_0.5 | A_SB14_0.1 | A_SB14_0.5 | A_SB15_0.1 | A_SB15_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-048 | ES2111279-051 | ES2111279-052 | ES2111279-055 | ES2111279-056 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **35.1** | **18.8** | **22.6** | **20.8** | **21.4** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | **0.0026** | <0.0002 | **0.0021** | **0.0007** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | **0.0002** | <0.0002 | **0.0002** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB13_0.5 | A_SB14_0.1 | A_SB14_0.5 | A_SB15_0.1 | A_SB15_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-048 | ES2111279-051 | ES2111279-052 | ES2111279-055 | ES2111279-056 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | **0.0028** | <0.0002 | **0.0027** | **0.0010** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | **0.0026** | <0.0002 | **0.0023** | **0.0010** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | **0.0028** | <0.0002 | **0.0027** | **0.0010** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **109** | **104** | **84.5** | **110** | **86.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **89.5** | **83.5** | **82.0** | **86.5** | **79.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB16_0.1 | A_SB16_0.5 | A_SB17_0.1 | A_SB17_0.5 | A_SB18_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-063 | ES2111279-064 | ES2111279-067 | ES2111279-068 | ES2111279-071 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **20.8** | **21.2** | **20.1** | **21.2** | **17.9** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0010** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0021** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0006** | **0.0005** | <0.0002 | **0.0003** | **0.0619** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0302** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0032** | **0.0012** | **0.0025** | **0.0104** | **0.642** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0024** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | **0.0013** | **0.0012** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0002** | <0.0002 | <0.0002 | **0.0006** | **0.0045** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0007** | **0.0014** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0004** | <0.0002 | **0.0002** | **0.0018** | **0.0180** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0015** | **0.0025** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0010** | **0.0016** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0005** | **0.0006** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0007** | **0.0006** |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0005** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB16_0.1 | A_SB16_0.5 | A_SB17_0.1 | A_SB17_0.5 | A_SB18_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-063 | ES2111279-064 | ES2111279-067 | ES2111279-068 | ES2111279-071 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0014** | **0.0072** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0044** | **0.0017** | **0.0031** | **0.0204** | **0.778** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0038** | **0.0017** | **0.0025** | **0.0107** | **0.704** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0044** | **0.0017** | **0.0031** | **0.0165** | **0.737** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **100** | **99.5** | **107** | **119** | **91.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **87.5** | **83.5** | **87.5** | **86.5** | **75.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB18_0.5 | A_SB19_0.1 | A_SB19_0.5 | A_SB20_0.1 | A_SB21_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-072 | ES2111279-075 | ES2111279-076 | ES2111279-079 | ES2111279-080 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 21.1 | 18.0 | 32.0 | 13.2 | 19.6 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0043 | 0.0011 | 0.0110 | <0.0005 | 0.0003 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0073 | 0.0004 | 0.0158 | <0.0005 | 0.0004 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.321 | 0.0067 | 0.195 | <0.0005 | 0.0071 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.200 | 0.0018 | 0.0213 | <0.0005 | 0.0030 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.142 | 1.35 | 2.85 | 0.0191 | 0.195 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0004 | 0.0122 | <0.0002 | <0.0005 | 0.0031 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.003 | <0.001 | 0.004 | <0.002 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0072 | 0.0016 | 0.0072 | <0.0005 | 0.0010 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0332 | 0.0035 | 0.0393 | <0.0005 | 0.0017 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0022 | 0.0003 | 0.0045 | <0.0005 | 0.0021 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.117 | 0.0035 | 0.0513 | <0.0005 | 0.0052 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0004 | 0.0055 | 0.0017 | 0.0010 | 0.0070 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0003 | 0.0014 | <0.0002 | <0.0005 | 0.0220 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0005 | 0.0096 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0005 | 0.0080 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0005 | 0.0019 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0012 | 0.0038 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.0014 | <0.0002 | <0.0005 | 0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB18_0.5 | A_SB19_0.1 | A_SB19_0.5 | A_SB20_0.1 | A_SB21_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-072 | ES2111279-075 | ES2111279-076 | ES2111279-079 | ES2111279-080 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0012 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0005 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0022** | **0.0125** | <0.0005 | **0.0103** | **0.0601** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0059** |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.840** | **1.40** | **3.20** | **0.0304** | **0.337** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.463** | **1.36** | **3.04** | **0.0191** | **0.202** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.632** | **1.38** | **3.16** | **0.0294** | **0.272** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **96.5** | **116** | **84.0** | **115** | **94.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **88.0** | **85.0** | **84.5** | **80.0** | **80.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB21_0.5 | A_SB22_0.1 | A_SB22_0.5 | QC02 | QC04 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-081 | ES2111279-083 | ES2111279-084 | ES2111279-088 | ES2111279-089 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 25.4 | 19.3 | 24.6 | 29.9 | 26.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0011 | <0.0002 | 0.0002 | 0.0004 | 0.0005 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0017 | 0.0002 | <0.0002 | 0.0003 | 0.0007 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0275 | 0.0052 | 0.0025 | 0.0042 | 0.0062 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0040 | 0.0005 | 0.0012 | 0.0004 | 0.0006 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.514 | 0.0154 | 0.130 | 0.0678 | 0.0804 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0159 | <0.0002 | 0.0007 | 0.0102 | 0.0290 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.002 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0011 | 0.0026 | 0.0028 | 0.0003 | 0.0007 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0030 | 0.0016 | 0.0011 | 0.0004 | 0.0007 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0017 | 0.0012 | 0.0015 | <0.0002 | 0.0006 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0050 | 0.0021 | 0.0033 | 0.0006 | 0.0015 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0046 | 0.0005 | 0.0020 | <0.0002 | 0.0012 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0041 | 0.0002 | 0.0008 | 0.0016 | 0.0035 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0012 | <0.0002 | 0.0002 | 0.0033 | 0.0059 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0009 | <0.0002 | 0.0002 | 0.0025 | 0.0040 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0.0004 | 0.0007 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0007 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0019 | <0.0002 | <0.0002 | 0.0012 | 0.0034 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.0009 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB21_0.5 | A_SB22_0.1 | A_SB22_0.5 | QC02 | QC04 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-081 | ES2111279-083 | ES2111279-084 | ES2111279-088 | ES2111279-089 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | **0.0044** | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0086** | <0.0005 | **0.0063** | **0.0014** | **0.0022** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | **0.0008** |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.596** | **0.0315** | **0.153** | **0.0994** | **0.144** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.542** | **0.0206** | **0.132** | **0.0720** | **0.0866** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.562** | **0.0301** | **0.148** | **0.0751** | **0.0928** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **104** | **96.0** | **96.0** | **106** | **110** |
| 13C8-PFOA | ---- | 0.0002 | % | **98.0** | **79.0** | **85.0** | **87.0** | **84.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC08 | QC11 | QC13 | QC15 | QC17 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-091 | ES2111279-093 | ES2111279-094 | ES2111279-097 | ES2111279-098 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 23.0 | 23.7 | 25.2 | 19.0 | 36.6 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.0003 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0002 | 0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0071 | 0.0115 | 0.0012 | 0.0004 | 0.0037 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0008 | 0.0025 | <0.0002 | <0.0002 | 0.0005 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.168 | 0.347 | 0.0129 | 0.0022 | 0.219 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0174 | 0.0184 | <0.0002 | <0.0002 | 0.0174 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.004 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0009 | 0.0069 | 0.0003 | 0.0003 | 0.0013 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0027 | 0.0027 | 0.0004 | 0.0005 | 0.0020 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0005 | 0.0029 | <0.0002 | 0.0004 | 0.0028 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0030 | 0.0189 | 0.0003 | 0.0004 | 0.0077 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0009 | 0.0127 | <0.0002 | <0.0002 | 0.0122 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0002 | 0.0041 | <0.0002 | <0.0002 | 0.0140 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0018 | <0.0002 | <0.0002 | 0.0095 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0018 | <0.0002 | <0.0002 | 0.0065 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | <0.0002 | <0.0002 | 0.0014 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.0005 | <0.0005 | <0.0005 | 0.0021 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0022 | 0.0052 | <0.0002 | <0.0002 | 0.0008 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.0015 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC08 | QC11 | QC13 | QC15 | QC17 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-091 | ES2111279-093 | ES2111279-094 | ES2111279-097 | ES2111279-098 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | **0.0185** | <0.0005 | <0.0005 | **0.0030** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | **0.0008** | <0.0005 | <0.0005 | **0.0013** |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.204** | **0.463** | **0.0151** | **0.0042** | **0.305** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.175** | **0.358** | **0.0141** | **0.0026** | **0.223** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.182** | **0.413** | **0.0151** | **0.0042** | **0.240** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **108** | **110** | **112** | **119** | **112** |
| 13C8-PFOA | ---- | 0.0002 | % | **79.0** | **88.5** | **87.0** | **84.5** | **85.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC21 | QC23 | QC27 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111279-100 | ES2111279-101 | ES2111279-103 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **25.0** | **15.2** | **15.0** | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | **0.0003** | **0.0006** | <0.0002 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | **0.0004** | <0.0002 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0018** | **0.0063** | **0.0009** | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | **0.0006** | <0.0002 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0183** | **0.259** | **0.0137** | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0002** | **0.0072** | **0.0002** | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | **0.003** | <0.001 | <0.001 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0019** | **0.0006** | <0.0002 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0014** | **0.0012** | **0.0002** | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0004** | **0.0007** | <0.0002 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0006** | **0.0029** | **0.0002** | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0005** | **0.0022** | <0.0002 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0004** | **0.0057** | <0.0002 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | **0.0033** | <0.0002 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | **0.0026** | <0.0002 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | **0.0005** | <0.0002 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | **0.0007** | <0.0005 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | **0.0011** | <0.0002 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC21 | QC23 | QC27 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111279-100 | ES2111279-101 | ES2111279-103 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | **0.0318** | <0.0005 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | **0.0017** | <0.0005 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0288** | **0.329** | **0.0152** | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0201** | **0.265** | **0.0146** | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0277** | **0.303** | **0.0150** | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **112** | **104** | **107** | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **84.0** | **79.0** | **72.0** | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC06 | QC10 | COUNCIL_TAP1 | COUNCIL_TAP2 | QC25 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-090 | ES2111279-092 | ES2111279-095 | ES2111279-096 | ES2111279-102 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **1.14** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **1.55** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **12.2** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.92** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **22.5** | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | **0.2** | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | **0.33** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **1.44** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | **0.20** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.70** | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC06 | QC10 | COUNCIL_TAP1 | COUNCIL_TAP2 | QC25 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111279-090 | ES2111279-092 | ES2111279-095 | ES2111279-096 | ES2111279-102 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **41.2** | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **34.7** | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **38.7** | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **87.1** | **87.1** | **86.7** | **88.3** | **86.3** |
| 13C8-PFOA | ---- | 0.02 | % | **93.9** | **95.0** | **94.6** | **95.1** | **95.8** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111279-104 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111279-104 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **86.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **95.2** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **SOIL** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111279** | Page | : 1 of 19 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 31-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 09-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 104 | | |
| No. of samples analysed | : 59 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Alex Rossi | Organic Chemist | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3597622)** | | | | | | | | | |
| ES2111046-028 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 17.9 | 13.3 | 29.7 | 0% - 50% |
| ES2111279-009 | A_SB03_0.1 | EA055: Moisture Content | ---- | 0.1 | % | 23.4 | 20.4 | 13.6 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3597623)** | | | | | | | | | |
| ES2111279-026 | A_SB07_0.4 | EA055: Moisture Content | ---- | 0.1 | % | 5.4 | 5.6 | 3.22 | 0% - 20% |
| ES2111279-047 | A_SB13_0.1 | EA055: Moisture Content | ---- | 0.1 | % | 19.6 | 17.8 | 9.55 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3597624)** | | | | | | | | | |
| ES2111279-068 | A_SB17_0.5 | EA055: Moisture Content | ---- | 0.1 | % | 21.2 | 21.1 | 0.638 | 0% - 20% |
| ES2111279-089 | QC04 | EA055: Moisture Content | ---- | 0.1 | % | 26.1 | 25.9 | 0.952 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3597625)** | | | | | | | | | |
| ES2111359-002 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 7.4 | 7.2 | 2.85 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111268-059 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0047 | 0.0056 | 17.6 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600892)** | | | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3600892) - continued** | | | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0055 | 0.0059 | 6.93 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0013 | 0.0014 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.506 | 0.521 | 3.00 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0050 | 0.0048 | 3.58 | 0% - 20% |
| ES2111279-026 | A_SB07_0.4 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0813 | 0.0856 | 5.16 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0054 | 0.0050 | 8.59 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3602380)** | | | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111279-068 | A_SB17_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0104 | 0.0102 | 1.98 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3602381)** | | | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111279-094 | QC13 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0012 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0129 | 0.0125 | 3.04 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111268-059 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600892)** | | | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0008 | 0.0009 | 17.6 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0016 | 0.0018 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111279-026 | A_SB07_0.4 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3600892) - continued** | | | | | | | | | |
| ES2111279-026 | A_SB07_0.4 | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3602380)** | | | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0005 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0012 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111279-068 | A_SB17_0.5 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0013 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0007 | 0.0007 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0018 | 0.0017 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0015 | 0.0014 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0010 | 0.0010 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0005 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0007 | 0.0008 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3602381)** | | | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111279-094 | QC13 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3602381) - continued** | | | | | | | | | |
| ES2111279-094 | QC13 | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0004 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600892)** | | | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0022 | 0.0024 | 7.43 | 0% - 50% |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3600892) - continued** | | | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111279-026 | A_SB07_0.4 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0005 | 0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3602380)** | | | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111279-068 | A_SB17_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3602380) - continued** | | | | | | | | | |
| ES2111279-068 | A_SB17_0.5 | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3602381)** | | | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111279-094 | QC13 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600195)** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600195) - continued** | | | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111268-059 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3600892)** | | | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111279-026 | A_SB07_0.4 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3602380)** | | | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3602380) - continued** | | | | | | | | | |
| ES2111279-068 | A_SB17_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | 0.0014 | 0.0016 | 9.77 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3602381)** | | | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111279-094 | QC13 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600892)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.4 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.4 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.6 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3602380)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3602381)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 97.6 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 76.4 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 124 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 126 | 72.0 | 129 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195) - continued** | | | | | | | | |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 127 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 116 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 119 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 116 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600892)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 102 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 111 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3602380)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 99.4 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 125 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.0 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.4 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 80.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 124 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3602381)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 102 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.6 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.6 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 127 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.0 | 64.0 | 136 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3602381) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.2 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 79.6 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 120 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 108 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 117 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 130 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600892)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 105 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 108 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 101 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 109 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 109 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3602380)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 124 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 122 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 121 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 125 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 61.0 | 139 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3602381)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 127 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 127 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 100 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 128 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 109 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 114 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 125 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 124 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600892)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 99.2 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 109 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 121 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 113 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3602380)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 104 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 97.6 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 106 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 121 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3602381)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 100 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 107 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 119 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 126 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.6 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 106 | 68.0 | 131 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3606064) - continued** | | | | | | | | |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 125 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 97.0 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 117 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 122 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3606064)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.9 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 101 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3606064)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 104 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 116 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 103 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Matrix Spike (MS) Report: Spike | SpikeRecovery(%) | Acceptable Limits (%) |
|---|---|---|

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 110 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 120 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 121 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 122 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 109 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 124 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3600892)** | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 102 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 108 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 68.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 65.2 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3602380)** | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 97.2 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 118 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 114 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 116 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 128 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 102 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3602381)** | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 101 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 114 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 105 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 109 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 118 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 77.2 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 116 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 110 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 116 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 127 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 120 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 128 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 128 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 112 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 116 | 69.0 | 135 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600195) - continued** | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 107 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 108 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3600892)** | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 112 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 122 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 129 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 123 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 130 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 121 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 132 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 104 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 104 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 108 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 93.3 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3602380)** | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 108 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 99.6 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 100 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 132 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 119 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 122 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 93.2 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 90.8 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 80.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 127 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3602381)** | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 101 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 97.2 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 93.6 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 118 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 112 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 126 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 97.6 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 86.0 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 76.0 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 124 | 69.0 | 133 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 115 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 107 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 107 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 120 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 117 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3600892)** | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 107 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 99.4 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 99.7 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 104 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 113 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 116 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 115 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3602380)** | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 99.6 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 128 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 125 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 125 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 118 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 115 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3602381)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3602381) - continued** | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 105 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 123 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 126 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 97.3 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 118 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 114 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600195)** | | | | | | | |
| ES2111268-046 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 116 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 122 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 120 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 126 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3600892)** | | | | | | | |
| ES2111279-006 | A_SB02_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 98.0 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 114 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 121 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 113 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3602380)** | | | | | | | |
| ES2111279-044 | A_SB12_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 112 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 106 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 117 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 121 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3602381)** | | | | | | | |
| ES2111197-002 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 100 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 108 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 116 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 125 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111279** | Page | : 1 of 12 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 09-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 104 |
| Order number | : ---- | No. of samples analysed | : 59 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2111279--006 | A_SB02_0.5 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| A_SB01_0.1, A_SB02_0.1, A_SB03_0.1, A_SB04_0.1, A_SB05_0.1, A_SB06_0.1, A_SB07_0.1, A_SB08_0.1, A_SB09_0.1, A_SB10_0.1, A_SB21_0.1, QC04, QC11, | A_SB01_0.5, A_SB02_0.5, A_SB03_0.4, A_SB04_0.5, A_SB05_0.4, A_SB06_0.5, A_SB07_0.4, A_SB08_0.4, A_SB09_0.5, A_SB10_0.5, QC02, QC08, QC13 | ---- | ---- | ---- | 31-Mar-2021 | 23-Mar-2021 | **8** |
| **HDPE Soil Jar** | | | | | | | |
| A_SB11_0.1, A_SB12_0.1, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB16_0.1, A_SB17_0.1, A_SB18_0.1, A_SB19_0.1, A_SB20_0.1, A_SB22_0.1, QC15, QC21, | A_SB11_0.5, A_SB12_0.5, A_SB13_0.5, A_SB14_0.5, A_SB15_0.5, A_SB16_0.5, A_SB17_0.5, A_SB18_0.5, A_SB19_0.5, A_SB21_0.5, A_SB22_0.5, QC17, QC23 | ---- | ---- | ---- | 31-Mar-2021 | 24-Mar-2021 | **7** |
| **HDPE Soil Jar** | | | | | | | |
| QC27 | | ---- | ---- | ---- | 31-Mar-2021 | 25-Mar-2021 | **6** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 10 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 10 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / *Container / Client Sample ID(s)* | | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SB01_0.1, | A_SB01_0.5, | **09-Mar-2021** | **----** | ---- | ---- | **31-Mar-2021** | 23-Mar-2021 | ✘ |
| A_SB02_0.1, | A_SB02_0.5, | | | | | | | |
| A_SB03_0.1, | A_SB03_0.4, | | | | | | | |
| A_SB04_0.1, | A_SB04_0.5, | | | | | | | |
| A_SB05_0.1, | A_SB05_0.4, | | | | | | | |
| A_SB06_0.1, | A_SB06_0.5, | | | | | | | |
| A_SB07_0.1, | A_SB07_0.4, | | | | | | | |
| A_SB08_0.1, | A_SB08_0.4, | | | | | | | |
| A_SB09_0.1, | A_SB09_0.5, | | | | | | | |
| A_SB10_0.1, | A_SB10_0.5, | | | | | | | |
| A_SB21_0.1, | QC02, | | | | | | | |
| QC04, | QC08, | | | | | | | |
| QC11, | QC13 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C) - Continued** | | | | | | | |
| A_SB11_0.1, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB13_0.5, A_SB14_0.1, A_SB14_0.5, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.5, A_SB22_0.1, A_SB22_0.5, QC15, QC17, QC21, QC23 | **10-Mar-2021** | **----** | ---- | ---- | **31-Mar-2021** | 24-Mar-2021 | ✘ |
| **HDPE Soil Jar (EA055)** | | | | | | | |
| QC27 | **11-Mar-2021** | **----** | ---- | ---- | **31-Mar-2021** | 25-Mar-2021 | ✘ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5, A_SB07_0.1, A_SB07_0.4, A_SB08_0.1, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, A_SB10_0.1, A_SB10_0.5 | **09-Mar-2021** | **01-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB21_0.1, QC02, QC04, QC08, QC11, QC13 | **09-Mar-2021** | **06-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_0.1, A_SB11_0.5, A_SB12_0.1 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB12_0.5, A_SB13_0.1, A_SB13_0.5, A_SB14_0.1, A_SB14_0.5, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.5, A_SB22_0.1, A_SB22_0.5, QC15, QC17, QC21, QC23 | **10-Mar-2021** | **06-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC27 | **11-Mar-2021** | **06-Apr-2021** | 07-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5, A_SB07_0.1, A_SB07_0.4, A_SB08_0.1, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, A_SB10_0.1, A_SB10_0.5 | **09-Mar-2021** | **01-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB21_0.1, QC02, QC04, QC08, QC11, QC13 | **09-Mar-2021** | **06-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_0.1, A_SB11_0.5, A_SB12_0.1 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB12_0.5, A_SB13_0.1, A_SB13_0.5, A_SB14_0.1, A_SB14_0.5, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.5, A_SB22_0.1, A_SB22_0.5, QC15, QC17, QC21, QC23 | **10-Mar-2021** | **06-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC27 | **11-Mar-2021** | **06-Apr-2021** | 07-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_0.1, A_SB01_0.5,<br>A_SB02_0.1, A_SB02_0.5,<br>A_SB03_0.1, A_SB03_0.4,<br>A_SB04_0.1, A_SB04_0.5,<br>A_SB05_0.1, A_SB05_0.4,<br>A_SB06_0.1, A_SB06_0.5,<br>A_SB07_0.1, A_SB07_0.4,<br>A_SB08_0.1, A_SB08_0.4,<br>A_SB09_0.1, A_SB09_0.5,<br>A_SB10_0.1, A_SB10_0.5 | **09-Mar-2021** | **01-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB21_0.1, QC02,<br>QC04, QC08,<br>QC11, QC13 | **09-Mar-2021** | **06-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_0.1, A_SB11_0.5,<br>A_SB12_0.1 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB12_0.5, A_SB13_0.1,<br>A_SB13_0.5, A_SB14_0.1,<br>A_SB14_0.5, A_SB15_0.1,<br>A_SB15_0.5, A_SB16_0.1,<br>A_SB16_0.5, A_SB17_0.1,<br>A_SB17_0.5, A_SB18_0.1,<br>A_SB18_0.5, A_SB19_0.1,<br>A_SB19_0.5, A_SB20_0.1,<br>A_SB21_0.5, A_SB22_0.1,<br>A_SB22_0.5, QC15,<br>QC17, QC21,<br>QC23 | **10-Mar-2021** | **06-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC27 | **11-Mar-2021** | **06-Apr-2021** | 07-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SB01_0.1, | A_SB01_0.5, | **09-Mar-2021** | **01-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_SB02_0.1, | A_SB02_0.5, | | | | | | | |
| A_SB03_0.1, | A_SB03_0.4, | | | | | | | |
| A_SB04_0.1, | A_SB04_0.5, | | | | | | | |
| A_SB05_0.1, | A_SB05_0.4, | | | | | | | |
| A_SB06_0.1, | A_SB06_0.5, | | | | | | | |
| A_SB07_0.1, | A_SB07_0.4, | | | | | | | |
| A_SB08_0.1, | A_SB08_0.4, | | | | | | | |
| A_SB09_0.1, | A_SB09_0.5, | | | | | | | |
| A_SB10_0.1, | A_SB10_0.5 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SB21_0.1, | QC02, | **09-Mar-2021** | **06-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| QC04, | QC08, | | | | | | | |
| QC11, | QC13 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SB11_0.1, | A_SB11_0.5, | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| A_SB12_0.1 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SB12_0.5, | A_SB13_0.1, | **10-Mar-2021** | **06-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| A_SB13_0.5, | A_SB14_0.1, | | | | | | | |
| A_SB14_0.5, | A_SB15_0.1, | | | | | | | |
| A_SB15_0.5, | A_SB16_0.1, | | | | | | | |
| A_SB16_0.5, | A_SB17_0.1, | | | | | | | |
| A_SB17_0.5, | A_SB18_0.1, | | | | | | | |
| A_SB18_0.5, | A_SB19_0.1, | | | | | | | |
| A_SB19_0.5, | A_SB20_0.1, | | | | | | | |
| A_SB21_0.5, | A_SB22_0.1, | | | | | | | |
| A_SB22_0.5, | QC15, | | | | | | | |
| QC17, | QC21, | | | | | | | |
| QC23 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC27 | | **11-Mar-2021** | **06-Apr-2021** | 07-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5, A_SB07_0.1, A_SB07_0.4, A_SB08_0.1, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, A_SB10_0.1, A_SB10_0.5 | **09-Mar-2021** | **01-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB21_0.1, QC02, QC04, QC08, QC11, QC13 | **09-Mar-2021** | **06-Apr-2021** | 05-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_0.1, A_SB11_0.5, A_SB12_0.1 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 11-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB12_0.5, A_SB13_0.1, A_SB13_0.5, A_SB14_0.1, A_SB14_0.5, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.5, A_SB22_0.1, A_SB22_0.5, QC15, QC17, QC21, QC23 | **10-Mar-2021** | **06-Apr-2021** | 06-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC27 | **11-Mar-2021** | **06-Apr-2021** | 07-Sep-2021 | ✓ | **06-Apr-2021** | 16-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>QC06, QC10, COUNCIL_TAP1, COUNCIL_TAP2, QC32 | **09-Mar-2021** | **07-Apr-2021** | 05-Sep-2021 | ✓ | **08-Apr-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC25 | **11-Mar-2021** | **07-Apr-2021** | 07-Sep-2021 | ✓ | **08-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>QC06, QC10, COUNCIL_TAP1, COUNCIL_TAP2, QC32 | **09-Mar-2021** | **07-Apr-2021** | 05-Sep-2021 | ✓ | **08-Apr-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC25 | **11-Mar-2021** | **07-Apr-2021** | 07-Sep-2021 | ✓ | **08-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>QC06, QC10, COUNCIL_TAP1, COUNCIL_TAP2, QC32 | **09-Mar-2021** | **07-Apr-2021** | 05-Sep-2021 | ✓ | **08-Apr-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC25 | **11-Mar-2021** | **07-Apr-2021** | 07-Sep-2021 | ✓ | **08-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>QC06, QC10, COUNCIL_TAP1, COUNCIL_TAP2, QC32 | **09-Mar-2021** | **07-Apr-2021** | 05-Sep-2021 | ✓ | **08-Apr-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC25 | **11-Mar-2021** | **07-Apr-2021** | 07-Sep-2021 | ✓ | **08-Apr-2021** | 07-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>QC06, QC10, COUNCIL_TAP1, COUNCIL_TAP2, QC32 | **09-Mar-2021** | **07-Apr-2021** | 05-Sep-2021 | ✓ | **08-Apr-2021** | 05-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC25 | **11-Mar-2021** | **07-Apr-2021** | 07-Sep-2021 | ✓ | **08-Apr-2021** | 07-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 7 | 57 | **12.28** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 8 | 76 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 76 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 76 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 76 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 10 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 10 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111279**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 6 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : Split into ES2111278 | No. of samples received / analysed | : 99 / 59 |
| | | No. of samples NOT collected | 5 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has been split from ES2111278.**
- **Please note that samples A_SB15_0.1, A_SB15_0.5, A_SB15_1.0 and A_SB15_1.5 have been duplicated on the COC. Sample QC19 was not received. Sample A_SB05_0.5 has the depth 0.4 on the PFAS jar. Sample A_SB22_1.0 has the depth 0.8 on the PFAS jar.**
- **Samples QC03, QC05, QC07, QC09, QC12, QC14, QC16, QC18, QC20, QC22, QC24, QC27 and QC29 have been forwarded to Eurofins for testing.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Sample was not received due to the following reason: ID's duplicated on the COC
- Sample QC19 was not received due to the following reason: Not received
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2111279-017 : [ 09-Mar-2021 ] : A_SB05_0.5 - A_SB05_0.4
ES2111279-085 : [ 10-Mar-2021 ] : A_SB22_1.0 - A_SB22_0.8

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111279-001 | 09-Mar-2021 00:00 | A_SB01_0.1 | | ✓ | ✓ |
| ES2111279-002 | 09-Mar-2021 00:00 | A_SB01_0.5 | | ✓ | ✓ |
| ES2111279-003 | 09-Mar-2021 00:00 | A_SB01_1.0 | ✓ | | |
| ES2111279-004 | 09-Mar-2021 00:00 | A_SB01_1.5 | ✓ | | |
| ES2111279-005 | 09-Mar-2021 00:00 | A_SB02_0.1 | | ✓ | ✓ |
| ES2111279-006 | 09-Mar-2021 00:00 | A_SB02_0.5 | | ✓ | ✓ |
| ES2111279-007 | 09-Mar-2021 00:00 | A_SB02_1.0 | ✓ | | |
| ES2111279-008 | 09-Mar-2021 00:00 | A_SB02_1.5 | ✓ | | |
| ES2111279-009 | 09-Mar-2021 00:00 | A_SB03_0.1 | | ✓ | ✓ |
| ES2111279-010 | 09-Mar-2021 00:00 | A_SB03_0.4 | | ✓ | ✓ |
| ES2111279-011 | 09-Mar-2021 00:00 | A_SB04_0.1 | | ✓ | ✓ |
| ES2111279-012 | 09-Mar-2021 00:00 | A_SB04_0.5 | | ✓ | ✓ |
| ES2111279-013 | 09-Mar-2021 00:00 | A_SB04_1.0 | ✓ | | |
| ES2111279-014 | 09-Mar-2021 00:00 | A_SB04_1.2 | ✓ | | |
| ES2111279-015 | 09-Mar-2021 00:00 | A_SB04_1.5 | ✓ | | |
| ES2111279-016 | 09-Mar-2021 00:00 | A_SB05_0.1 | | ✓ | ✓ |
| ES2111279-017 | 09-Mar-2021 00:00 | A_SB05_0.5 A_SB05_0... | | ✓ | ✓ |
| ES2111279-018 | 09-Mar-2021 00:00 | A_SB05_1.0 | ✓ | | |
| ES2111279-019 | 09-Mar-2021 00:00 | A_SB05_1.3 | ✓ | | |
| ES2111279-020 | 09-Mar-2021 00:00 | A_SB05_1.5 | ✓ | | |
| ES2111279-021 | 09-Mar-2021 00:00 | A_SB06_0.1 | | ✓ | ✓ |
| ES2111279-022 | 09-Mar-2021 00:00 | A_SB06_0.5 | | ✓ | ✓ |
| ES2111279-023 | 09-Mar-2021 00:00 | A_SB06_1.0 | ✓ | | |
| ES2111279-024 | 09-Mar-2021 00:00 | A_SB06_1.5 | ✓ | | |
| ES2111279-025 | 09-Mar-2021 00:00 | A_SB07_0.1 | | ✓ | ✓ |
| ES2111279-026 | 09-Mar-2021 00:00 | A_SB07_0.4 | | ✓ | ✓ |
| ES2111279-027 | 09-Mar-2021 00:00 | A_SB07_0.8 | ✓ | | |
| ES2111279-028 | 09-Mar-2021 00:00 | A_SB07_1.5 | ✓ | | |
| ES2111279-029 | 09-Mar-2021 00:00 | A_SB08_0.1 | | ✓ | ✓ |
| ES2111279-030 | 09-Mar-2021 00:00 | A_SB08_0.4 | | ✓ | ✓ |
| ES2111279-031 | 09-Mar-2021 00:00 | A_SB08_1.0 | ✓ | | |
| ES2111279-032 | 09-Mar-2021 00:00 | A_SB08_1.5 | ✓ | | |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111279-033 | 09-Mar-2021 00:00 | A_SB09_0.1 | | ✓ | ✓ |
| ES2111279-034 | 09-Mar-2021 00:00 | A_SB09_0.5 | | ✓ | ✓ |
| ES2111279-035 | 09-Mar-2021 00:00 | A_SB09_1.5 | ✓ | | |
| ES2111279-036 | 09-Mar-2021 00:00 | A_SB10_0.1 | | ✓ | ✓ |
| ES2111279-037 | 09-Mar-2021 00:00 | A_SB10_0.5 | | ✓ | ✓ |
| ES2111279-038 | 09-Mar-2021 00:00 | A_SB10_1.5 | ✓ | | |
| ES2111279-039 | 10-Mar-2021 00:00 | A_SB11_0.1 | | ✓ | ✓ |
| ES2111279-040 | 10-Mar-2021 00:00 | A_SB11_0.5 | | ✓ | ✓ |
| ES2111279-041 | 10-Mar-2021 00:00 | A_SB11_1.2 | ✓ | | |
| ES2111279-042 | 10-Mar-2021 00:00 | A_SB11_1.5 | ✓ | | |
| ES2111279-043 | 10-Mar-2021 00:00 | A_SB12_0.1 | | ✓ | ✓ |
| ES2111279-044 | 10-Mar-2021 00:00 | A_SB12_0.5 | | ✓ | ✓ |
| ES2111279-045 | 10-Mar-2021 00:00 | A_SB12_1.0 | ✓ | | |
| ES2111279-046 | 10-Mar-2021 00:00 | A_SB12_1.5 | ✓ | | |
| ES2111279-047 | 10-Mar-2021 00:00 | A_SB13_0.1 | | ✓ | ✓ |
| ES2111279-048 | 10-Mar-2021 00:00 | A_SB13_0.5 | | ✓ | ✓ |
| ES2111279-049 | 10-Mar-2021 00:00 | A_SB13_1.0 | ✓ | | |
| ES2111279-050 | 10-Mar-2021 00:00 | A_SB13_1.5 | ✓ | | |
| ES2111279-051 | 10-Mar-2021 00:00 | A_SB14_0.1 | | ✓ | ✓ |
| ES2111279-052 | 10-Mar-2021 00:00 | A_SB14_0.5 | | ✓ | ✓ |
| ES2111279-053 | 10-Mar-2021 00:00 | A_SB14_1.0 | ✓ | | |
| ES2111279-054 | 10-Mar-2021 00:00 | A_SB14_1.5 | ✓ | | |
| ES2111279-055 | 10-Mar-2021 00:00 | A_SB15_0.1 | | ✓ | ✓ |
| ES2111279-056 | 10-Mar-2021 00:00 | A_SB15_0.5 | | ✓ | ✓ |
| ES2111279-057 | 10-Mar-2021 00:00 | A_SB15_1.0 | ✓ | | |
| ES2111279-058 | 10-Mar-2021 00:00 | A_SB15_1.5 | ✓ | | |
| ES2111279-063 | 10-Mar-2021 00:00 | A_SB16_0.1 | | ✓ | ✓ |
| ES2111279-064 | 10-Mar-2021 00:00 | A_SB16_0.5 | | ✓ | ✓ |
| ES2111279-065 | 10-Mar-2021 00:00 | A_SB16_1.0 | ✓ | | |
| ES2111279-066 | 10-Mar-2021 00:00 | A_SB16_1.5 | ✓ | | |
| ES2111279-067 | 10-Mar-2021 00:00 | A_SB17_0.1 | | ✓ | ✓ |
| ES2111279-068 | 10-Mar-2021 00:00 | A_SB17_0.5 | | ✓ | ✓ |
| ES2111279-069 | 10-Mar-2021 00:00 | A_SB17_1.0 | ✓ | | |
| ES2111279-070 | 10-Mar-2021 00:00 | A_SB17_1.5 | ✓ | | |
| ES2111279-071 | 10-Mar-2021 00:00 | A_SB18_0.1 | | ✓ | ✓ |
| ES2111279-072 | 10-Mar-2021 00:00 | A_SB18_0.5 | | ✓ | ✓ |
| ES2111279-073 | 10-Mar-2021 00:00 | A_SB18_1.0 | ✓ | | |
| ES2111279-074 | 10-Mar-2021 00:00 | A_SB18_1.5 | ✓ | | |
| ES2111279-075 | 10-Mar-2021 00:00 | A_SB19_0.1 | | ✓ | ✓ |
| ES2111279-076 | 10-Mar-2021 00:00 | A_SB19_0.5 | | ✓ | ✓ |
| ES2111279-077 | 10-Mar-2021 00:00 | A_SB19_1.0 | ✓ | | |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111279-078 | 10-Mar-2021 00:00 | A_SB19_1.5 | ✓ | | |
| ES2111279-079 | 10-Mar-2021 00:00 | A_SB20_0.1 | | ✓ | ✓ |
| ES2111279-080 | 09-Mar-2021 00:00 | A_SB21_0.1 | | ✓ | ✓ |
| ES2111279-081 | 10-Mar-2021 00:00 | A_SB21_0.5 | | ✓ | ✓ |
| ES2111279-082 | 10-Mar-2021 00:00 | A_SB21_1.0 | ✓ | | |
| ES2111279-083 | 10-Mar-2021 00:00 | A_SB22_0.1 | | ✓ | ✓ |
| ES2111279-084 | 10-Mar-2021 00:00 | A_SB22_0.5 | | ✓ | ✓ |
| ES2111279-085 | 10-Mar-2021 00:00 | A_SB22_1.0 A_SB22_0... | ✓ | | |
| ES2111279-086 | 09-Mar-2021 00:00 | A_SB22_1.5 | ✓ | | |
| ES2111279-088 | 09-Mar-2021 00:00 | QC02 | | ✓ | ✓ |
| ES2111279-089 | 09-Mar-2021 00:00 | QC04 | | ✓ | ✓ |
| ES2111279-091 | 09-Mar-2021 00:00 | QC08 | | ✓ | ✓ |
| ES2111279-093 | 09-Mar-2021 00:00 | QC11 | | ✓ | ✓ |
| ES2111279-094 | 09-Mar-2021 00:00 | QC13 | | ✓ | ✓ |
| ES2111279-097 | 10-Mar-2021 00:00 | QC15 | | ✓ | ✓ |
| ES2111279-098 | 10-Mar-2021 00:00 | QC17 | | ✓ | ✓ |
| ES2111279-100 | 10-Mar-2021 00:00 | QC21 | | ✓ | ✓ |
| ES2111279-101 | 10-Mar-2021 00:00 | QC23 | | ✓ | ✓ |
| ES2111279-103 | 11-Mar-2021 00:00 | QC27 | | ✓ | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111279-087 | 09-Mar-2021 00:00 | QC01 | ✓ | |
| ES2111279-090 | 09-Mar-2021 00:00 | QC06 | | ✓ |
| ES2111279-092 | 09-Mar-2021 00:00 | QC10 | | ✓ |
| ES2111279-095 | 09-Mar-2021 00:00 | COUNCIL_TAP1 | | ✓ |
| ES2111279-096 | 09-Mar-2021 00:00 | COUNCIL_TAP2 | | ✓ |
| ES2111279-102 | 11-Mar-2021 00:00 | QC25 | | ✓ |
| ES2111279-104 | 09-Mar-2021 00:00 | QC32 | | ✓ |

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / Client Sample ID(s) | Container | Due for extraction | Due for analysis | Samples Received Date | Samples Received Evaluation | Instructions Received Date | Instructions Received Evaluation |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content** | | | | | | | |
| A_SB01_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB01_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB02_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB02_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB03_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB03_0.4 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB04_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB04_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB05_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB05_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB06_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB06_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB07_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB07_0.4 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB08_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB08_0.4 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB09_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB09_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB10_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB10_0.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB11_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB11_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB12_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB12_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB13_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB13_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB14_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB14_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB15_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB15_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB16_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB16_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB17_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB17_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB18_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB18_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB19_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB19_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB20_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB21_0.1 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB21_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB22_0.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| A_SB22_0.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC02 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC04 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC08 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC11 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC13 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC15 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC17 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC21 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC23 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |
| QC27 | HDPE Soil Jar | ---- | 25-Mar-2021 | 26-Mar-2021 | × | ---- | ---- |

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | ~~17776~~ 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: Subcon/ Forward Lab / Split WO
Lab / Analysis: Split into ES2111278
Organised By / Date: Eurofins / QC03, QC05, QC07, QC09, QC12,
Relinquished By / Date: QC14, QC16, QC18, QC20, QC22, QC24,
Connote / Courier: QC27, QC29
WO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A-SB01-0.1 | Soil | 9/3/21 | AM | 1 PFAS JAR | 1 | X | | |
| 2 | A-SB01-0.5 | | | | | | X | | |
| 3 | A-SB01-1.0 | | | | | | | X | |
| 4 | A-SB01-1.5 | | | | | | | X | |
| 5 | A-SB02-0.1 | | | | | | X | | |
| 6 | A-SB02-0.5 | | | | | | X | | |
| 7 | A-SB02-1.0 | | | | | | | X | |
| 8 | A-SB02-1.5 | | | | | | | X | |
| 9 | A-SB03-0.1 | | | | | | X | | |
| 10 | A-SB03-0.4 | | | | | | X | | |
| 11 | A-SB04-0.1 | | | | | | X | X | |
| 12 | A-SB04-0.5 | | | | | | X | X | |
| 13 | A-SB04-1.0 | | | | | | | X | |
| 14 | A-SB04-1.2 | | | | | | | X | |
| 15 | A-SB04-1.8 | | | | | | | X | |
| 16 | A-SB05-0.1 | | | | | | X | | |
| 17 | A-SB05-0.5 | | | | | | X | | |
| 18 | A-SB05-1.0 | | | | | | | X | |
| 19 | A-SB05-1.3 | | | | | | | X | |
| 20 | A-SB05-1.5 | | | | | | | X | |
| Total | | | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2111279
Telephone : - 61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams Signature: Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: Carlyn Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8516

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 2 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | A-SB06-0.1 | Soil | 9/3/21 | AM | PFAS JAR | 1 | X | | | | | | | | | | | |
| 22 | A-SB06-0.5 | | | AM | | | X | | | | | | | | | | | |
| 23 | A-SB06-1.0 | | | AM | | | | | | | | | | | | | X | |
| 24 | A-SB06-1.5 | | | AM | | | | | | | | | | | | | X | |
| 25 | A-SB07-0.1 | | | PM | | | X | | | | | | | | | | | |
| 26 | A-SB07-0.4 | | | | | | X | | | | | | | | | | | |
| 27 | A-SB07-0.8 | | | | | | | | | | | | | | | | X | |
| 28 | A-SB07-1.5 | | | | | | | | | | | | | | | | X | |
| 29 | A-SB08-0.1 | | | | | | X | | | | | | | | | | | |
| 30 | A-SB08-0.4 | | | | | | X | | | | | | | | | | | |
| 31 | A-SB08-1.0 | | | | | | | | | | | | | | | | X | |
| 32 | A-SB08-1.5 | | | | | | | | | | | | | | | | X | |
| 33 | A-SB09-0.1 | | | | | | X | | | | | | | | | | | |
| 34 | A-SB09-0.5 | | | | | | X | | | | | | | | | | | |
| 35 | A-SB09-1.5 | | | | | | | | | | | | | | | | X | |
| 36 | A-SB10-0.1 | | | | | | X | | | | | | | | | | | |
| 37 | A-SB10-0.5 | | | | | | X | | | | | | | | | | | |
| 38 | A-SB10-1.5 | | | | | | | | | | | | | | | | X | |
| 39 | A-SB11-0.1 | | 10/3/21 | AM | | | X | | | | | | | | | | | |
| 40 | A-SB11-0.5 | | 10/3/21 | AM | | | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

**Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:**

**Sampler Name:**

**Signature:**

**Date:** 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

**Laboratory:** ALS NSW
**Address:** 277-289 Woodpark Road, Smithfield
**Contact:** Brenda Hong
**Phone:** 02 8784 8515

| | | | |
|---|---|---|---|
| **Job Number:** | 17776 | **Purchase Order:** | |
| **Project Name:** | DSI | **Quote No:** | SY-665-19 V2 |
| **Sampled By:** | CW / HP | **Turn Around Time:** | standard |
| **Project Manager:** | Carlyn Williams | **Page:** | 3 of 10 |
| **Email Report To:** | carlyn.williams@senversa.com.au | **Phone/Mobile:** | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| 41 | A_SB11_1.2 | Soil | 10/3/21 | AM | PFAS JAR | 1 | | | | | | | | | | | X | |
| 42 | A_SB11_1.5 | | | | | | | | | | | | | | | | X | |
| 43 | A_SB12_0.1 | | | | | | X | | | | | | | | | | | |
| 44 | A_SB12_0.5 | | | | | | X | | | | | | | | | | | |
| 45 | A_SB12_1.0 | | | | | | | | | | | | | | | | X | |
| 46 | A_SB12_1.5 | | | | | | | | | | | | | | | | X | |
| 47 | A_SB13_0.1 | | | | | | X | | | | | | | | | | | |
| 48 | A_SB13_0.5 | | | | | | X | | | | | | | | | | | |
| 49 | A_SB13_1.0 | | | | | | | | | | | | | | | | X | |
| 50 | A_SB13_1.5 | | | | | | | | | | | | | | | | X | |
| 51 | A_SB14_0.1 | | | | | | X | | | | | | | | | | | |
| 52 | A_SB14_0.5 | | | | | | X | | | | | | | | | | | |
| 53 | A_SB14_1.0 | | | | | | | | | | | | | | | | X | |
| 54 | A_SB14_1.5 | | | | | | | | | | | | | | | | X | |
| 55 | A_SB15_0.1 | | | PM | | | X | | | | | | | | | | | |
| 56 | A_SB15_0.5 | | | | | | X | | | | | | | | | | | |
| 57 | A_SB15_1.0 | | | | | | | | | | | | | | | | X | |
| 58 | A_SB15_1.5 | | | | | | | | | | | | | | | | X | |
| 59 | A_SB15_0.1 | | | | | | X | | | | | | | | | | | |
| 60 | A_SB15_0.5 | | | | | | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

**Sampler:** I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

**Sampler Name:**

**Signature:**

**Date:** 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 4 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Sample Information: Matrix * | Date | Time | Container Information: Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | A_SB15_1.0 | Soil | 10/3/21 | PM | PFAS JAR | 1 | | | | | | | | | | | X | |
| 62 | A_SB15_1.5 | | | | | | | | | | | | | | | | X | |
| 63 | A_SB16_0.1 | | | | | | X | | | | | | | | | | | |
| 64 | A_SB16_0.5 | | | | | | X | | | | | | | | | | | |
| 65 | A_SB16_1.0 | | | | | | | | | | | | | | | | X | |
| 66 | A_SB16_1.5 | | | | | | | | | | | | | | | | X | |
| 67 | A_SB17_0.1 | | | | | | X | | | | | | | | | | | |
| 68 | A_SB17_0.5 | | | | | | X | | | | | | | | | | | |
| 69 | A_SB17_1.0 | | | | | | | | | | | | | | | | X | |
| 70 | A_SB17_1.5 | | | | | | | | | | | | | | | | X | |
| 71 | A_SB18_0.1 | | | | | | X | | | | | | | | | | | |
| 72 | A_SB18_0.5 | | | | | | X | | | | | | | | | | | |
| 73 | A_SB18_1.0 | | | | | | | | | | | | | | | | X | |
| 74 | A_SB18_1.5 | | | | | | | | | | | | | | | | X | |
| 75 | A_SB19_0.1 | | | | | | X | | | | | | | | | | | |
| 76 | A_SB19_0.5 | | | | | | X | | | | | | | | | | | |
| 77 | A_SB19_1.0 | | | | | | | | | | | | | | | | X | |
| 78 | A_SB19_1.5 | | | | | | | | | | | | | | | | X | |
| 79 | A_SB20_0.1 | | | | | | X | | | | | | | | | | | |
| 80 | A_SB21_0.5 | | | | | | X | | | | | | | | | | | |
| Total | | | | | | | 10 | | | | | | | | | | 9 | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
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Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 9515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 5 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | A-SB21-0.5 | Soil | 10/3/21 | PM | PFAS JAR | 1 | x | | | | | | | | | | | |
| 82 | A-SB21-1.0 | Soil | 10/3/21 | | | | | | | | | | | | | | x | |
| 83 | A-SB22-0.1 | | | | | | x | | | | | | | | | | | |
| 84 | A-SB22-0.5 | | | | | | x | | | | | | | | | | | |
| 85 | A-SB22-1.0 | | | | | | | | | | | | | | | | x | |
| 86 | A-SB22-1.5 | | | | | | | | | | | | | | | | x | |
| 87 | QC01 | Water | 9/3/21 | | PFAS BOTTLE | 2 | | | | | | | | | | | | |
| 88 | QC02 | Soil | | | | | x | | | | | | | | | | | |
| – | QC03 | " | | | | | x | | | Please forward to Eurofins | | | | | | | | |
| 89 | QC04 | " | | | | | x | | | | | | | | | | | |
| – | QC05 | " | | | | | x | | | Please forward to Eurofins | | | | | | | | |
| 90 | QC06 | Water | | | BOTTLE | 2 | x | | | | | | | | | | | |
| – | QC07 | Water | | | " | 2 | x | | | Please forward to Eurofins | | | | | | | | |
| 91 | QC08 | Soil | | | | | x | | | | | | | | | | | |
| – | QC09 | Soil | | | | | x | | | Please forward to Eurofins | | | | | | | | |
| 92 | QC10 | Water | | | BOTTLE | 2 | x | | | | | | | | | | | |
| 93 | QC11 | Soil | | | JAR | 1 | x | | | | | | | | | | | |
| – | QC12 | Soil | | | " | 1 | x | | | Please forward to Eurofins | | | | | | | | |
| 94 | QC13 | | | | | | x | | | | | | | | | | | |
| – | QC14 | | | | | | x | | | Please forward to Eurofins | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 4/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MGoud | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

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Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 389

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-565-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0461 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | |
|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 95 | COUNCIL-TAP1 | W | 9/3 | | BOTTLE | 2 | X | |
| 96 | COUNCIL-TAP2 | W | 9/3 | | " | 2 | X | |
| 97 | QC15 | Soil | 10/3 | | JAR | 1 | X | |
| — | QC16 | | | | | | X | Please forward to Eurofins |
| 98 | QC17 | | | | | | X | |
| — | QC18 | | | | | | X | Please forward to Eurofins |
| 99 | QC19 | | | | | | X | |
| — | QC20 | | | | | | X | Please forward to Eurofins |
| 100 | QC21 | | | | | | X | |
| — | QC22 | | | | | | X | Please forward to Eurofins |
| 101 | QC23 | | | | | | X | |
| — | QC24 | | | | | | X | Please forward to Eurofins |
| 102 | QC25 | W | | | BOTTLE | 2 | X | |
| — | QC27 | S | 11/3 | | JAR | 1 | X | Please forward to Eurofins |
| 103 | QC28 | S | | | | | X | |
| — | QC29 | S | | | | | X | Please forward to Eurofins |
| 104 | QC3[redacted] | W | | | BOTTLE | 2 | X | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of those samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MJoud | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

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Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 21 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 14:05 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 79 | | |
| No. of samples analysed | : 37 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | QC54 | QC37 | QC52 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-040 | ES2111280-041 | ES2111280-048 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | GRASS | GRASS | GRASS | ---- | ---- |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 92.8 | 286 | 75.2 | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 3 | <1 | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | 9 | <1 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | 4 | <1 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 13 | <1 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | QC54 | QC37 | QC52 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-040 | ES2111280-041 | ES2111280-048 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | **16** | <1 | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | **72.0** | **81.5** | **73.5** | ---- | ---- |
| 13C8-PFOA | ---- | 1 | % | **120** | **120** | **115** | ---- | ---- |

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_DAM | WW11_DAM | QC59 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-032 | ES2111280-033 | ES2111280-051 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | **2.42** | **0.51** | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **3.00** | **0.51** | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | **13.6** | **3.76** | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | **1.65** | **0.23** | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **21.0** | **5.59** | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.3** | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | **0.55** | **0.18** | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **2.21** | **0.59** | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.75** | **0.06** | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **1.25** | **0.22** | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_DAM | WW11_DAM | QC59 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-032 | ES2111280-033 | ES2111280-051 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **46.7** | **11.6** | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **34.6** | **9.35** | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **42.1** | **10.9** | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **80.1** | **65.0** | **74.6** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **114** | **85.0** | **118** | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS140 | A_SS141 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-005 | ES2111280-006 | ES2111280-007 | ES2111280-008 | ES2111280-009 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **15.3** | **15.1** | **21.1** | **31.7** | **29.8** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0016** | **0.0019** | **0.0071** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0035** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0010** | **0.0456** | **0.443** | **0.215** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0076** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | **0.0006** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0005** | **0.0038** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0046** | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS140 | A_SS141 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-005 | ES2111280-006 | ES2111280-007 | ES2111280-008 | ES2111280-009 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0010** | **0.0010** | **0.0594** | **0.446** | **0.230** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0010** | **0.0472** | **0.445** | **0.222** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0010** | **0.0010** | **0.0472** | **0.446** | **0.226** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **99.5** | **89.5** | **117** | **80.5** | **81.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **117** | **116** | **117** | **106** | **114** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB24_0.1 | A_SB25_0.1 | A_SB25_0.5 | A_SB26_0.1 | A_SB26_0.3 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-011 | ES2111280-012 | ES2111280-013 | ES2111280-016 | ES2111280-017 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **8.0** | **14.9** | **22.4** | **18.1** | **19.5** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0008** | **0.0007** | **0.0032** | **0.0005** | **0.0003** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0866** | **0.0384** | **0.0019** | **0.0156** | **0.0118** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0039** | **0.0006** | <0.0002 | **0.0006** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0003** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | **0.0006** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0004** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | **0.0005** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB24_0.1 | A_SB25_0.1 | A_SB25_0.5 | A_SB26_0.1 | A_SB26_0.3 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-011 | ES2111280-012 | ES2111280-013 | ES2111280-016 | ES2111280-017 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0918** | **0.0397** | **0.0055** | **0.0180** | **0.0121** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0874** | **0.0391** | **0.0051** | **0.0161** | **0.0121** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0874** | **0.0391** | **0.0055** | **0.0174** | **0.0121** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **75.5** | **95.5** | **82.0** | **98.0** | **87.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **113** | **114** | **119** | **108** | **109** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD02 | BBC_SD03 | QC39 | QC46 | QC48 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 27-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-035 | ES2111280-036 | ES2111280-042 | ES2111280-046 | ES2111280-047 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **34.7** | **21.8** | **52.8** | **15.6** | **23.0** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0007** | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0009** | <0.0002 | **0.0002** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0142** | **0.0005** | **0.0037** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0016** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0009** | **0.0005** | **0.0991** | **0.0182** | **0.0015** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0008** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | **0.0002** | **0.0004** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD02 | BBC_SD03 | QC39 | QC46 | QC48 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 27-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-035 | ES2111280-036 | ES2111280-042 | ES2111280-046 | ES2111280-047 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0009** | **0.0005** | **0.119** | **0.0189** | **0.0058** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0009** | **0.0005** | **0.113** | **0.0187** | **0.0052** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0009** | **0.0005** | **0.116** | **0.0189** | **0.0056** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **81.0** | **94.5** | **75.5** | **81.5** | **94.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **118** | **120** | **105** | **106** | **118** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC56 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-049 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **23.7** | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0009** | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0049** | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0004** | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0003** | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0003** | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC56 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-049 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0071** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0058** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0068** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **94.5** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **114** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP3 | A_TAP4 | A_TAP5 | PWS_EB_TOILETS | PWS_HCAS_TOILETS |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-020 | ES2111280-021 | ES2111280-022 | ES2111280-025 | ES2111280-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.26** |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.41** |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | <0.02 | **0.03** | **0.04** | <0.02 | **11.5** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.85** |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.08** | <0.01 | <0.01 | **20.8** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | **0.2** |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.30** |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.17** |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.16** |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.55** |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP3 | A_TAP4 | A_TAP5 | PWS_EB_TOILETS | PWS_HCAS_TOILETS |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-020 | ES2111280-021 | ES2111280-022 | ES2111280-025 | ES2111280-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **38.2** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **32.3** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **35.9** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **95.6** | **94.1** | **90.3** | **90.4** | **75.1** |
| 13C8-PFOA | ---- | 0.02 | % | **94.6** | **94.4** | **95.1** | **97.7** | **117** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS | HC_SW01 | COCKPIT_SW01 | PWS_DUCK_DAM | QC41 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-031 | ES2111280-034 | ES2111280-037 | ES2111280-038 | ES2111280-043 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **1.38** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **1.43** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **10.3** | <0.02 | <0.02 | **0.07** | **0.08** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.86** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **21.2** | <0.01 | **0.03** | **0.02** | **0.02** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | **0.2** | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | **0.32** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **1.25** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | **0.16** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.57** | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS | HC_SW01 | COCKPIT_SW01 | PWS_DUCK_DAM | QC41 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-031 | ES2111280-034 | ES2111280-037 | ES2111280-038 | ES2111280-043 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **37.7** | <0.01 | **0.03** | **0.09** | **0.10** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **31.5** | <0.01 | **0.03** | **0.09** | **0.10** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **35.4** | <0.01 | **0.03** | **0.09** | **0.10** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **75.5** | **78.2** | **81.8** | **84.7** | **80.4** |
| 13C8-PFOA | ---- | 0.02 | % | **118** | **120** | **115** | **117** | **114** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC43 | QC45 | QC58 | QC61 | QC62 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-044 | ES2111280-045 | ES2111280-050 | ES2111280-052 | ES2111280-053 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC43 | QC45 | QC58 | QC61 | QC62 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-044 | ES2111280-045 | ES2111280-050 | ES2111280-052 | ES2111280-053 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **76.9** | **79.9** | **83.0** | **78.6** | **86.7** |
| 13C8-PFOA | ---- | 0.02 | % | **117** | **118** | **119** | **118** | **116** |

## Surrogate Control Limits

| Sub-Matrix: BIOTA | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 50 | 130 |
| 13C8-PFOA | ---- | 50 | 130 |

| Sub-Matrix: SEAWATER | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: SOIL | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: WATER | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 12 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 79 | | |
| No. of samples analysed | : 37 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **BIOTA**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328) - continued** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3591911)** | | | | | | | | | |
| ES2111268-032 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 40.2 | 38.3 | 5.01 | 0% - 20% |
| ES2111280-012 | A_SB25_0.1 | EA055: Moisture Content | ---- | 0.1 | % | 14.9 | 14.6 | 2.23 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3592983)** | | | | | | | | | |
| ES2111268-058 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 18.5 | 18.4 | 0.00 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593875)** | | | | | | | | | |
| ES2111268-022 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 64.9 | 66.1 | 1.87 | 0% - 20% |
| ES2111268-056 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 33.1 | 34.9 | 5.22 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3599409)** | | | | | | | | | |
| ES2111259-004 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 93.1 | 91.6 | 1.52 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0010 | 0.0009 | 11.2 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3597273) - continued** | | | | | | | | | |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3597273) - continued** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **BIOTA**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | 5 µg/kg | 102 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | 5 µg/kg | 109 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 5 µg/kg | 96.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <1 | 5 µg/kg | 118 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | 25 µg/kg | 114 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | 5 µg/kg | 80.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | 5 µg/kg | 111 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | 5 µg/kg | 119 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 90.8 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <1 | 5 µg/kg | 113 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 76.4 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 93.9 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <1 | 5 µg/kg | 106 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <2 | 12.5 µg/kg | 104 | 88.1 | 105 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 81.6 | 144 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 84.7 | 135 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 78.9 | 20.5 | 150 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | 5 µg/kg | 120 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | 5 µg/kg | 108 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | 5 µg/kg | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | 5 µg/kg | 87.6 | 65.0 | 137 |

Sub-Matrix: **BIOTA**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | 5 µg/kg | # 92.0 | 93.4 | 130 |
| **EP231P: PFAS Sums (QCLot: 3593328)** | | | | | | | | |
| EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | ---- | ---- | ---- | ---- |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 113 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 80.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 117 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.8 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 98.7 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 111 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 125 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 79.2 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3597273)** | | | | | | | | |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3597273) - continued** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 96.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 94.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 81.6 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 98.0 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 118 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 73.0 | 72.0 | 130 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3596425) - continued** | | | | | | | | |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 112 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.0 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 96.3 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 102 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 90.2 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 126 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.3 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 64.0 | 140 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3596425) - continued** | | | | | | | | |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.0 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 5 µg/kg | 103 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 5 µg/kg | 109 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 5 µg/kg | 111 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 5 µg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 5 µg/kg | 113 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 5 µg/kg | 122 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 25 µg/kg | 113 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 5 µg/kg | 125 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 5 µg/kg | 115 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 5 µg/kg | 81.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 5 µg/kg | 116 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 5 µg/kg | 115 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 5 µg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 5 µg/kg | 122 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 5 µg/kg | 118 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 5 µg/kg | 76.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 12.5 µg/kg | 95.8 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 µg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 12.5 µg/kg | # 111 | 88.1 | 105 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 12.5 µg/kg | 107 | 81.6 | 144 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 12.5 µg/kg | 107 | 84.7 | 135 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 12.5 µg/kg | 81.1 | 20.5 | 150 |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328) - continued** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 5 µg/kg | 114 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 5 µg/kg | 112 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 5 µg/kg | 112 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 5 µg/kg | 116 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 5 µg/kg | 86.8 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 5 µg/kg | # 92.4 | 93.4 | 130 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 88.0 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 94.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 94.0 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 78.8 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 100 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 105 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 115 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 103 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 72.4 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 92.0 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 119 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 101 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 105 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 88.0 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 82.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 94.1 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 126 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 101 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 108 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 116 | 68.7 | 130 |

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273) - continued** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 88.1 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 123 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 108 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 87.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 101 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 102 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 77.2 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 12 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 79 |
| Order number | : ---- | No. of samples analysed | : 37 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **BIOTA**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Laboratory Control Spike (LCS) Recoveries** | | | | | | | |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | QC-3593328-002 | ---- | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.0 % | 93.4-130% | **Recovery less than lower control limit** |
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231C: Perfluoroalkyl Sulfonamides | ES2111261--001 | Anonymous | **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 111 % | 88.1-105% | **Recovery greater than upper data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2111261--001 | Anonymous | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.4 % | 93.4-130% | **Recovery less than lower data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| *Method* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|
| **Container** / Client Sample ID(s) | *Date extracted* | *Due for extraction* | ***Days overdue*** | *Date analysed* | *Due for analysis* | ***Days overdue*** |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | |
| **HDPE Soil Jar** | | | | | | |
| BBC_SD02 | ---- | ---- | ---- | 30-Mar-2021 | 28-Mar-2021 | **2** |

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Moisture Content | 6 | 61 | 9.84 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 36 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 36 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **Biota Sample Pre-Preparation** | | | | | | | |
| **HDPE Soil Jar (Biota-PP)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 30-Mar-2021 | ---- | ---- | ---- | ---- | ---- |
| **Snap Lock Bag (Biota-PP)** | | | | | | | |
| QC37 | 13-Mar-2021 | 30-Mar-2021 | ---- | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231-PFOS-SP)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 01-Apr-2021 | 12-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231-PFOS-SP)** | | | | | | | |
| QC37 | 13-Mar-2021 | 01-Apr-2021 | 09-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 01-Apr-2021 | 12-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| QC37 | 13-Mar-2021 | 01-Apr-2021 | 09-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 01-Apr-2021 | 12-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| QC37 | 13-Mar-2021 | 01-Apr-2021 | 09-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 01-Apr-2021 | 12-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| QC37 | 13-Mar-2021 | 01-Apr-2021 | 09-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | |
| QC54, QC52 | 16-Mar-2021 | 01-Apr-2021 | 12-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | |
| QC37 | 13-Mar-2021 | 01-Apr-2021 | 09-Sep-2021 | ✓ | 01-Apr-2021 | 11-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar (EA055)**<br>BBC_SD02 | **14-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 28-Mar-2021 | × |
| **HDPE Soil Jar (EA055)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 29-Mar-2021 | ✓ |
| **HDPE Soil Jar (EA055)**<br>QC56 | **16-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 30-Mar-2021 | ✓ |
| **HDPE Soil Jar (EA055)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 31-Mar-2021 | ✓ |
| **HDPE Soil Jar (EA055)**<br>QC39 | **27-Mar-2021** | **----** | ---- | ---- | **01-Apr-2021** | 10-Apr-2021 | ✓ |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5, A_SB23_1.0, A_SB24_0.1, A_SB25_0.1, A_SB25_0.5, A_SB26_0.1, A_SB26_0.3, QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141, BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5, A_SB23_1.0, A_SB24_0.1, A_SB25_0.1, A_SB25_0.5, A_SB26_0.1, A_SB26_0.3, QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141, BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| WW11_DAM | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| HC_SW01, | PWS_DUCK_DAM, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| QC41, | QC43, | | | | | | | |
| QC45 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS | | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TAP3, | A_TAP4, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| A_TAP5, | PWS_HCAS_TOILETS, | | | | | | | |
| PWS_HEAD_TOILETS, | PWS_HEAD_DAM, | | | | | | | |
| QC58 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| COCKPIT_SW01, | QC59, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| QC61, | QC62 | | | | | | | |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **BIOTA**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 10 | **10.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Moisture Content | EA055 | 6 | 61 | **9.84** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 16 | **12.50** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 16 | **6.25** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 16 | **6.25** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 16 | **6.25** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 36 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 36 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 36 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 36 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| PFOS - Linear/Branched Speciation | EP231-PFOS-SP | BIOTA | In-house: Linear PFOS is determined by quantiation of the separate linear peak using linear PFOS. Branched PFOS is determined as the difference between total PFOS (determined using a mixed linear/branched standard) and linear PFOS. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | BIOTA | In-house: A sample extract is analysed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of biota which is then solvent extracted. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Prep-Preparation for Biota Analysis | * Biota-PP | BIOTA | A sample is prepared from whole or particular tissues/organs, identified, homogenised and the total weight of prepared sample recorded. |
| Sample Preparation for PFAS in Biota | EP231-PR | BIOTA | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of homogenised biota which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111280**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 5 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 27-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : Split from ES2111268 | No. of samples received / analysed | : 79 / 37 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has been split from ES2111268.**
- **Samples QC55, QC38, QC40, QC42, QC44, QC47, QC49, QC53, QC57 and QC60 have been forwarded to Eurofins for testin.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2111280-029 : [ 14-Mar-2021 ] : PWS_HEAD_TOILETS_0.1
ES2111280-030 : [ 14-Mar-2021 ] : PWS_HEAD_TOILETS_0.5

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **BIOTA**

| Laboratory sample ID | Sampling date / time | Sample ID | BIOTA - Biota-PP Pre-preparation of Biota Samples | BIOTA - EP231X PFAS - Full Suite (28 analytes) - includes PFOS |
|---|---|---|---|---|
| ES2111280-040 | 16-Mar-2021 00:00 | QC54 | ✓ | ✓ |
| ES2111280-041 | 13-Mar-2021 00:00 | QC37 | ✓ | ✓ |
| ES2111280-048 | 16-Mar-2021 00:00 | QC52 | ✓ | ✓ |

Matrix: **BIOTA**

| Laboratory sample ID | Sampling date / time | Sample ID | (On Hold) BIOTA No analysis requested |
|---|---|---|---|
| ES2111280-054 | 13-Mar-2021 00:00 | MC_BIOTA7 | ✓ |
| ES2111280-055 | 13-Mar-2021 00:00 | MC_BIOTA12 | ✓ |
| ES2111280-056 | 13-Mar-2021 00:00 | MC_BIOTA_14 | ✓ |
| ES2111280-057 | 13-Mar-2021 00:00 | MC_BIOTA15 | ✓ |
| ES2111280-058 | 13-Mar-2021 00:00 | MC_BIOTA16 | ✓ |
| ES2111280-059 | 27-Mar-2021 00:00 | MC_BIOTA18 | ✓ |
| ES2111280-060 | 16-Mar-2021 00:00 | MC_BIOTA123 | ✓ |
| ES2111280-061 | 16-Mar-2021 00:00 | MC_BIOTA124 | ✓ |
| ES2111280-062 | 16-Mar-2021 00:00 | MC_BIOTA125 | ✓ |
| ES2111280-063 | 16-Mar-2021 00:00 | MC_BIOTA126 | ✓ |
| ES2111280-064 | 16-Mar-2021 00:00 | MC_BIOTA127 | ✓ |
| ES2111280-065 | 16-Mar-2021 00:00 | MC_BIOTA128 | ✓ |
| ES2111280-066 | 16-Mar-2021 00:00 | MC_BIOTA129 | ✓ |
| ES2111280-067 | 16-Mar-2021 00:00 | MC_BIOTA130 | ✓ |
| ES2111280-068 | 16-Mar-2021 00:00 | MC_BIOTA131 | ✓ |
| ES2111280-069 | 16-Mar-2021 00:00 | MC_BIOTA132 | ✓ |
| ES2111280-070 | 16-Mar-2021 00:00 | MC_BIOTA133 | ✓ |

| | | | (On Hold) BIOTA No analysis requested |
|---|---|---|---|
| ES2111280-071 | 16-Mar-2021 00:00 | MC_BIOTA134 | ✓ |
| ES2111280-072 | 16-Mar-2021 00:00 | MC_BIOTA135 | ✓ |
| ES2111280-073 | 16-Mar-2021 00:00 | MC_BIOTA136 | ✓ |
| ES2111280-074 | 16-Mar-2021 00:00 | MC_BIOTA137 | ✓ |
| ES2111280-075 | 16-Mar-2021 00:00 | MC_BIOTA138 | ✓ |
| ES2111280-076 | 16-Mar-2021 00:00 | MC_BIOTA139 | ✓ |
| ES2111280-077 | 16-Mar-2021 00:00 | BIOTA_UNKNOWN | ✓ |

Matrix: **SOIL**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111280-001 | 16-Mar-2021 00:00 | A_SS136 | ✓ | | |
| ES2111280-002 | 16-Mar-2021 00:00 | A_SS137 | ✓ | | |
| ES2111280-003 | 16-Mar-2021 00:00 | A_SS138 | ✓ | | |
| ES2111280-004 | 16-Mar-2021 00:00 | A_SS139 | ✓ | | |
| ES2111280-005 | 17-Mar-2021 00:00 | A_SS140 | | ✓ | ✓ |
| ES2111280-006 | 17-Mar-2021 00:00 | A_SS141 | | ✓ | ✓ |
| ES2111280-007 | 15-Mar-2021 00:00 | A_SB23_0.1 | | ✓ | ✓ |
| ES2111280-008 | 15-Mar-2021 00:00 | A_SB23_0.5 | | ✓ | ✓ |
| ES2111280-009 | 15-Mar-2021 00:00 | A_SB23_1.0 | | ✓ | ✓ |
| ES2111280-010 | 15-Mar-2021 00:00 | A_SB23_1.5 | ✓ | | |
| ES2111280-011 | 15-Mar-2021 00:00 | A_SB24_0.1 | | ✓ | ✓ |
| ES2111280-012 | 15-Mar-2021 00:00 | A_SB25_0.1 | | ✓ | ✓ |
| ES2111280-013 | 15-Mar-2021 00:00 | A_SB25_0.5 | | ✓ | ✓ |
| ES2111280-014 | 15-Mar-2021 00:00 | A_SB25_1.0 | ✓ | | |
| ES2111280-015 | 15-Mar-2021 00:00 | A_SB25_1.5 | ✓ | | |
| ES2111280-016 | 15-Mar-2021 00:00 | A_SB26_0.1 | | ✓ | ✓ |
| ES2111280-017 | 15-Mar-2021 00:00 | A_SB26_0.3 | | ✓ | ✓ |
| ES2111280-018 | 15-Mar-2021 00:00 | A_SB26_0.5 | ✓ | | |
| ES2111280-019 | 16-Mar-2021 00:00 | A_SD10 | ✓ | | |
| ES2111280-023 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.1 | ✓ | | |
| ES2111280-024 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.5 | ✓ | | |
| ES2111280-026 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.1 | ✓ | | |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111280-027 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.5 | ✓ | | |
| ES2111280-029 | 14-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.1 | ✓ | | |
| ES2111280-030 | 14-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.5 | ✓ | | |
| ES2111280-035 | 14-Mar-2021 00:00 | BBC_SD02 | | ✓ | ✓ |
| ES2111280-036 | 17-Mar-2021 00:00 | BBC_SD03 | | ✓ | ✓ |
| ES2111280-042 | 27-Mar-2021 00:00 | QC39 | | ✓ | ✓ |
| ES2111280-046 | 15-Mar-2021 00:00 | QC46 | | ✓ | ✓ |
| ES2111280-047 | 15-Mar-2021 00:00 | QC48 | | ✓ | ✓ |
| ES2111280-049 | 16-Mar-2021 00:00 | QC56 | | ✓ | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111280-020 | 16-Mar-2021 00:00 | A_TAP3 | | ✓ |
| ES2111280-021 | 16-Mar-2021 00:00 | A_TAP4 | | ✓ |
| ES2111280-022 | 16-Mar-2021 00:00 | A_TAP5 | | ✓ |
| ES2111280-025 | 15-Mar-2021 00:00 | PWS_EB_TOILETS | | ✓ |
| ES2111280-028 | 16-Mar-2021 00:00 | PWS_HCAS_TOILETS | | ✓ |
| ES2111280-031 | 16-Mar-2021 00:00 | PWS_HEAD_TOILETS | | ✓ |
| ES2111280-032 | 16-Mar-2021 00:00 | PWS_HEAD_DAM | | ✓ |
| ES2111280-033 | 13-Mar-2021 00:00 | WW11_DAM | | ✓ |
| ES2111280-034 | 14-Mar-2021 00:00 | HC_SW01 | | ✓ |
| ES2111280-037 | 17-Mar-2021 00:00 | COCKPIT_SW01 | | ✓ |
| ES2111280-038 | 14-Mar-2021 00:00 | PWS_DUCK_DAM | | ✓ |
| ES2111280-039 | 14-Mar-2021 00:00 | PWS_DUCK_DAMA | ✓ | |
| ES2111280-043 | 14-Mar-2021 00:00 | QC41 | | ✓ |
| ES2111280-044 | 14-Mar-2021 00:00 | QC43 | | ✓ |
| ES2111280-045 | 14-Mar-2021 00:00 | QC45 | | ✓ |
| ES2111280-050 | 16-Mar-2021 00:00 | QC58 | | ✓ |
| ES2111280-051 | 17-Mar-2021 00:00 | QC59 | | ✓ |
| ES2111280-052 | 17-Mar-2021 00:00 | QC61 | | ✓ |
| ES2111280-053 | 17-Mar-2021 00:00 | QC62 | | ✓ |
| ES2111280-078 | 18-Mar-2021 00:00 | QC65 | ✓ | |

| | | | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111280-079 | 18-Mar-2021 00:00 | QC66 | ✓ | |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111263
Organised By / Date: Eurofins; QC55, QC38, QC40, QC42, QC44, QC47,
Relinquished By / Date: QC49, QC53, QC57, QC60
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A-SS136 | S | 16/3 | AM | | 1 | | X | |
| 2 | A-SS137 | | | | | | | X | |
| 3 | A-SS138 | | | | | | | X | |
| 4 | A-SS139 | | | | | | | X | |
| 5 | A-SS140 | | 15/3 | | | | X | | |
| 6 | A-SS141 | | 15/3 | AM | | | X | | |
| 7 | A-SB23-0.1 | | 15/3 | AM | | | X | | |
| 8 | A-SB23-0.5 | | | | | | X | | |
| 9 | A-SB23-1.0 | | | | | | X | X | |
| 10 | A-SB23-1.5 | | | | | | | X | |
| 11 | A-SB24-0.1 | | | | | | X | | |
| 12 | A-SB25-0.1 | | | | | | X | | |
| 13 | A-SB25-0.5 | | | | | | X | | |
| 14 | A-SB25-1.0 | | | | | | | X | |
| 15 | A-SB25-1.5 | | | | | | | X | |
| 16 | A-SB26-0.1 | | | | | | X | | |
| 17 | A-SB26-0.3 | | | | | | X | | |
| 18 | A-SB26-0.5 | | 15/3 | AM | | | | X | |
| 19 | A-SD10 | S | 16/3 | AM | | 1 | | | |
| 20 | A-TAP3 | W | 16/3 | AM | | 2 | X | | |
| Total | | | | | | | 0 | | |

Environmental Division
Sydney
Work Order Reference
ES2111280
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | A-TAP4 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 22 | A-TAP5 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 23 | PWS-EB-TOILETS-0.1 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 24 | PWS-EB-TOILETS-0.5 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 25 | PWS-EB-TOILETS | W | 15/3 | PM | | 2 | X | | | | | | | | | | | |
| 26 | PWS-CAS-TOILETS-0.1 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 27 | PWS-CAS-TOILETS-0.5 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 28 | PWS-CAS-TOILETS | W | 15/3 | AM | | 2 | X | | | | | | | | | | | |
| 29 | PWS-HEAD-TOILETS-0.1 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 30 | PWS-HEAD-TOILETS-0.5 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 31 | PWS-HEAD-TOILETS | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 32 | PWS-HEAD-DAM | S/W | 16/3 | AM | | 3 | X | | | | | | | | | | | |
| 33 | WWII-DAM | S/W | 13/3 | PM | | 3 | X | | | | | | | | | | | |
| 34 | HC-SW01 | W | 14/3 | PM | | 2 | X | | | | | | | | | | | |
| 35 | BBC-SD02 | S | 14/3 | AM | | 1 | X | | | | | | | | | | | |
| 36 | BBC-SD02 | S | 17/3 | PM | | 1 | X | | | | | | | | | | | |
| 37 | COCKPIT-SW01 | W | 17/3 | AM | | 2 | X | | | | | | | | | | | |
| 38 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 39 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 40 | QC54 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | |
| – | QC55 | S/BIOTA | " | | | 2 | x | | x | Pls fwd to Eurofins | | | | | | | |
| 41 | QC37 | biota | 13/3/21 | | bag | 1 | x | | | | | | | | | | |
| – | QC38 | " | " | | bag | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 42 | QC39 | S | " | | jar | 1 | x | | | | | | | | | | |
| – | QC40 | S | " | | jar | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | | | | | | | | | |
| – | QC42 | W | " | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 44 | QC43 | W | | | | 2 | x | | | | | | | | | | |
| – | QC44 | W | | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 45 | QC45 | W | | | | 2 | x | | | | | | | | | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | | | | | | | | | |
| – | QC47 | S | " | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 47 | QC48 | S | " | | | 1 | x | | | | | | | | | | |
| – | QC49 | S | " | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | |
| – | QC53 | S/BIOTA | | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 49 | QC56 | S | | | | 1 | x | | | | | | | | | | |
| – | QC57 | S | | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 50 | QC58 | W | | | bot | 2 | x | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; HI = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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# Chain of Custody Documentation

Senversa Pty Ltd
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ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | | | | | | | | | |
| – | QC60 | S/W | | | " | 2 | x | | | | | | | | | | |
| 52 | QC61 | W | | | bot | 1 | x | | | | | | | | | | |
| 53 | QC62 | W | | | bot | 1 | x | | | | | | | | | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | | | | | | | | | X | |
| 55 | MC-BIOTA 12 | | | | | | | | | | | | | | | X | |
| 56 | MC-BIOTA 14 | | | | | | | | | | | | | | | X | |
| 57 | MC_BIOTA15 | | | | | | | | | | | | | | | X | |
| 58 | MC_BIOTA16 | | | | | | | | | | | | | | | X | |
| 59 | MC_BIOTA18 | | | | | | | | | | | | | | | X | |
| 60 | A_BIOTA123 | | 16/3/21 | | | | | | | | | | | | | X | |
| 61 | A_BIOTA124 | | | | | | | | | | | | | | | X | |
| 62 | A_BIOTA125 | | | | | | | | | | | | | | | X | |
| 63 | A_BIOTA126 | | | | | | | | | | | | | | | X | |
| 64 | A_BIOTA127 | | | | | | | | | | | | | | | X | |
| 65 | A_BIOTA128 | | | | | | | | | | | | | | | X | |
| 66 | A_BIOTA129 | | | | | | | | | | | | | | | X | |
| 67 | A_BIOTA130 | | | | | | | | | | | | | | | X | |
| 68 | A_BIOTA131 | | | | | | | | | | | | | | | X | |
| 69 | A_BIOTA132 | | | | | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

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V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 6515

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|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 70 | A_BIOTA133 | Biota | 16/3/21 | | bag | 1 | | | | | | | | | | | X | |
| 71 | A_BIOTA134 | | | | | | | | | | | | | | | | X | |
| 72 | A_BIOTA135 | | | | | | | | | | | | | | | | X | |
| 73 | A_BIOTA136 | | | | | | | | | | | | | | | | X | |
| 74 | A_BIOTA137 | | | | | | | | | | | | | | | | X | |
| 75 | A_BIOTA138 | | | | | | | | | | | | | | | | X | |
| 76 | A_BIOTA139 | | | | | | | | | | | | | | | | X | |
| 77 | BIOTA_UNKNOWN | | Unknown | | | | | | | | | | | | | | X | |
| 78 | QC65 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| 79 | QC66 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. | Date: 19/3 | Carrier / Reference #: | Name/Signature: MGoul | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 29 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 26-Apr-2021 14:27 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 79 | | |
| No. of samples analysed | : 59 | | |

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/04/2021): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X: PFAS for samples #060 - 076
- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | QC54 | QC37 | QC52 | A_BIOTA123 | A_BIOTA124 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-040 | ES2111280-041 | ES2111280-048 | ES2111280-060 | ES2111280-061 |
| | | | | Result | Result | Result | Result | Result |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | GRASS | GRASS | GRASS | grass | grass |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 92.8 | 286 | 75.2 | 17.3 | 20.5 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 3 | <1 | <1 | <1 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | 9 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | 4 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 13 | <1 | <1 | <1 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | QC54 | QC37 | QC52 | A_BIOTA123 | A_BIOTA124 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-040 | ES2111280-041 | ES2111280-048 | ES2111280-060 | ES2111280-061 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | **16** | <1 | <1 | <1 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | **72.0** | **81.5** | **73.5** | **96.5** | **94.5** |
| 13C8-PFOA | ---- | 1 | % | **120** | **120** | **115** | **93.0** | **96.0** |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA125 | A_BIOTA126 | A_BIOTA127 | A_BIOTA128 | A_BIOTA129 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-062 | ES2111280-063 | ES2111280-064 | ES2111280-065 | ES2111280-066 |
| | | | | Result | Result | Result | Result | Result |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | grass | grass | grass | grass | grass |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 23.8 | 31.7 | 30.6 | 29.5 | 21.9 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | <1 | <1 | 1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | <1 | 1 | <1 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA125 | A_BIOTA126 | A_BIOTA127 | A_BIOTA128 | A_BIOTA129 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-062 | ES2111280-063 | ES2111280-064 | ES2111280-065 | ES2111280-066 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | <1 | 6 | <1 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | 100 | 87.5 | 88.0 | 90.5 | 111 |
| 13C8-PFOA | ---- | 1 | % | 96.5 | 102 | 92.0 | 97.0 | 118 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA130 | A_BIOTA131 | A_BIOTA132 | A_BIOTA133 | A_BIOTA134 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-067 | ES2111280-068 | ES2111280-069 | ES2111280-070 | ES2111280-071 |
| | | | | Result | Result | Result | Result | Result |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | grass | grass | grass | grass | grass |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 23.1 | 23.3 | 17.1 | 25.9 | 30.8 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA130 | A_BIOTA131 | A_BIOTA132 | A_BIOTA133 | A_BIOTA134 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-067 | ES2111280-068 | ES2111280-069 | ES2111280-070 | ES2111280-071 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | **85.0** | **92.5** | **85.0** | **90.5** | **71.5** |
| 13C8-PFOA | ---- | 1 | % | **95.5** | **92.0** | **93.0** | **98.0** | **87.0** |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA135 | A_BIOTA136 | A_BIOTA137 | A_BIOTA138 | A_BIOTA139 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-072 | ES2111280-073 | ES2111280-074 | ES2111280-075 | ES2111280-076 |
| | | | | Result | Result | Result | Result | Result |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| ø Sample Description | ---- | - | -- | dry grass | dry grass | dry grass | fresh grass | fresh grass |
| ø Weight of Sample Prepared | ---- | 0.1 | g | 6.4 | 10.1 | 10.3 | 11.8 | 11.0 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Linear | 2795-39-3 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) - Branched | ---- | 1 | µg/kg | <1 | <1 | <1 | 1 | <1 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | <1 | 1 | <1 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |

## Analytical Results

| Sub-Matrix: BIOTA (Matrix: BIOTA) | | | Sample ID | A_BIOTA135 | A_BIOTA136 | A_BIOTA137 | A_BIOTA138 | A_BIOTA139 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-072 | ES2111280-073 | ES2111280-074 | ES2111280-075 | ES2111280-076 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 5 | µg/kg | <5 | <5 | <5 | <5 | <5 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | <1 | <1 | <1 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | <2 | <2 | <2 |
| **EP231P: PFAS Sums** | | | | | | | | |
| ^ Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | <1 | 1 | <1 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 1 | % | 83.5 | 86.0 | 84.5 | 84.0 | 90.0 |
| 13C8-PFOA | ---- | 1 | % | 91.5 | 95.0 | 92.5 | 99.0 | 94.5 |

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_DAM | WW11_DAM | QC59 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-032 | ES2111280-033 | ES2111280-051 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | **2.42** | **0.51** | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **3.00** | **0.51** | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | **13.6** | **3.76** | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | **1.65** | **0.23** | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **21.0** | **5.59** | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.3** | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | **0.55** | **0.18** | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **2.21** | **0.59** | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.75** | **0.06** | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **1.25** | **0.22** | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: SEAWATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_DAM | WW11_DAM | QC59 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-032 | ES2111280-033 | ES2111280-051 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **46.7** | **11.6** | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **34.6** | **9.35** | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **42.1** | **10.9** | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **80.1** | **65.0** | **74.6** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **114** | **85.0** | **118** | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-001 | ES2111280-002 | ES2111280-003 | ES2111280-004 | ES2111280-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **20.5** | **18.9** | **23.4** | **11.1** | **15.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0002** | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0034** | **0.0003** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0024** | **0.0005** | **0.0303** | **0.0184** | **0.0010** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0065** | **0.0028** | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0011** | **0.0007** | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0012** | **0.0008** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | **0.0006** | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0008** | **0.0011** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0006** | **0.0005** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS136 | A_SS137 | A_SS138 | A_SS139 | A_SS140 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-001 | ES2111280-002 | ES2111280-003 | ES2111280-004 | ES2111280-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0024** | **0.0005** | **0.0463** | **0.0252** | **0.0010** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0024** | **0.0005** | **0.0337** | **0.0187** | **0.0010** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0024** | **0.0005** | **0.0372** | **0.0219** | **0.0010** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **95.0** | **100** | **107** | **107** | **99.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **105** | **106** | **97.5** | **102** | **117** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS141 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB24_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-006 | ES2111280-007 | ES2111280-008 | ES2111280-009 | ES2111280-011 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **15.1** | **21.1** | **31.7** | **29.8** | **8.0** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | **0.0016** | **0.0019** | **0.0071** | **0.0008** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0035** | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0456** | **0.443** | **0.215** | **0.0866** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | **0.0076** | <0.0002 | <0.0002 | **0.0039** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | **0.0006** | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0005** | **0.0038** | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | **0.0046** | <0.0002 | <0.0002 | **0.0005** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS141 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB24_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-006 | ES2111280-007 | ES2111280-008 | ES2111280-009 | ES2111280-011 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0010** | **0.0594** | **0.446** | **0.230** | **0.0918** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0010** | **0.0472** | **0.445** | **0.222** | **0.0874** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0010** | **0.0472** | **0.446** | **0.226** | **0.0874** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **89.5** | **117** | **80.5** | **81.5** | **75.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **116** | **117** | **106** | **114** | **113** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB25_0.1 | A_SB25_0.5 | A_SB26_0.1 | A_SB26_0.3 | BBC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-012 | ES2111280-013 | ES2111280-016 | ES2111280-017 | ES2111280-035 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **14.9** | **22.4** | **18.1** | **19.5** | **34.7** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0007** | **0.0032** | **0.0005** | **0.0003** | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0384** | **0.0019** | **0.0156** | **0.0118** | **0.0009** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | **0.0006** | <0.0002 | **0.0006** | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0003** | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | **0.0004** | **0.0006** | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | **0.0004** | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB25_0.1 | A_SB25_0.5 | A_SB26_0.1 | A_SB26_0.3 | BBC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-012 | ES2111280-013 | ES2111280-016 | ES2111280-017 | ES2111280-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0397** | **0.0055** | **0.0180** | **0.0121** | **0.0009** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0391** | **0.0051** | **0.0161** | **0.0121** | **0.0009** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0391** | **0.0055** | **0.0174** | **0.0121** | **0.0009** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **95.5** | **82.0** | **98.0** | **87.5** | **81.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **114** | **119** | **108** | **109** | **118** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD03 | QC39 | QC46 | QC48 | QC56 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 27-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-036 | ES2111280-042 | ES2111280-046 | ES2111280-047 | ES2111280-049 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **21.8** | **52.8** | **15.6** | **23.0** | **23.7** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | **0.0007** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | **0.0009** | <0.0002 | **0.0002** | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | **0.0142** | **0.0005** | **0.0037** | **0.0009** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | **0.0016** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0005** | **0.0991** | **0.0182** | **0.0015** | **0.0049** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | **0.0008** | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | **0.0003** | <0.0002 | <0.0002 | **0.0004** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | **0.0006** | **0.0002** | **0.0004** | **0.0003** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | **0.0006** | <0.0002 | <0.0002 | **0.0003** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0003** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD03 | QC39 | QC46 | QC48 | QC56 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 27-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-036 | ES2111280-042 | ES2111280-046 | ES2111280-047 | ES2111280-049 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0005** | **0.119** | **0.0189** | **0.0058** | **0.0071** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0005** | **0.113** | **0.0187** | **0.0052** | **0.0058** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0005** | **0.116** | **0.0189** | **0.0056** | **0.0068** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **94.5** | **75.5** | **81.5** | **94.5** | **94.5** |
| 13C8-PFOA | ---- | 0.0002 | % | **120** | **105** | **106** | **118** | **114** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP3 | A_TAP4 | A_TAP5 | PWS_EB_TOILETS | PWS_HCAS_TOILETS |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-020 | ES2111280-021 | ES2111280-022 | ES2111280-025 | ES2111280-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.26** |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.41** |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | <0.02 | **0.03** | **0.04** | <0.02 | **11.5** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.85** |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.08** | <0.01 | <0.01 | **20.8** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | **0.2** |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.30** |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.17** |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.16** |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.55** |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | A_TAP3 | A_TAP4 | A_TAP5 | PWS_EB_TOILETS | PWS_HCAS_TOILETS |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-020 | ES2111280-021 | ES2111280-022 | ES2111280-025 | ES2111280-028 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **38.2** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **32.3** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.11** | **0.04** | <0.01 | **35.9** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **95.6** | **94.1** | **90.3** | **90.4** | **75.1** |
| 13C8-PFOA | ---- | 0.02 | % | **94.6** | **94.4** | **95.1** | **97.7** | **117** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS | HC_SW01 | COCKPIT_SW01 | PWS_DUCK_DAM | QC41 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-031 | ES2111280-034 | ES2111280-037 | ES2111280-038 | ES2111280-043 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **1.38** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **1.43** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **10.3** | <0.02 | <0.02 | **0.07** | **0.08** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.86** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **21.2** | <0.01 | **0.03** | **0.02** | **0.02** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | **0.2** | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | **0.32** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **1.25** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | **0.16** | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.57** | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS | HC_SW01 | COCKPIT_SW01 | PWS_DUCK_DAM | QC41 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 14-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-031 | ES2111280-034 | ES2111280-037 | ES2111280-038 | ES2111280-043 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **37.7** | <0.01 | **0.03** | **0.09** | **0.10** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **31.5** | <0.01 | **0.03** | **0.09** | **0.10** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **35.4** | <0.01 | **0.03** | **0.09** | **0.10** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **75.5** | **78.2** | **81.8** | **84.7** | **80.4** |
| 13C8-PFOA | ---- | 0.02 | % | **118** | **120** | **115** | **117** | **114** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC43 | QC45 | QC58 | QC61 | QC62 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-044 | ES2111280-045 | ES2111280-050 | ES2111280-052 | ES2111280-053 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC43 | QC45 | QC58 | QC61 | QC62 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 14-Mar-2021 00:00 | 14-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2111280-044 | ES2111280-045 | ES2111280-050 | ES2111280-052 | ES2111280-053 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **76.9** | **79.9** | **83.0** | **78.6** | **86.7** |
| 13C8-PFOA | ---- | 0.02 | % | **117** | **118** | **119** | **118** | **116** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC65 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-078 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | QC65 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111280-078 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 106 | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 105 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: BIOTA | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 50 | 130 |
| 13C8-PFOA | ---- | 50 | 130 |

| Sub-Matrix: SEAWATER | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: SOIL | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: WATER | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 19 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 29-Mar-2021 |
| C-O-C number | : ---- | Issue Date | : 26-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 79 | | |
| No. of samples analysed | : 59 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Inorganics, Smithfield, NSW |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **BIOTA**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3630471)** | | | | | | | | | |
| ES2111280-060 | A_BIOTA123 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| ES2111280-070 | A_BIOTA133 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3593328) - continued** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3630471)** | | | | | | | | | |
| ES2111280-060 | A_BIOTA123 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | 0.00 | No Limit |
| ES2111280-070 | A_BIOTA133 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | <5 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3593328) - continued** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3630471)** | | | | | | | | | |
| ES2111280-060 | A_BIOTA123 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| ES2111280-070 | A_BIOTA133 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <5 | <5 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3630471)** | | | | | | | | | |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3630471) - continued** | | | | | | | | | |
| ES2111280-060 | A_BIOTA123 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| ES2111280-070 | A_BIOTA133 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | <2 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3593328)** | | | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3630471)** | | | | | | | | | |
| ES2111280-060 | A_BIOTA123 | EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |
| ES2111280-070 | A_BIOTA133 | EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | <1 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3591911)** | | | | | | | | | |
| ES2111268-032 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 40.2 | 38.3 | 5.01 | 0% - 20% |
| ES2111280-012 | A_SB25_0.1 | EA055: Moisture Content | ---- | 0.1 | % | 14.9 | 14.6 | 2.23 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3592983)** | | | | | | | | | |
| ES2111268-058 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 18.5 | 18.4 | 0.00 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3593875)** | | | | | | | | | |
| ES2111268-022 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 64.9 | 66.1 | 1.87 | 0% - 20% |
| ES2111268-056 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 33.1 | 34.9 | 5.22 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3599409)** | | | | | | | | | |
| ES2111259-004 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 93.1 | 91.6 | 1.52 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3633697)** | | | | | | | | | |
| ES2111280-002 | A_SS137 | EA055: Moisture Content | ---- | 0.1 | % | 18.9 | 19.5 | 3.19 | 0% - 20% |
| ES2113223-013 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 3.2 | 3.3 | 3.44 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3597273) - continued** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0010 | 0.0009 | 11.2 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0009 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3630313)** | | | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0024 | 0.0024 | 0.00 | 0% - 50% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3630313)** | | | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3630313)** | | | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3630313) - continued** | | | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3597273)** | | | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2111280-035 | BBC_SD02 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3630313)** | | | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **BIOTA**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | 5 µg/kg | 102 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | 5 µg/kg | 109 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 5 µg/kg | 96.0 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <1 | 5 µg/kg | 118 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3630471)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 1 | µg/kg | <1 | 5 µg/kg | 73.6 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 1 | µg/kg | <1 | 5 µg/kg | 84.8 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 1 | µg/kg | <1 | 5 µg/kg | 87.6 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 1 | µg/kg | <1 | 5 µg/kg | 92.4 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 1 | µg/kg | <1 | 5 µg/kg | 82.4 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 1 | µg/kg | <1 | 5 µg/kg | 89.2 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | 25 µg/kg | 114 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | 5 µg/kg | 110 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | 5 µg/kg | 80.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | 5 µg/kg | 111 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | 5 µg/kg | 119 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 90.8 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <1 | 5 µg/kg | 113 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 76.4 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 93.9 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630471)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 5 | µg/kg | <5 | 25 µg/kg | 96.4 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 1 | µg/kg | <1 | 5 µg/kg | 84.8 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 1 | µg/kg | <1 | 5 µg/kg | 87.2 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 1 | µg/kg | <1 | 5 µg/kg | 88.8 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 1 | µg/kg | <1 | 5 µg/kg | 94.8 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 1 | µg/kg | <1 | 5 µg/kg | 92.4 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 1 | µg/kg | <1 | 5 µg/kg | 89.6 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 93.2 | 64.0 | 136 |

Sub-Matrix: **BIOTA**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630471) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 1 | µg/kg | <1 | 5 µg/kg | 99.2 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 1 | µg/kg | <1 | 5 µg/kg | 87.2 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 85.8 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <1 | 5 µg/kg | 106 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <2 | 12.5 µg/kg | 104 | 88.1 | 105 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 81.6 | 144 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 84.7 | 135 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 78.9 | 20.5 | 150 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | 5 µg/kg | 120 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | 5 µg/kg | 116 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3630471)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 1 | µg/kg | <1 | 5 µg/kg | 91.6 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 2 | µg/kg | <2 | 12.5 µg/kg | 105 | 88.1 | 105 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 88.3 | 81.6 | 144 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 2 | µg/kg | <2 | 12.5 µg/kg | 97.6 | 84.7 | 135 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 2 | µg/kg | <2 | 12.5 µg/kg | 100 | 20.5 | 150 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 1 | µg/kg | <1 | 5 µg/kg | 93.6 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 1 | µg/kg | <1 | 5 µg/kg | 92.0 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | 5 µg/kg | 108 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | 5 µg/kg | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | 5 µg/kg | 87.6 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | 5 µg/kg | # 92.0 | 93.4 | 130 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3630471)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 2 | µg/kg | <2 | 5 µg/kg | 86.8 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 2 | µg/kg | <2 | 5 µg/kg | 85.2 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 2 | µg/kg | <2 | 5 µg/kg | 80.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 2 | µg/kg | <2 | 5 µg/kg | # 92.4 | 93.4 | 130 |
| **EP231P: PFAS Sums (QCLot: 3593328)** | | | | | | | | |
| EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | ---- | ---- | ---- | ---- |

Sub-Matrix: **BIOTA**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231P: PFAS Sums (QCLot: 3630471)** | | | | | | | | |
| EP231X: Sum of PFAS | ---- | 1 | µg/kg | <1 | ---- | ---- | ---- | ---- |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 107 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3630313)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.0 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.4 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.4 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.2 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 113 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 118 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 80.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.8 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 122 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 117 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.8 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 112 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630313)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 97.3 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 97.2 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 99.2 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 109 | 69.0 | 133 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630313) - continued** | | | | | | | | |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 108 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.4 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 108 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 121 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 98.7 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 111 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 125 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 79.2 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 120 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 113 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3630313)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.4 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 99.5 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 106 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 104 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3597273)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 101 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 96.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 94.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 81.6 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3630313)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 92.4 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 96.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 113 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 90.8 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 98.0 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3631269)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 82.4 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.2 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 87.2 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 83.4 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 79.4 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 120 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 128 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 104 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 118 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 73.0 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 112 | 71.0 | 133 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3596425) - continued** | | | | | | | | |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.0 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 96.3 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3631269)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 91.8 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 85.6 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 106 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 90.6 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.0 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 85.8 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3595670)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 127 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 121 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 102 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 90.2 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 126 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.3 | 57.6 | 145 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3596425) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3631269)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 94.7 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 85.6 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 117 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 117 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.4 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3595670)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 80.4 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.0 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3631269)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 96.8 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 102 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 101 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 100 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 5 µg/kg | 103 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 5 µg/kg | 109 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 5 µg/kg | 111 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 5 µg/kg | 110 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 5 µg/kg | 113 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 5 µg/kg | 122 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3630471)** | | | | | | | |
| ES2111280-061 | A_BIOTA124 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 5 µg/kg | 73.6 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 5 µg/kg | 82.4 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 5 µg/kg | 88.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 5 µg/kg | 92.0 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 5 µg/kg | 86.4 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 5 µg/kg | 95.6 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 25 µg/kg | 113 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 5 µg/kg | 125 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 5 µg/kg | 115 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 5 µg/kg | 81.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 5 µg/kg | 116 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 5 µg/kg | 115 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 5 µg/kg | 114 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 5 µg/kg | 122 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 5 µg/kg | 118 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 5 µg/kg | 76.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 12.5 µg/kg | 95.8 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630471)** | | | | | | | |
| ES2111280-061 | A_BIOTA124 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 25 µg/kg | 89.7 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 5 µg/kg | 83.6 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 5 µg/kg | 92.8 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 5 µg/kg | 91.2 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 5 µg/kg | 98.0 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 5 µg/kg | 93.2 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 5 µg/kg | 88.0 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 5 µg/kg | 96.4 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 5 µg/kg | 102 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 5 µg/kg | 89.6 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 12.5 µg/kg | 85.0 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328)** | | | | | | | |

Sub-Matrix: **BIOTA**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3593328) - continued** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 µg/kg | 118 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 12.5 µg/kg | # 111 | 88.1 | 105 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 12.5 µg/kg | 107 | 81.6 | 144 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 12.5 µg/kg | 107 | 84.7 | 135 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 12.5 µg/kg | 81.1 | 20.5 | 150 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 5 µg/kg | 114 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 5 µg/kg | 112 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3630471)** | | | | | | | |
| ES2111280-061 | A_BIOTA124 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 5 µg/kg | 89.2 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 12.5 µg/kg | # 116 | 88.1 | 105 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 12.5 µg/kg | 88.0 | 81.6 | 144 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 12.5 µg/kg | 102 | 84.7 | 135 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 12.5 µg/kg | 92.0 | 20.5 | 150 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 5 µg/kg | 91.2 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 5 µg/kg | 91.2 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3593328)** | | | | | | | |
| ES2111261-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 5 µg/kg | 112 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 5 µg/kg | 116 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 5 µg/kg | 86.8 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 5 µg/kg | # 92.4 | 93.4 | 130 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3630471)** | | | | | | | |
| ES2111280-061 | A_BIOTA124 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 5 µg/kg | 83.6 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 5 µg/kg | 80.4 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 5 µg/kg | 89.6 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 5 µg/kg | # 74.4 | 93.4 | 130 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 88.0 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 99.2 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 94.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 94.0 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 78.8 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 100 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3630313)** | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 80.8 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 89.6 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 96.8 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 95.2 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 78.0 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 105 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 105 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 115 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 103 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 72.4 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 92.0 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 119 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 101 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 105 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 88.0 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 82.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 94.1 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3630313)** | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 101 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 98.4 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 109 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 96.8 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 98.0 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 98.8 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 111 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 108 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 95.2 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 81.2 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 107 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273)** | | | | | | | |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3597273) - continued** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 126 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 101 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 108 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 116 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 88.1 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 123 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 108 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3630313)** | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 105 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 106 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 104 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 101 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 105 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 101 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 98.0 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3597273)** | | | | | | | |
| ES2111280-005 | A_SS140 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 87.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 101 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 102 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 77.2 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3630313)** | | | | | | | |
| ES2111280-001 | A_SS136 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 115 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 105 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 106 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 80.8 | 69.2 | 143 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111280** | Page | : 1 of 14 |
| **Amendment** | : **1** | | |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 26-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 79 |
| Order number | : ---- | No. of samples analysed | : 59 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **BIOTA**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Laboratory Control Spike (LCS) Recoveries** | | | | | | | |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | QC-3593328-002 | ---- | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.0 % | 93.4-130% | **Recovery less than lower control limit** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | QC-3630471-002 | ---- | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.4 % | 93.4-130% | **Recovery less than lower control limit** |
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231C: Perfluoroalkyl Sulfonamides | ES2111261--001 | Anonymous | **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 111 % | 88.1-105% | **Recovery greater than upper data quality objective** |
| EP231C: Perfluoroalkyl Sulfonamides | ES2111280--061 | A_BIOTA124 | **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 116 % | 88.1-105% | **Recovery greater than upper data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2111261--001 | Anonymous | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 92.4 % | 93.4-130% | **Recovery less than lower data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2111280--061 | A_BIOTA124 | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 74.4 % | 93.4-130% | **Recovery less than lower data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| *Method* | | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| **Container** / Client Sample ID(s) | | *Date extracted* | *Due for extraction* | ***Days overdue*** | *Date analysed* | *Due for analysis* | ***Days overdue*** |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| BBC_SD02 | | ---- | ---- | ---- | 30-Mar-2021 | 28-Mar-2021 | **2** |
| **HDPE Soil Jar** | | | | | | | |
| A_SS136, A_SS138, | A_SS137, A_SS139 | ---- | ---- | ---- | 21-Apr-2021 | 30-Mar-2021 | **22** |

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Moisture Content | 8 | 81 | 9.88 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

| Quality Control Sample Type / Method | Count QC | Count Regular | Rate (%) Actual | Rate (%) Expected | Quality Control Specification |
|---|---|---|---|---|---|
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 37 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 37 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / ***Container*** / *Client Sample ID(s)* | | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|---|
| | | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **Biota Sample Pre-Preparation** | | | | | | | | |
| **HDPE Soil Jar (Biota-PP)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **30-Mar-2021** | ---- | ---- | **----** | ---- | ---- |
| **Snap Lock Bag (Biota-PP)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **30-Mar-2021** | ---- | ---- | **----** | ---- | ---- |
| **Snap Lock Bag (Biota-PP)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **20-Apr-2021** | ---- | ---- | **----** | ---- | ---- |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231-PFOS-SP)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231-PFOS-SP)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231-PFOS-SP)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **21-Apr-2021** | 12-Sep-2021 | ✓ | **21-Apr-2021** | 31-May-2021 | ✓ |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **21-Apr-2021** | 12-Sep-2021 | ✓ | **21-Apr-2021** | 31-May-2021 | ✓ |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **21-Apr-2021** | 12-Sep-2021 | ✓ | **21-Apr-2021** | 31-May-2021 | ✓ |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **21-Apr-2021** | 12-Sep-2021 | ✓ | **21-Apr-2021** | 31-May-2021 | ✓ |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|---|
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC54, | QC52 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| QC37 | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 11-May-2021 | ✓ |
| **Snap Lock Bag (EP231X)** | | | | | | | | |
| A_BIOTA123, | A_BIOTA124, | **16-Mar-2021** | **21-Apr-2021** | 12-Sep-2021 | ✓ | **21-Apr-2021** | 31-May-2021 | ✓ |
| A_BIOTA125, | A_BIOTA126, | | | | | | | |
| A_BIOTA127, | A_BIOTA128, | | | | | | | |
| A_BIOTA129, | A_BIOTA130, | | | | | | | |
| A_BIOTA131, | A_BIOTA132, | | | | | | | |
| A_BIOTA133, | A_BIOTA134, | | | | | | | |
| A_BIOTA135, | A_BIOTA136, | | | | | | | |
| A_BIOTA137, | A_BIOTA138, | | | | | | | |
| A_BIOTA139 | | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| BBC_SD02 | | **14-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 28-Mar-2021 | × |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SB23_0.1, | A_SB23_0.5, | **15-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 29-Mar-2021 | ✓ |
| A_SB23_1.0, | A_SB24_0.1, | | | | | | | |
| A_SB25_0.1, | A_SB25_0.5, | | | | | | | |
| A_SB26_0.1, | A_SB26_0.3, | | | | | | | |
| QC46, | QC48 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS136, | A_SS137, | **16-Mar-2021** | **----** | ---- | ---- | **21-Apr-2021** | 30-Mar-2021 | × |
| A_SS138, | A_SS139 | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| QC56 | | **16-Mar-2021** | **----** | ---- | ---- | **29-Mar-2021** | 30-Mar-2021 | ✓ |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| A_SS140, | A_SS141, | **17-Mar-2021** | **----** | ---- | ---- | **30-Mar-2021** | 31-Mar-2021 | ✓ |
| BBC_SD03 | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| QC39 | | **27-Mar-2021** | **----** | ---- | ---- | **01-Apr-2021** | 10-Apr-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS136, A_SS137,<br>A_SS138, A_SS139 | **16-Mar-2021** | **23-Apr-2021** | 12-Sep-2021 | ✓ | **26-Apr-2021** | 02-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS136, A_SS137,<br>A_SS138, A_SS139 | **16-Mar-2021** | **23-Apr-2021** | 12-Sep-2021 | ✓ | **26-Apr-2021** | 02-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS136, A_SS137,<br>A_SS138, A_SS139 | **16-Mar-2021** | **23-Apr-2021** | 12-Sep-2021 | ✓ | **26-Apr-2021** | 02-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>BBC_SD02 | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, A_SB25_0.5,<br>A_SB26_0.1, A_SB26_0.3,<br>QC46, QC48 | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS136, A_SS137,<br>A_SS138, A_SS139 | **16-Mar-2021** | **23-Apr-2021** | 12-Sep-2021 | ✓ | **26-Apr-2021** | 02-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC56 | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SS140, A_SS141,<br>BBC_SD03 | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>QC39 | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|---|
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| BBC_SD02 | | **14-Mar-2021** | **31-Mar-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SB23_0.1, | A_SB23_0.5, | **15-Mar-2021** | **31-Mar-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| A_SB23_1.0, | A_SB24_0.1, | | | | | | | |
| A_SB25_0.1, | A_SB25_0.5, | | | | | | | |
| A_SB26_0.1, | A_SB26_0.3, | | | | | | | |
| QC46, | QC48 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SS136, | A_SS137, | **16-Mar-2021** | **23-Apr-2021** | 12-Sep-2021 | ✓ | **26-Apr-2021** | 02-Jun-2021 | ✓ |
| A_SS138, | A_SS139 | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC56 | | **16-Mar-2021** | **31-Mar-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| A_SS140, | A_SS141, | **17-Mar-2021** | **31-Mar-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |
| BBC_SD03 | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| QC39 | | **27-Mar-2021** | **31-Mar-2021** | 23-Sep-2021 | ✓ | **01-Apr-2021** | 10-May-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| WW11_DAM | | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| HC_SW01, | PWS_DUCK_DAM, | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| QC41, | QC43, | | | | | | | |
| QC45 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS | | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_TAP3, | A_TAP4, | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| A_TAP5, | PWS_HCAS_TOILETS, | | | | | | | |
| PWS_HEAD_TOILETS, | PWS_HEAD_DAM, | | | | | | | |
| QC58 | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| COCKPIT_SW01, | QC59, | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| QC61, | QC62 | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| QC65 | | **18-Mar-2021** | **23-Apr-2021** | 14-Sep-2021 | ✓ | **26-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC65 | **18-Mar-2021** | **23-Apr-2021** | 14-Sep-2021 | ✓ | **26-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC65 | **18-Mar-2021** | **23-Apr-2021** | 14-Sep-2021 | ✓ | **26-Apr-2021** | 14-Sep-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC65 | **18-Mar-2021** | **23-Apr-2021** | 14-Sep-2021 | ✓ | **26-Apr-2021** | 14-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>WW11_DAM | **13-Mar-2021** | **01-Apr-2021** | 09-Sep-2021 | ✓ | **01-Apr-2021** | 09-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>HC_SW01, PWS_DUCK_DAM,<br>QC41, QC43,<br>QC45 | **14-Mar-2021** | **01-Apr-2021** | 10-Sep-2021 | ✓ | **01-Apr-2021** | 10-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS | **15-Mar-2021** | **01-Apr-2021** | 11-Sep-2021 | ✓ | **01-Apr-2021** | 11-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_TAP3, A_TAP4,<br>A_TAP5, PWS_HCAS_TOILETS,<br>PWS_HEAD_TOILETS, PWS_HEAD_DAM,<br>QC58 | **16-Mar-2021** | **01-Apr-2021** | 12-Sep-2021 | ✓ | **01-Apr-2021** | 12-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>COCKPIT_SW01, QC59,<br>QC61, QC62 | **17-Mar-2021** | **01-Apr-2021** | 13-Sep-2021 | ✓ | **01-Apr-2021** | 13-Sep-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>QC65 | **18-Mar-2021** | **23-Apr-2021** | 14-Sep-2021 | ✓ | **26-Apr-2021** | 14-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **BIOTA**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 27 | 11.11 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 27 | 7.41 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 27 | 7.41 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 27 | 7.41 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Moisture Content | EA055 | 8 | 81 | 9.88 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 20 | 15.00 | 10.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | 10.00 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | Evaluation | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 37 | 0.00 | 10.00 | × | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 37 | 8.11 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 37 | 8.11 | 5.00 | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 37 | 0.00 | 5.00 | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| PFOS - Linear/Branched Speciation | EP231-PFOS-SP | BIOTA | In-house: Linear PFOS is determined by quantiation of the separate linear peak using linear PFOS. Branched PFOS is determined as the difference between total PFOS (determined using a mixed linear/branched standard) and linear PFOS. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | BIOTA | In-house: A sample extract is analysed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of biota which is then solvent extracted. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Prep-Preparation for Biota Analysis | * Biota-PP | BIOTA | A sample is prepared from whole or particular tissues/organs, identified, homogenised and the total weight of prepared sample recorded. |
| Sample Preparation for PFAS in Biota | EP231-PR | BIOTA | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of homogenised biota which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |

| *Preparation Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111280**
**Amendment** : **1**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 5 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## *Dates*

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 12-Apr-2021 |
| Client Requested Due Date | : 22-Apr-2021 | Scheduled Reporting Date | : **22-Apr-2021** |

## *Delivery Details*

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : Split from ES2111268 | No. of samples received / analysed | : 79 / 58 |

## *General Comments*

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the new scheduled release date for this work order following additional analysis for PFAS on biota samples.
- **This work order has been split from ES2111268.**
- **Samples QC55, QC38, QC40, QC42, QC44, QC47, QC49, QC53, QC57 and QC60 have been forwarded to Eurofins for testin.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2111280-029 : [ 14-Mar-2021 ] : PWS_HEAD_TOILETS_0.1
ES2111280-030 : [ 14-Mar-2021 ] : PWS_HEAD_TOILETS_0.5

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **BIOTA**

| Laboratory sample ID | Sampling date / time | Sample ID | BIOTA - Biota-PP Pre-preparation of Biota Samples | BIOTA - EP231X PFAS - Full Suite (28 analytes) - includes PFOS |
|---|---|---|---|---|
| ES2111280-040 | 16-Mar-2021 00:00 | QC54 | ✓ | ✓ |
| ES2111280-041 | 13-Mar-2021 00:00 | QC37 | ✓ | ✓ |
| ES2111280-048 | 16-Mar-2021 00:00 | QC52 | ✓ | ✓ |
| ES2111280-060 | 16-Mar-2021 00:00 | A_BIOTA123 | | ✓ |
| ES2111280-061 | 16-Mar-2021 00:00 | A_BIOTA124 | | ✓ |
| ES2111280-062 | 16-Mar-2021 00:00 | A_BIOTA125 | | ✓ |
| ES2111280-063 | 16-Mar-2021 00:00 | A_BIOTA126 | | ✓ |
| ES2111280-064 | 16-Mar-2021 00:00 | A_BIOTA127 | | ✓ |
| ES2111280-065 | 16-Mar-2021 00:00 | A_BIOTA128 | | ✓ |
| ES2111280-066 | 16-Mar-2021 00:00 | A_BIOTA129 | | ✓ |
| ES2111280-067 | 16-Mar-2021 00:00 | A_BIOTA130 | | ✓ |
| ES2111280-068 | 16-Mar-2021 00:00 | A_BIOTA131 | | ✓ |
| ES2111280-069 | 16-Mar-2021 00:00 | A_BIOTA132 | | ✓ |
| ES2111280-070 | 16-Mar-2021 00:00 | A_BIOTA133 | | ✓ |
| ES2111280-071 | 16-Mar-2021 00:00 | A_BIOTA134 | | ✓ |
| ES2111280-072 | 16-Mar-2021 00:00 | A_BIOTA135 | | ✓ |
| ES2111280-073 | 16-Mar-2021 00:00 | A_BIOTA136 | | ✓ |
| ES2111280-074 | 16-Mar-2021 00:00 | A_BIOTA137 | | ✓ |
| ES2111280-075 | 16-Mar-2021 00:00 | A_BIOTA138 | | ✓ |
| ES2111280-076 | 16-Mar-2021 00:00 | A_BIOTA139 | | ✓ |

Matrix: **BIOTA**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) BIOTA No analysis requested |
|---|---|---|---|
| ES2111280-054 | 13-Mar-2021 00:00 | MC_BIOTA7 | ✓ |
| ES2111280-055 | 13-Mar-2021 00:00 | MC_BIOTA12 | ✓ |
| ES2111280-056 | 13-Mar-2021 00:00 | MC_BIOTA_14 | ✓ |
| ES2111280-057 | 13-Mar-2021 00:00 | MC_BIOTA15 | ✓ |
| ES2111280-058 | 13-Mar-2021 00:00 | MC_BIOTA16 | ✓ |
| ES2111280-059 | 27-Mar-2021 00:00 | MC_BIOTA18 | ✓ |
| ES2111280-077 | 16-Mar-2021 00:00 | BIOTA_UNKNOWN | ✓ |

Matrix: **SOIL**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111280-001 | 16-Mar-2021 00:00 | A_SS136 | | ✓ | ✓ |
| ES2111280-002 | 16-Mar-2021 00:00 | A_SS137 | | ✓ | ✓ |
| ES2111280-003 | 16-Mar-2021 00:00 | A_SS138 | | ✓ | ✓ |
| ES2111280-004 | 16-Mar-2021 00:00 | A_SS139 | | ✓ | ✓ |
| ES2111280-005 | 17-Mar-2021 00:00 | A_SS140 | | ✓ | ✓ |
| ES2111280-006 | 17-Mar-2021 00:00 | A_SS141 | | ✓ | ✓ |
| ES2111280-007 | 15-Mar-2021 00:00 | A_SB23_0.1 | | ✓ | ✓ |
| ES2111280-008 | 15-Mar-2021 00:00 | A_SB23_0.5 | | ✓ | ✓ |
| ES2111280-009 | 15-Mar-2021 00:00 | A_SB23_1.0 | | ✓ | ✓ |
| ES2111280-010 | 15-Mar-2021 00:00 | A_SB23_1.5 | ✓ | | |
| ES2111280-011 | 15-Mar-2021 00:00 | A_SB24_0.1 | | ✓ | ✓ |
| ES2111280-012 | 15-Mar-2021 00:00 | A_SB25_0.1 | | ✓ | ✓ |
| ES2111280-013 | 15-Mar-2021 00:00 | A_SB25_0.5 | | ✓ | ✓ |
| ES2111280-014 | 15-Mar-2021 00:00 | A_SB25_1.0 | ✓ | | |
| ES2111280-015 | 15-Mar-2021 00:00 | A_SB25_1.5 | ✓ | | |
| ES2111280-016 | 15-Mar-2021 00:00 | A_SB26_0.1 | | ✓ | ✓ |
| ES2111280-017 | 15-Mar-2021 00:00 | A_SB26_0.3 | | ✓ | ✓ |
| ES2111280-018 | 15-Mar-2021 00:00 | A_SB26_0.5 | ✓ | | |
| ES2111280-019 | 16-Mar-2021 00:00 | A_SD10 | ✓ | | |
| ES2111280-023 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.1 | ✓ | | |
| ES2111280-024 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.5 | ✓ | | |
| ES2111280-026 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.1 | ✓ | | |

| | | | (On Hold) SOIL No analysis requested | SOIL - EA055-103 Moisture Content | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|
| ES2111280-027 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.5 | ✓ | | |
| ES2111280-029 | 14-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.1 | ✓ | | |
| ES2111280-030 | 14-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.5 | ✓ | | |
| ES2111280-035 | 14-Mar-2021 00:00 | BBC_SD02 | | ✓ | ✓ |
| ES2111280-036 | 17-Mar-2021 00:00 | BBC_SD03 | | ✓ | ✓ |
| ES2111280-042 | 27-Mar-2021 00:00 | QC39 | | ✓ | ✓ |
| ES2111280-046 | 15-Mar-2021 00:00 | QC46 | | ✓ | ✓ |
| ES2111280-047 | 15-Mar-2021 00:00 | QC48 | | ✓ | ✓ |
| ES2111280-049 | 16-Mar-2021 00:00 | QC56 | | ✓ | ✓ |

Matrix: **WATER**

| *Laboratory sample ID* | *Sampling date / time* | *Sample ID* | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111280-020 | 16-Mar-2021 00:00 | A_TAP3 | | ✓ |
| ES2111280-021 | 16-Mar-2021 00:00 | A_TAP4 | | ✓ |
| ES2111280-022 | 16-Mar-2021 00:00 | A_TAP5 | | ✓ |
| ES2111280-025 | 15-Mar-2021 00:00 | PWS_EB_TOILETS | | ✓ |
| ES2111280-028 | 16-Mar-2021 00:00 | PWS_HCAS_TOILETS | | ✓ |
| ES2111280-031 | 16-Mar-2021 00:00 | PWS_HEAD_TOILETS | | ✓ |
| ES2111280-032 | 16-Mar-2021 00:00 | PWS_HEAD_DAM | | ✓ |
| ES2111280-033 | 13-Mar-2021 00:00 | WW11_DAM | | ✓ |
| ES2111280-034 | 14-Mar-2021 00:00 | HC_SW01 | | ✓ |
| ES2111280-037 | 17-Mar-2021 00:00 | COCKPIT_SW01 | | ✓ |
| ES2111280-038 | 14-Mar-2021 00:00 | PWS_DUCK_DAM | | ✓ |
| ES2111280-039 | 14-Mar-2021 00:00 | PWS_DUCK_DAMA | ✓ | |
| ES2111280-043 | 14-Mar-2021 00:00 | QC41 | | ✓ |
| ES2111280-044 | 14-Mar-2021 00:00 | QC43 | | ✓ |
| ES2111280-045 | 14-Mar-2021 00:00 | QC45 | | ✓ |
| ES2111280-050 | 16-Mar-2021 00:00 | QC58 | | ✓ |
| ES2111280-051 | 17-Mar-2021 00:00 | QC59 | | ✓ |
| ES2111280-052 | 17-Mar-2021 00:00 | QC61 | | ✓ |
| ES2111280-053 | 17-Mar-2021 00:00 | QC62 | | ✓ |
| ES2111280-078 | 18-Mar-2021 00:00 | QC65 | ✓ | |

| | | | (On Hold) WATER No analysis requested | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2111280-079 | 18-Mar-2021 00:00 | QC66 | ✓ | |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111263
Organised By / Date: Eurofins; QC55, QC38, QC40, QC42, QC44, QC47,
Relinquished By / Date: QC49, QC53, QC57, QC60
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A-SS136 | S | 16/3 | AM | | 1 | | X | |
| 2 | A-SS137 | | | | | | | X | |
| 3 | A-SS138 | | | | | | | X | |
| 4 | A-SS139 | | | | | | | X | |
| 5 | A-SS140 | | 15/3 | | | | X | | |
| 6 | A-SS141 | | 15/3 | AM | | | X | | |
| 7 | A-SB23-0.1 | | 15/3 | AM | | | X | | |
| 8 | A-SB23-0.5 | | | | | | X | | |
| 9 | A-SB23-1.0 | | | | | | X | X | |
| 10 | A-SB23-1.5 | | | | | | | X | |
| 11 | A-SB24-0.1 | | | | | | X | | |
| 12 | A-SB25-0.1 | | | | | | X | | |
| 13 | A-SB25-0.5 | | | | | | X | | |
| 14 | A-SB25-1.0 | | | | | | | X | |
| 15 | A-SB25-1.5 | | | | | | | X | |
| 16 | A-SB26-0.1 | | | | | | X | | |
| 17 | A-SB26-0.3 | | | | | | X | | |
| 18 | A-SB26-0.5 | | 15/3 | AM | | | | X | |
| 19 | A-SD10 | S | 16/3 | AM | | 1 | | | |
| 20 | A-TAP3 | W | 16/3 | AM | | 2 | X | | |
| Total | | | | | | | 0 | | |

Environmental Division
Sydney
Work Order Reference
ES2111280
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 21 | A-TAP4 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 22 | A-TAP5 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 23 | PWS-EB-TOILETS-0.1 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 24 | PWS-EB-TOILETS-0.5 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 25 | PWS-EB-TOILETS | W | 15/3 | PM | | 2 | X | | | | | | | | | | | |
| 26 | PWS-CAS-TOILETS-0.1 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 27 | PWS-CAS-TOILETS-0.5 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 28 | PWS-CAS-TOILETS | W | 15/3 | AM | | 2 | X | | | | | | | | | | | |
| 29 | PWS-HEAD-TOILETS-0.1 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 30 | PWS-HEAD-TOILETS-0.5 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 31 | PWS-HEAD-TOILETS | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 32 | PWS-HEAD-DAM | S/W | 16/3 | AM | | 3 | X | | | | | | | | | | | |
| 33 | WWII-DAM | S/W | 13/3 | PM | | 3 | X | | | | | | | | | | | |
| 34 | HC-SW01 | W | 14/3 | PM | | 2 | X | | | | | | | | | | | |
| 35 | BBC-SD02 | S | 14/3 | AM | | 1 | X | | | | | | | | | | | |
| 36 | BBC-SD02 | S | 17/3 | PM | | 1 | X | | | | | | | | | | | |
| 37 | COCKPIT-SW01 | W | 17/3 | AM | | 2 | X | | | | | | | | | | | |
| 38 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 39 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 40 | QC54 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | |
| – | QC55 | S/BIOTA | " | | | 2 | x | | x | Pls fwd to Eurofins | | | | | | | |
| 41 | QC37 | biota | 13/3/21 | | bag | 1 | x | | | | | | | | | | |
| – | QC38 | " | " | | bag | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 42 | QC39 | S | " | | jar | 1 | x | | | | | | | | | | |
| – | QC40 | S | " | | jar | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | | | | | | | | | |
| – | QC42 | W | " | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 44 | QC43 | W | | | | 2 | x | | | | | | | | | | |
| – | QC44 | W | | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 45 | QC45 | W | | | | 2 | x | | | | | | | | | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | | | | | | | | | |
| – | QC47 | S | " | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 47 | QC48 | S | " | | | 1 | x | | | | | | | | | | |
| – | QC49 | S | " | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | |
| – | QC53 | S/BIOTA | | | | 2 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 49 | QC56 | S | | | | 1 | x | | | | | | | | | | |
| – | QC57 | S | | | | 1 | x | | x | Pls FWD to Eurofins | | | | | | | |
| 50 | QC58 | W | | | bot | 2 | x | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; HI = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | | | | | | | | | |
| – | QC60 | S/W | | | " | 2 | x | | | | | | | | | | |
| 52 | QC61 | W | | | bot | 1 | x | | | | | | | | | | |
| 53 | QC62 | W | | | bot | 1 | x | | | | | | | | | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | | | | | | | | | X | |
| 55 | MC-BIOTA 12 | | | | | | | | | | | | | | | X | |
| 56 | MC-BIOTA 14 | | | | | | | | | | | | | | | X | |
| 57 | MC_BIOTA15 | | | | | | | | | | | | | | | X | |
| 58 | MC_BIOTA16 | | | | | | | | | | | | | | | X | |
| 59 | MC_BIOTA18 | | | | | | | | | | | | | | | X | |
| 60 | A_BIOTA123 | | 16/3/21 | | | | | | | | | | | | | X | |
| 61 | A_BIOTA124 | | | | | | | | | | | | | | | X | |
| 62 | A_BIOTA125 | | | | | | | | | | | | | | | X | |
| 63 | A_BIOTA126 | | | | | | | | | | | | | | | X | |
| 64 | A_BIOTA127 | | | | | | | | | | | | | | | X | |
| 65 | A_BIOTA128 | | | | | | | | | | | | | | | X | |
| 66 | A_BIOTA129 | | | | | | | | | | | | | | | X | |
| 67 | A_BIOTA130 | | | | | | | | | | | | | | | X | |
| 68 | A_BIOTA131 | | | | | | | | | | | | | | | X | |
| 69 | A_BIOTA132 | | | | | | | | | | | | | | | X | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 6515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 70 | A_BIOTA133 | Biota | 16/3/21 | | bag | 1 | | | | | | | | | | | X | |
| 71 | A_BIOTA134 | | | | | | | | | | | | | | | | X | |
| 72 | A_BIOTA135 | | | | | | | | | | | | | | | | X | |
| 73 | A_BIOTA136 | | | | | | | | | | | | | | | | X | |
| 74 | A_BIOTA137 | | | | | | | | | | | | | | | | X | |
| 75 | A_BIOTA138 | | | | | | | | | | | | | | | | X | |
| 76 | A_BIOTA139 | | | | | | | | | | | | | | | | X | |
| 77 | BIOTA_UNKNOWN | | Unknown | | | | | | | | | | | | | | X | |
| 78 | QC65 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| 79 | QC66 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. | Date: 19/3 | Carrier / Reference #: | Name/Signature: MGoul | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

Updated Analysis Rec: 31/3

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 80 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-686-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required: Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111262
Organised By / Date: Email; QC55, QC58, QC40, QC42, QC44, QC47,
Relinquished By / Date: QC49, QC53, QC57, QC60
Connote / Courier:
PO No:
Attached By PO / Internal Sheet:

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | PFAS 31X - PFAS Full Suite (26 compounds) | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A-SS136 | S | 16/3 | AM | | 1 | X | X | |
| 2 | A-SS137 | | | | | | X | X | |
| 3 | A-SS138 | | | | | | X | X | |
| 4 | A-SS139 | | | | | | X | X | |
| 5 | A-SS140 | | 15/3 | | | | X | | |
| 6 | A-SS141 | | 15/3 | AM | | | X | | |
| 7 | A-SB23_0.1 | | 15/3 | AM | | | X | | |
| 8 | A-SB23_0.5 | | | | | | X | | |
| 9 | A-SB23_1.0 | | | | | | X | X | |
| 10 | A-SB23_1.5 | | | | | | | X | |
| 11 | A-SB24_0.1 | | | | | | X | | |
| 12 | A-SB25_0.1 | | | | | | X | | |
| 13 | A-SB25_0.5 | | | | | | X | | |
| 14 | A-SB25_1.0 | | | | | | | X | |
| 15 | A-SB25_1.5 | | | | | | | X | |
| 16 | A-SB26_0.1 | | | | | | X | | |
| 17 | A-SB26_0.3 | | | | | | X | | |
| 18 | A-SB26_0.5 | | 15/3 | AM | | 1 | | X | |
| 19 | A-SD10 | S | 16/3 | AM | | 1 | | | |
| 20 | A-TAP3 | W | 16/3 | AM | | 2 | X | | |
| Total | | | | | | | 9 | | |

Environmental Division
Sydney
Work Order Reference
ES2111280
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SV-685-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| 21 | A-TAP4 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 22 | A-TAP5 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 23 | PWS-EB-TOILETS-0.1 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 24 | PWS-EB-TOILETS-0.5 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 25 | PWS-EB-TOILETS | W | 15/3 | PM | | 2 | X | | | | | | | | | | | |
| 26 | PWS-CAS-TOILETS-0.1 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 27 | PWS-CAS-TOILETS-0.5 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 28 | PWS-CAS-TOILETS | W | 15/3 | AM | | 2 | X | | | | | | | | | | | |
| 29 | PWS-HEAD-TOILETS-0.1 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 30 | PWS-HEAD-TOILETS-0.5 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 31 | PWS-HEAD-TOILETS | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 32 | PWS-HEAD-DAM | S/W | 16/3 | AM | | 3 | X | | | | | | | | | | | |
| 33 | WW11-DAM | S/W | 13/3 | PM | | 3 | X | | | | | | | | | | | |
| 34 | HC-SW01 | W | 14/3 | PM | | 2 | X | | | | | | | | | | | |
| 35 | BBC-SD02 | S | 14/3 | AM | | 1 | X | | | | | | | | | | | |
| 36 | BBC-SD02 | S | 17/3 | PM | | 1 | X | | | | | | | | | | | |
| 37 | COCKPIT-SW01 | W | 17/3 | AM | | 2 | X | | | | | | | | | | | |
| 38 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 39 | PWS-DUCK-DAM2 | W | 14/3 | AM | | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-865-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP234(X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 40 | QC54 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC55 | S/BIOTA | " | | | 2 | x | | x | Pls | fwd | to | Eurofins | | | | | |
| 41 | QC37 | Biota | 13/3/21 | | bag | 1 | x | | | | | | | | | | | |
| – | QC38 | " | " | | bag | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 42 | QC39 | S | " | | jar | 1 | x | | | | | | | | | | | |
| – | QC40 | S | " | | jar | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | | | | | | | | | | |
| – | QC42 | W | " | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 44 | QC43 | W | | | | 2 | x | | | | | | | | | | | |
| – | QC44 | W | | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 45 | QC45 | W | | | | 2 | x | | | | | | | | | | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | | | | | | | | | | |
| – | QC47 | S | " | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 47 | QC48 | S | " | | | 1 | x | | | | | | | | | | | |
| – | QC49 | S | " | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC53 | S/BIOTA | | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 49 | QC56 | S | | | | 1 | x | | | | | | | | | | | |
| – | QC57 | S | | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 50 | QC58 | W | | | bot | 2 | x | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 300

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-065-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | BP231X - PFAB Full Suite (25 compounds) | | | | | | | | | | HOLD | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | | | | | | | | | | |
| – | QC60 | S/W | | | " | 2 | x | * Als Forward to Eurofins | | | | | | | | | | |
| 52 | QC61 | W | | | bot | 1 | x | | | | | | | | | | | |
| 53 | QC62 | W | | | bot | 1 | x | | | | | | | | | | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | | | | | | | | | | x | |
| 55 | MC-BIOTA 12 | | | | | | | | | | | | | | | | x | |
| 56 | MC-BIOTA 14 | | | | | | | | | | | | | | | | x | |
| 57 | MC-BIOTA 15 | | | | | | | | | | | | | | | | x | |
| 58 | MC-BIOTA 16 | | | | | | | | | | | | | | | | x | |
| 59 | MC-BIOTA 18 | | | | | | | | | | | | | | | | x | |
| 60 | A-BIOTA 123 | | 16/3/21 | | | | x | | | | | | | | | | x | |
| 61 | A-BIOTA 124 | | | | | | x | | | | | | | | | | x | |
| 62 | A-BIOTA 125 | | | | | | x | | | | | | | | | | x | |
| 63 | A-BIOTA 126 | | | | | | x | | | | | | | | | | x | |
| 64 | A-BIOTA 127 | | | | | | x | | | | | | | | | | x | |
| 65 | A-BIOTA 128 | | | | | | x | | | | | | | | | | x | |
| 66 | A-BIOTA 129 | | | | | | x | | | | | | | | | | x | |
| 67 | A-BIOTA 130 | | | | | | x | | | | | | | | | | x | |
| 68 | A-BIOTA 131 | | | | | | x | | | | | | | | | | x | |
| 69 | A-BIOTA 132 | | | | | | x | | | | | | | | | | x | |
| Total | | | | | | | | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: [signature] | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | GW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix* | Date | Time | Type / Code | Total Bottles | LF2210 - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| [illegible] | A_BIOTA133 | Biota | 16/3/21 | | bag | 1 | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA134 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA135 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA136 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA137 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA138 | | | | | | X | | | | | | | | | | X | |
| 76 | A_BIOTA139 | | | | | | X | | | | | | | | | | X | |
| 77 | BIOTA_UNKNOWN | | Unknown | | | | X | | | | | | | | | | X | |
| 78 | QC65 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| 79 | QC66 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples.

Sampler Name: CARLYN WILLIAMS Signature: [signature] Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable) | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. [signature] | Date: 19/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L = Lugol's Iodine preserved white plastic bottle; SW = sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

Updated Analysis Rec: 31/3

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# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 80 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111262
Organised By / Date: Eurofins; QC55, QC38, QC40, QC42, QC44, QC47,
Relinquished By / Date: QC49, QC53, QC57, QC60
Connote / Courier:
PO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | HOLD |
|---|---|---|---|---|---|---|---|
| 1 | A-SS136 | S | 16/3 | AM | | 1 | X |
| 2 | A-SS137 | | | | | | X |
| 3 | A-SS138 | | | | | | X |
| 4 | A-SS139 | | | | | | X |
| 5 | A-SS140 | | 17/3 | | | | X |
| 6 | A-SS141 | | 16/3 | AM | | | X |
| 7 | A-SB23_0.1 | | 15/3 | AM | | | X |
| 8 | A-SB23_0.5 | | | | | | X |
| 9 | A-SB23_1.0 | | | | | | X |
| 10 | A-SB23_1.5 | | | | | | X |
| 11 | A-SB24_0.1 | | | | | | X |
| 12 | A-SB25_0.1 | | | | | | X |
| 13 | A-SB25_0.5 | | | | | | X |
| 14 | A-SB25_1.0 | | | | | | X |
| 15 | A-SB25_1.5 | | | | | | X |
| 16 | A-SB26_0.1 | | | | | | X |
| 17 | A-SB26_0.3 | | | | | | X |
| 18 | A-SB26_0.5 | | 15/3 | AM | | | X |
| 19 | A-SD10 | S | 16/3 | AM | | 1 | |
| 20 | A-TAP3 | W | 16/3 | AM | | 2 | X |
| Total | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2111280
Telephone: +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS | Signature: | Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MJoul | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

17776_COC_Blank

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SV-685-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| 21 | A-TAP4 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 22 | A-TAP5 | W | 16/3 | AM | | 2 | X | | | | | | | | | | | |
| 23 | PWS-EB-TOILETS-0.1 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 24 | PWS-EB-TOILETS-0.5 | S | 15/3 | PM | | 1 | | | | | | | | | | | X | |
| 25 | PWS-EB-TOILETS | W | 15/3 | PM | | 2 | X | | | | | | | | | | | |
| 26 | PWS-CAS-TOILETS-0.1 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 27 | PWS-CAS-TOILETS-0.5 | S | 15/3 | AM | | 1 | | | | | | | | | | | X | |
| 28 | PWS-CAS-TOILETS | W | 15/3 | AM | | 2 | X | | | | | | | | | | | |
| 29 | PWS-HEAD-TOILETS-0.1 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 30 | PWS-HEAD-TOILETS-0.5 | S | 14/3 | AM | | 1 | | | | | | | | | | | X | |
| 31 | PWS-HEAD-TOILETS | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 32 | PWS-HEAD-DAM | S/W | 16/3 | AM | | 3 | X | | | | | | | | | | | |
| 33 | WW11-DAM | S/W | 13/3 | PM | | 3 | X | | | | | | | | | | | |
| 34 | HC-SW01 | W | 14/3 | PM | | 2 | X | | | | | | | | | | | |
| 35 | BBC-SD02 | S | 14/3 | AM | | 1 | X | | | | | | | | | | | |
| 36 | BBC-SD02 | S | 17/3 | PM | | 1 | X | | | | | | | | | | | |
| 37 | COCKPIT-SW01 | W | 17/3 | AM | | 2 | X | | | | | | | | | | | |
| 38 | PWS-DUCK-DAM | W | 14/3 | AM | | 2 | X | | | | | | | | | | | |
| 39 | PWS-DUCK-DAM2 | W | 14/3 | AM | | 2 | | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8516

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-865-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP234(X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 40 | QC54 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC55 | S/BIOTA | " | | | 2 | x | | x | Pls | fwd | to | Eurofins | | | | | |
| 41 | QC37 | Biota | 13/3/21 | | bag | 1 | x | | | | | | | | | | | |
| – | QC38 | " | " | | bag | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 42 | QC39 | S | " | | jar | 1 | x | | | | | | | | | | | |
| – | QC40 | S | " | | jar | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | | | | | | | | | | |
| – | QC42 | W | " | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 44 | QC43 | W | | | | 2 | x | | | | | | | | | | | |
| – | QC44 | W | | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 45 | QC45 | W | | | | 2 | x | | | | | | | | | | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | | | | | | | | | | |
| – | QC47 | S | " | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 47 | QC48 | S | " | | | 1 | x | | | | | | | | | | | |
| – | QC49 | S | " | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC53 | S/BIOTA | | | | 2 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 49 | QC56 | S | | | | 1 | x | | | | | | | | | | | |
| – | QC57 | S | | | | 1 | x | | x | Pls | FWD | to | Eurofins | | | | | |
| 50 | QC58 | W | | | bot | 2 | x | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 300

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-065-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | BP231X - PFAB Full Suite (25 compounds) | HOLD | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | |
| – | QC60 | S/W | | | " | 2 | x | * Als Forward to Eurofins | |
| 52 | QC61 | W | | | bot | 1 | x | | |
| 53 | QC62 | W | | | bot | 1 | x | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | x | |
| 55 | MC-BIOTA 12 | | | | | | | x | |
| 56 | MC-BIOTA 14 | | | | | | | x | |
| 57 | MC-BIOTA 15 | | | | | | | x | |
| 58 | MC-BIOTA 16 | | | | | | | x | |
| 59 | MC-BIOTA 18 | | | | | | | x | |
| 60 | A-BIOTA 123 | | 16/3/21 | | | | x | x | |
| 61 | A-BIOTA 124 | | | | | | x | x | |
| 62 | A-BIOTA 125 | | | | | | x | x | |
| 63 | A-BIOTA 126 | | | | | | x | x | |
| 64 | A-BIOTA 127 | | | | | | x | x | |
| 65 | A-BIOTA 128 | | | | | | x | x | |
| 66 | A-BIOTA 129 | | | | | | x | x | |
| 67 | A-BIOTA 130 | | | | | | x | x | |
| 68 | A-BIOTA 131 | | | | | | x | x | |
| 69 | A-BIOTA 132 | | | | | | x | x | |
| Total | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: [signature] | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | GW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix* | Date | Time | Type / Code | Total Bottles | LF2210 - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | |
| [illegible] | A_BIOTA133 | Biota | 16/3/21 | | bag | 1 | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA134 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA135 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA136 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA137 | | | | | | X | | | | | | | | | | X | |
| [illegible] | A_BIOTA138 | | | | | | X | | | | | | | | | | X | |
| 76 | A_BIOTA139 | | | | | | X | | | | | | | | | | X | |
| 77 | BIOTA_UNKNOWN | | Unknown | | | | X | | | | | | | | | | X | |
| 78 | QC65 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| 79 | QC66 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples.

Sampler Name: CARLYN WILLIAMS Signature: [signature] Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable) | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. [signature] | Date: 19/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L = Lugol's Iodine preserved white plastic bottle; SW = sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111281** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 09:34 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HOSP_TAP1 | PWS_HOSP_TAP3 | PWS_HOSP_TAP4 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111281-001 | ES2111281-002 | ES2111281-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | PWS_HOSP_TAP1 | PWS_HOSP_TAP3 | PWS_HOSP_TAP4 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2111281-001 | ES2111281-002 | ES2111281-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **74.5** | **83.1** | **81.8** | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **114** | **118** | **116** | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111281** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 01-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 98.0 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 118 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 73.0 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 112 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.0 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 96.3 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3596425)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 102 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 90.2 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 126 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.3 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3596425)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 113 | 67.0 | 138 |

| Sub-Matrix: **WATER** | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3596425) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.0 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2111281** | Page | : 1 of 4 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-Apr-2021 |
| Sampler | : CW, HP | No. of samples received | : 3 |
| Order number | : ---- | No. of samples analysed | : 3 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 17 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 0 | 17 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **01-Apr-2021** | 06-Sep-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **01-Apr-2021** | 06-Sep-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **01-Apr-2021** | 06-Sep-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **01-Apr-2021** | 06-Sep-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** PWS_HOSP_TAP1, PWS_HOSP_TAP3, PWS_HOSP_TAP4 | **10-Mar-2021** | **01-Apr-2021** | 06-Sep-2021 | ✓ | **01-Apr-2021** | 06-Sep-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 17 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 0 | 17 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | WATER | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | WATER | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2111281**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : CW, HP | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 31-Mar-2021 |
| Client Requested Due Date | : 06-Apr-2021 | Scheduled Reporting Date | : **06-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Carrier | Security Seal | : Not Available |
| No. of coolers/boxes | : 15 | Temperature | : 15.7 - Ice Bricks present |
| Receipt Detail | : | No. of samples received / analysed | : 3 / 3 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

| Laboratory sample ID | Sampling date / time | Sample ID | WATER - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|
| ES2111281-001 | 10-Mar-2021 00:00 | PWS_HOSP_TAP1 | ✓ |
| ES2111281-002 | 10-Mar-2021 00:00 | PWS_HOSP_TAP3 | ✓ |
| ES2111281-003 | 10-Mar-2021 00:00 | PWS_HOSP_TAP4 | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - XTab (XTAB) | Email | carlyn.williams@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-655-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division Sydney
Work Order Reference
ES2111281

Telephone : + 61-2-8784 8555

| Sample Information | | | | | Container Information | | |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | HOSP_TAP1 | W | 10/3 | | | 2 | X |
| 2 | HOSP_TAP3 | W | 10/3 | | | 2 | X |
| 3 | HOSP_TAP4 | W | 10/3 | | | 2 | X |
| Total | | | | | | | 6 |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples: Sampler Name: Carlyn Williams Signature: Date: 11/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 11/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00AM | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$)-Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: CW
Checked by: _____

**SAMPLE RECEIPT INFORMATION & BOTTLE TYPE**

**WORKORDER No:**

**To be completed by Sample Receipt**

**Sorting Times** *(Only record for BP, Mobil & URS)*

Time Sorting Commenced:

Time Placed in Fridge:

Sorting to Fridge Target Time <1 Hour

**Temperature Details**

Sample Temp: 15.7 average °C ..... °C ..... °C

Chilling Method -

☑ Ice, melted

☑ Ice Bricks

☑ No Chilling

**Packaging**

**Security Seal Intact?** ***Circle below***

☐ **YES** (Security seal intact)

☐ **NO** (Security seal broken)

☐ **NA** (No security seal used)

| Packaging Type | No. |
|---|---|
| Hard Esky | 17 15 |
| Foam Esky | |

Other:

**Courier Details** (Mandatory for Quarantine)

Carrier: STARTRACK

Con Note: 3GK200007640

3GK200007645

**Samples checked, labelled and put in trays by:**

Initial:

Client Code: SENVER

**Sample Receipt Advice Comments - To be completed by Sorting Staff**

VOC analysis may be compromised as sample containers contained **headspace** *(list)*:

Details of any samples damaged during transit:

**Other Information** (e.g. Were bottles received that weren't completely filled) (e.g. If sample temperature is above 6°C add further detail here - Internal use only - Not for SRN):

**Tray Numbers:** QW020

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

Environmental Division Sydney
Work Order Reference
ES2111281

Telephone : 61-2-8784 8555

| Sample Information | | | | | Container Information | | Analysis Required |
|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) |
| 1 | HOSP_TAP1 | W | 10/3 | | | 2 | X |
| 2 | HOSP_TAP3 | W | 10/3 | | | 2 | X |
| 3 | HOSP_TAP4 | W | 10/3 | | | 2 | X |
| Total | | | | | | 6 | 0 |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams
Signature:
Date: 11/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: M Jound | Date: 26.3.21 |
| Of: Senversa | Time: 8:00AM | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: CW
Checked by: _____

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115092** | Page | : 1 of 47 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 26-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-May-2021 16:36 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 61 | | |
| No. of samples analysed | : 61 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |
| Wisam Marassa | Inorganics Coordinator | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB01_1.0 | A_SB02_1.5 | A_SB04_1.0 | A_SB05_1.0 | A_SB06_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-001 | ES2115092-002 | ES2115092-003 | ES2115092-004 | ES2115092-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.30** | **0.16** | **0.28** | **0.03** | **0.02** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.07** | **0.06** | **0.10** | <0.02 | **0.03** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **31.2** | **21.5** | **44.5** | **6.65** | **8.58** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.23** | <0.02 | **0.80** | **0.14** | **0.06** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.03** | <0.02 | **0.07** | **0.02** | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.05** | <0.02 | **0.07** | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.04** | <0.02 | **0.04** | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.17** | **0.04** | **0.14** | **0.02** | **0.02** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.06** | <0.02 | **0.06** | **0.03** | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.05** | <0.02 | **0.07** | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.24** | <0.02 | **0.36** | **0.02** | **0.07** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB01_1.0 | A_SB02_1.5 | A_SB04_1.0 | A_SB05_1.0 | A_SB06_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-001 | ES2115092-002 | ES2115092-003 | ES2115092-004 | ES2115092-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **0.08** | <0.05 | **0.20** | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **32.5** | **21.8** | **46.7** | **6.91** | **8.78** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **31.5** | **21.7** | **44.8** | **6.68** | **8.60** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **31.9** | **21.7** | **45.3** | **6.72** | **8.62** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **103** | **103** | **104** | **91.8** | **102** |
| 13C8-PFOA | ---- | 0.02 | % | **110** | **100** | **97.1** | **93.6** | **95.2** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB07_1.5 | A_SB08_1.0 | A_SB09_1.5 | A_SB10_1.5 | A_SB11_1.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-006 | ES2115092-007 | ES2115092-008 | ES2115092-009 | ES2115092-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.04** | **0.03** | **0.04** | **0.08** | **0.07** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **9.10** | **3.03** | **7.33** | **6.26** | **2.47** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | **0.12** | **0.13** | <0.02 | **0.06** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | <0.02 | **0.07** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.03** | **0.01** | **0.02** | **0.01** | **0.08** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | **0.02** | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | **0.11** | **0.09** | <0.02 | **0.33** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB07_1.5 | A_SB08_1.0 | A_SB09_1.5 | A_SB10_1.5 | A_SB11_1.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-006 | ES2115092-007 | ES2115092-008 | ES2115092-009 | ES2115092-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **9.19** | **3.32** | **7.61** | **6.35** | **3.19** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **9.14** | **3.06** | **7.37** | **6.34** | **2.54** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **9.19** | **3.07** | **7.39** | **6.35** | **2.76** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **110** | **105** | **102** | **99.9** |
| 13C8-PFOA | ---- | 0.02 | % | **93.3** | **108** | **98.5** | **100** | **114** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB12_1.0 | A_SB15_1.0 | A_SB16_1.0 | A_SB17_1.5 | A_SB18_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-011 | ES2115092-012 | ES2115092-013 | ES2115092-014 | ES2115092-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.29** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **1.23** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **30.6** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.23** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | <0.01 | <0.01 | **0.02** | **0.19** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | **0.2** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | **0.04** | **0.33** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.02** | **1.46** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.59** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | <0.01 | <0.01 | <0.01 | **0.15** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB12_1.0 | A_SB15_1.0 | A_SB16_1.0 | A_SB17_1.5 | A_SB18_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-011 | ES2115092-012 | ES2115092-013 | ES2115092-014 | ES2115092-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.08** | <0.01 | <0.01 | **0.08** | **35.3** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | <0.01 | <0.01 | **0.02** | **30.8** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.08** | <0.01 | <0.01 | **0.08** | **33.8** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **99.5** | **108** | **108** | **89.0** | **112** |
| 13C8-PFOA | ---- | 0.02 | % | **112** | **110** | **108** | **89.7** | **106** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB19_1.0 | A_SB21_1.0 | A_SB22_1.5 | A_SB23_1.5 | A_SB25_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-016 | ES2115092-017 | ES2115092-018 | ES2115092-019 | ES2115092-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.30** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.31** | <0.02 | **0.04** | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **4.91** | **0.27** | **0.66** | **0.37** | **0.05** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **1.46** | **0.04** | **0.02** | **0.03** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **57.5** | **3.95** | **0.87** | **4.20** | **0.04** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | **0.05** | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | **0.1** | <0.1 | **0.1** | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.25** | **0.02** | **0.37** | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **1.26** | **0.04** | **0.23** | **0.03** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.24** | **0.04** | **0.41** | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **1.60** | **0.07** | **0.51** | **0.17** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.03** | **0.08** | **0.09** | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | **0.10** | **0.02** | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | **0.03** | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB19_1.0 | A_SB21_1.0 | A_SB22_1.5 | A_SB23_1.5 | A_SB25_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-016 | ES2115092-017 | ES2115092-018 | ES2115092-019 | ES2115092-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | **0.20** | **0.08** | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **68.0** | **4.89** | **3.40** | **4.80** | **0.09** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **62.4** | **4.22** | **1.53** | **4.57** | **0.09** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **66.2** | **4.59** | **3.23** | **4.77** | **0.09** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **110** | **99.2** | **110** | **95.5** | **108** |
| 13C8-PFOA | ---- | 0.02 | % | **102** | **97.3** | **108** | **96.1** | **107** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB26_0.5 | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-021 | ES2115092-022 | ES2115092-023 | ES2115092-024 | ES2115092-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.05** | **0.33** | **0.38** | **0.17** | **0.19** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | **0.03** | **0.13** | <0.02 | **0.04** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.45** | **6.45** | **59.2** | **0.70** | **10.2** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | **1.31** | **0.18** | **0.09** | **0.03** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | **0.1** | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | **0.07** | **0.02** | **0.05** | **0.03** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **0.05** | **0.03** | **0.04** | **0.02** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.05** | **0.07** | **0.02** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.15** | **0.28** | **0.04** | **0.06** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | **0.08** | **0.10** | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | **0.08** | **0.07** | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | **0.56** | **0.63** | <0.02 | **0.06** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB26_0.5 | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-021 | ES2115092-022 | ES2115092-023 | ES2115092-024 | ES2115092-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | **0.10** | **0.28** | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.50** | **9.26** | **61.4** | **1.21** | **10.6** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.50** | **6.78** | **59.6** | **0.87** | **10.4** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.50** | **7.20** | **60.3** | **1.12** | **10.5** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **101** | **112** | **109** | **93.8** |
| 13C8-PFOA | ---- | 0.02 | % | **108** | **97.0** | **93.0** | **110** | **94.3** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB03_0.1 | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB05_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-026 | ES2115092-027 | ES2115092-028 | ES2115092-029 | ES2115092-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.11** | **0.07** | **0.41** | **0.23** | **0.11** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | **0.05** | **0.15** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **5.29** | **6.36** | **7.82** | **44.8** | **1.10** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.06** | **0.10** | **0.89** | **1.25** | **0.05** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | **0.2** | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.08** | **0.06** | **0.12** | **0.04** | **0.08** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.06** | **0.04** | **0.08** | **0.05** | **0.04** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.10** | **0.08** | **0.04** | **0.04** | **0.03** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.11** | **0.08** | **0.17** | **0.13** | **0.05** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.07** | **0.06** | **0.03** | <0.02 | **0.04** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.37** | **0.28** | <0.02 | **0.05** | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.33** | **0.64** | **1.03** | **0.88** | **0.02** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB03_0.1 | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB05_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-026 | ES2115092-027 | ES2115092-028 | ES2115092-029 | ES2115092-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **1.48** | **2.05** | <0.05 | **0.08** | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **8.06** | **9.82** | **10.9** | **47.7** | **1.52** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **5.40** | **6.43** | **8.23** | **45.0** | **1.21** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **7.23** | **8.74** | **8.84** | **45.4** | **1.41** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **104** | **102** | **100** | **110** |
| 13C8-PFOA | ---- | 0.02 | % | **104** | **101** | **102** | **102** | **111** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB05_0.4 | A_SB06_0.1 | A_SB06_0.5 | A_SB07_0.1 | A_SB07_0.4 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-031 | ES2115092-032 | ES2115092-033 | ES2115092-034 | ES2115092-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.02** | **0.04** | **0.02** | **0.07** | **0.03** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **4.85** | **0.72** | **6.29** | **0.73** | **2.45** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.33** | **0.09** | **0.06** | **0.03** | **0.06** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | **0.03** | <0.02 | **0.02** | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **0.02** | <0.02 | **0.02** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | **0.03** | **0.03** | **0.03** | **0.02** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.03** | <0.02 | <0.02 | **0.02** | **0.02** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.03** | <0.02 | **0.18** | **0.02** | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB05_0.4 | A_SB06_0.1 | A_SB06_0.5 | A_SB07_0.1 | A_SB07_0.4 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-031 | ES2115092-032 | ES2115092-033 | ES2115092-034 | ES2115092-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **5.28** | **0.93** | **6.58** | **0.94** | **2.58** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **4.87** | **0.76** | **6.31** | **0.80** | **2.48** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **4.89** | **0.84** | **6.34** | **0.87** | **2.50** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **106** | **103** | **106** | **106** | **98.2** |
| 13C8-PFOA | ---- | 0.02 | % | **106** | **111** | **104** | **97.6** | **99.4** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | QC04 | A_SB08_0.4 | A_SB09_0.1 | A_SB09_0.5 | QC08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-036 | ES2115092-037 | ES2115092-038 | ES2115092-039 | ES2115092-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.07** | **0.05** | **0.04** | **0.03** | **0.21** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.26** | **1.92** | **0.57** | **4.60** | **0.75** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | **0.27** | **0.07** | **0.07** | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.10** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | **0.03** | **0.02** | **0.02** | **0.06** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | **0.02** | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | **0.05** | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.03** | **0.22** | **0.03** | **0.06** | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | QC04 | A_SB08_0.4 | A_SB09_0.1 | A_SB09_0.5 | QC08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-036 | ES2115092-037 | ES2115092-038 | ES2115092-039 | ES2115092-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.38** | **2.56** | **0.73** | **4.78** | **1.17** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.33** | **1.97** | **0.61** | **4.63** | **0.96** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.35** | **2.00** | **0.63** | **4.65** | **1.17** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **103** | **108** | **95.3** | **103** | **104** |
| 13C8-PFOA | ---- | 0.02 | % | **99.1** | **100** | **97.4** | **101** | **98.7** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB10_0.5 | QC11 | A_SB11_0.5 | A_SB12_0.1 | A_SB12_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-041 | ES2115092-042 | ES2115092-043 | ES2115092-044 | ES2115092-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.12** | **0.18** | **0.14** | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.02** | **0.03** | **0.03** | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **7.05** | **1.62** | **2.85** | **0.45** | **0.02** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.2** | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | **0.22** | **0.10** | **0.04** | **0.03** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | **0.08** | **0.04** | **0.02** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.09** | **0.06** | **0.05** | **0.02** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | **0.41** | **0.14** | **0.17** | **0.04** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | **0.19** | <0.02 | **0.12** | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | **0.02** | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB10_0.5 | QC11 | A_SB11_0.5 | A_SB12_0.1 | A_SB12_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-041 | ES2115092-042 | ES2115092-043 | ES2115092-044 | ES2115092-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | **0.10** | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **7.21** | **3.14** | **3.38** | **0.85** | **0.11** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **7.17** | **1.80** | **2.99** | **0.45** | **0.02** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **7.19** | **2.90** | **3.33** | **0.73** | **0.11** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **102** | **97.2** | **92.7** | **108** | **99.8** |
| 13C8-PFOA | ---- | 0.02 | % | **95.4** | **102** | **99.9** | **99.5** | **96.8** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB13_0.1 | A_SB14_0.1 | A_SB15_0.1 | A_SB15_0.5 | A_SB16_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-046 | ES2115092-047 | ES2115092-048 | ES2115092-049 | ES2115092-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.03** | **0.02** | **0.02** | <0.01 | **0.04** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB13_0.1 | A_SB14_0.1 | A_SB15_0.1 | A_SB15_0.5 | A_SB16_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-046 | ES2115092-047 | ES2115092-048 | ES2115092-049 | ES2115092-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.03** | **0.02** | **0.02** | <0.01 | **0.04** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.03** | **0.02** | **0.02** | <0.01 | **0.04** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.03** | **0.02** | **0.02** | <0.01 | **0.04** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **96.7** | **97.3** | **88.1** | **104** | **91.2** |
| 13C8-PFOA | ---- | 0.02 | % | **96.5** | **90.3** | **88.5** | **95.0** | **89.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB16_0.5 | A_SB17_0.1 | A_SB17_0.5 | A_SB18_0.1 | A_SB18_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-051 | ES2115092-052 | ES2115092-053 | ES2115092-054 | ES2115092-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | **0.14** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.10** | **0.26** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **3.27** | **11.1** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **1.25** | **4.48** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | **0.12** | **9.24** | **3.01** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | **0.1** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | **0.05** | **0.06** | **0.43** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.03** | **0.27** | **1.90** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | **0.03** | **0.11** | **0.21** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.04** | **0.68** | **4.15** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | **0.04** | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB16_0.5 | A_SB17_0.1 | A_SB17_0.5 | A_SB18_0.1 | A_SB18_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-051 | ES2115092-052 | ES2115092-053 | ES2115092-054 | ES2115092-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | **0.13** | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.02** | **0.29** | **15.2** | **25.8** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | **0.12** | **12.5** | **14.1** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.02** | **0.27** | **13.8** | **21.0** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **97.9** | **84.1** | **91.0** | **109** | **104** |
| 13C8-PFOA | ---- | 0.02 | % | **88.9** | **90.6** | **86.1** | **83.4** | **80.2** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB19_0.1 | A_SB19_0.5 | A_SB20_0.1 | A_SB21_0.1 | A_SB21_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-056 | ES2115092-057 | ES2115092-058 | ES2115092-059 | ES2115092-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.03** | **0.30** | <0.02 | <0.02 | **0.03** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **0.62** | <0.02 | <0.02 | **0.06** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.29** | **6.17** | <0.02 | **0.19** | **1.03** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.06** | **0.63** | <0.02 | **0.07** | **0.13** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **36.0** | **71.7** | **0.13** | **2.39** | **9.84** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | <0.02 | **0.09** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.1** | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.09** | **0.39** | <0.02 | **0.05** | **0.06** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.22** | **2.21** | <0.02 | **0.10** | **0.20** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.37** | <0.02 | **0.13** | **0.10** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.10** | **1.40** | <0.01 | **0.17** | **0.22** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.14** | **0.02** | <0.02 | **0.11** | **0.15** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | **0.10** | **0.06** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.05** | <0.02 | <0.02 | <0.02 | **0.04** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB19_0.1 | A_SB19_0.5 | A_SB20_0.1 | A_SB21_0.1 | A_SB21_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-056 | ES2115092-057 | ES2115092-058 | ES2115092-059 | ES2115092-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **0.54** | <0.05 | <0.05 | **0.74** | **0.22** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **37.6** | **83.9** | **0.13** | **4.05** | **12.2** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **36.3** | **77.9** | **0.13** | **2.58** | **10.9** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **37.3** | **82.6** | **0.13** | **3.77** | **11.7** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **97.8** | **104** | **117** | **117** |
| 13C8-PFOA | ---- | 0.02 | % | **80.7** | **81.6** | **93.7** | **78.5** | **82.0** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB22_0.1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115092-061 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.23** | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.17** | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.09** | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.08** | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.05** | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.05** | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB22_0.1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115092-061 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.67** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.40** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.67** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **113** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **79.1** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB01_1.0 | A_SB02_1.5 | A_SB04_1.0 | A_SB05_1.0 | A_SB06_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-001 | ES2115092-002 | ES2115092-003 | ES2115092-004 | ES2115092-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 19.1 | 24.9 | 25.6 | 22.0 | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | 7.6 | 7.6 | 7.0 | 7.2 | 7.3 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0003 | <0.0002 | 0.0004 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0005 | <0.0002 | 0.0005 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0075 | 0.0044 | 0.0065 | 0.0009 | 0.0010 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0016 | 0.0014 | 0.0022 | 0.0004 | 0.0009 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.843 | 0.611 | 1.58 | 0.227 | 0.269 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0216 | 0.0016 | 0.0675 | 0.0117 | 0.0081 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0010 | 0.0003 | 0.0013 | 0.0005 | 0.0003 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0012 | 0.0004 | 0.0014 | 0.0002 | 0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0002 | 0.0010 | 0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0040 | 0.0010 | 0.0031 | 0.0005 | 0.0006 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0014 | <0.0002 | 0.0018 | 0.0010 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0014 | <0.0002 | 0.0025 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0004 | <0.0002 | 0.0003 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0066 | 0.0002 | 0.0128 | 0.0008 | 0.0027 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB01_1.0 | A_SB02_1.5 | A_SB04_1.0 | A_SB05_1.0 | A_SB06_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-001 | ES2115092-002 | ES2115092-003 | ES2115092-004 | ES2115092-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | **0.0019** | <0.0005 | **0.0064** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.894** | **0.620** | **1.69** | **0.243** | **0.283** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.850** | **0.615** | **1.59** | **0.228** | **0.270** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.860** | **0.617** | **1.60** | **0.229** | **0.271** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **103** | **90.5** | **87.5** | **114** | **120** |
| 13C8-PFOA | ---- | 0.0002 | % | **100** | **104** | **102** | **105** | **104** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB07_1.5 | A_SB08_1.0 | A_SB09_1.5 | A_SB10_1.5 | A_SB11_1.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-006 | ES2115092-007 | ES2115092-008 | ES2115092-009 | ES2115092-010 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 26.5 | 21.3 | 30.3 | 28.9 | 27.8 |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | 7.3 | 7.0 | 7.1 | 7.2 | 7.3 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0013 | 0.0010 | 0.0011 | 0.0028 | 0.0016 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0006 | 0.0003 | 0.0004 | 0.0005 | 0.0006 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.340 | 0.122 | 0.245 | 0.249 | 0.0807 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0044 | 0.0238 | 0.0185 | 0.0008 | 0.0124 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0006 | <0.0002 | 0.0005 | <0.0002 | 0.0010 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0004 | <0.0002 | 0.0003 | 0.0002 | 0.0005 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0003 | <0.0002 | <0.0002 | <0.0002 | 0.0009 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0011 | 0.0003 | 0.0006 | 0.0003 | 0.0017 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0008 | 0.0006 | 0.0004 | <0.0002 | 0.0005 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0014 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0004 | 0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0005 | 0.0058 | 0.0032 | <0.0002 | 0.0178 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB07_1.5 | A_SB08_1.0 | A_SB09_1.5 | A_SB10_1.5 | A_SB11_1.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-006 | ES2115092-007 | ES2115092-008 | ES2115092-009 | ES2115092-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.350** | **0.156** | **0.270** | **0.254** | **0.118** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.341** | **0.123** | **0.246** | **0.252** | **0.0823** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.344** | **0.123** | **0.248** | **0.252** | **0.0864** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **104** | **116** | **118** | **106** | **102** |
| 13C8-PFOA | ---- | 0.0002 | % | **110** | **106** | **108** | **110** | **114** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB12_1.0 | A_SB15_1.0 | A_SB16_1.0 | A_SB17_1.5 | A_SB18_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-011 | ES2115092-012 | ES2115092-013 | ES2115092-014 | ES2115092-015 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **27.2** | **27.2** | **25.6** | **30.8** | **31.0** |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | **6.8** | **7.0** | **5.5** | **5.4** | **4.6** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0090** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0273** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | **0.0006** | **0.841** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | **0.0068** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0008** | <0.0002 | **0.0002** | **0.0022** | **0.0070** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | <0.001 | <0.001 | **0.005** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | **0.0013** | **0.0074** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | <0.0002 | <0.0002 | **0.0008** | **0.0336** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | **0.0009** | **0.0202** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0006** | <0.0002 | <0.0002 | **0.0005** | **0.0042** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | **0.0002** | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB12_1.0 | A_SB15_1.0 | A_SB16_1.0 | A_SB17_1.5 | A_SB18_1.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-011 | ES2115092-012 | ES2115092-013 | ES2115092-014 | ES2115092-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0032** | <0.0002 | **0.0002** | **0.0069** | **0.962** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0012** | <0.0002 | **0.0002** | **0.0028** | **0.848** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0032** | <0.0002 | **0.0002** | **0.0063** | **0.927** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **116** | **110** | **102** | **116** | **108** |
| 13C8-PFOA | ---- | 0.0002 | % | **116** | **102** | **104** | **112** | **120** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB19_1.0 | A_SB21_1.0 | A_SB22_1.5 | A_SB23_1.5 | A_SB25_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-016 | ES2115092-017 | ES2115092-018 | ES2115092-019 | ES2115092-020 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 29.1 | 8.4 | 15.2 | 29.2 | 17.7 |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | 5.0 | 8.4 | 8.2 | 5.4 | 5.1 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0077 | 0.0006 | 0.0006 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0099 | 0.0007 | 0.0009 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.152 | 0.0163 | 0.0151 | 0.0103 | 0.0013 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0583 | 0.0019 | 0.0006 | 0.0011 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 2.89 | 0.207 | 0.0411 | 0.177 | 0.0011 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.0039 | 0.0008 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | 0.003 | <0.001 | 0.002 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0052 | 0.0005 | 0.0081 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0260 | 0.0009 | 0.0050 | 0.0007 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0066 | 0.0009 | 0.0096 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0546 | 0.0020 | 0.0121 | 0.0045 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0009 | 0.0026 | 0.0024 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.0034 | 0.0015 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0015 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.0011 | 0.0004 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.0006 | <0.0002 | <0.0002 | <0.0002 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB19_1.0 | A_SB21_1.0 | A_SB22_1.5 | A_SB23_1.5 | A_SB25_1.0 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-016 | ES2115092-017 | ES2115092-018 | ES2115092-019 | ES2115092-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | **0.0062** | **0.0049** | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | **0.0013** | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **3.21** | **0.252** | **0.106** | **0.194** | **0.0024** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **3.04** | **0.223** | **0.0562** | **0.187** | **0.0024** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **3.14** | **0.234** | **0.0985** | **0.192** | **0.0024** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **106** | **108** | **107** | **100** | **118** |
| 13C8-PFOA | ---- | 0.0002 | % | **119** | **108** | **108** | **108** | **117** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB26_0.5 | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-021 | ES2115092-022 | ES2115092-023 | ES2115092-024 | ES2115092-025 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **15.3** | ---- | ---- | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | **5.2** | **8.2** | **8.0** | **8.0** | **8.2** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | **0.0012** | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0127** | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0003** | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB26_0.5 | A_SB01_0.1 | A_SB01_0.5 | A_SB02_0.1 | A_SB02_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-021 | ES2115092-022 | ES2115092-023 | ES2115092-024 | ES2115092-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0142** | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0139** | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0142** | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **98.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **102** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB03_0.1 | A_SB03_0.4 | A_SB04_0.1 | A_SB04_0.5 | A_SB05_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-026 | ES2115092-027 | ES2115092-028 | ES2115092-029 | ES2115092-030 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.3** | **8.2** | **7.8** | **7.7** | **7.7** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB05_0.4 | A_SB06_0.1 | A_SB06_0.5 | A_SB07_0.1 | A_SB07_0.4 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-031 | ES2115092-032 | ES2115092-033 | ES2115092-034 | ES2115092-035 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.5** | **8.2** | **7.9** | **7.8** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC04 | A_SB08_0.4 | A_SB09_0.1 | A_SB09_0.5 | QC08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-036 | ES2115092-037 | ES2115092-038 | ES2115092-039 | ES2115092-040 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.7** | **7.5** | **8.2** | **7.8** | **7.3** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB10_0.5 | QC11 | A_SB11_0.5 | A_SB12_0.1 | A_SB12_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-041 | ES2115092-042 | ES2115092-043 | ES2115092-044 | ES2115092-045 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.7** | **7.4** | **7.1** | **8.0** | **5.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB13_0.1 | A_SB14_0.1 | A_SB15_0.1 | A_SB15_0.5 | A_SB16_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-046 | ES2115092-047 | ES2115092-048 | ES2115092-049 | ES2115092-050 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.0** | **7.7** | **7.9** | **7.8** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB16_0.5 | A_SB17_0.1 | A_SB17_0.5 | A_SB18_0.1 | A_SB18_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-051 | ES2115092-052 | ES2115092-053 | ES2115092-054 | ES2115092-055 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.9** | **7.8** | **7.8** | **6.6** | **5.2** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB19_0.1 | A_SB19_0.5 | A_SB20_0.1 | A_SB21_0.1 | A_SB21_0.5 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115092-056 | ES2115092-057 | ES2115092-058 | ES2115092-059 | ES2115092-060 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.7** | **5.0** | **6.2** | **8.2** | **7.9** |

## Analytical Results

| Sub-Matrix: **SOIL** (Matrix: **SOIL**) | | | Sample ID | **A_SB22_0.1** | **----** | **----** | **----** | **----** |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | ---- | ---- | ---- | ---- |
| *Compound* | *CAS Number* | *LOR* | *Unit* | **ES2115092-061** | **--------** | **--------** | **--------** | **--------** |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.9** | **----** | **----** | **----** | **----** |

## Surrogate Control Limits

| Sub-Matrix: DI WATER LEACHATE | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: SOIL | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115092** | Page | : 1 of 19 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 26-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 06-May-2021 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 61 | | |
| No. of samples analysed | : 61 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |
| Wisam Marassa | Inorganics Coordinator | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3646752)** | | | | | | | | | |
| ES2114580-014 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 8.6 | 9.0 | 4.48 | No Limit |
| ES2115060-004 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 19.9 | 21.1 | 5.85 | 0% - 20% |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3646753)** | | | | | | | | | |
| ES2115092-007 | A_SB08_1.0 | EA055: Moisture Content | ---- | 0.1 | % | 21.3 | 22.5 | 5.35 | 0% - 20% |
| ES2115092-018 | A_SB22_1.5 | EA055: Moisture Content | ---- | 0.1 | % | 15.2 | 15.3 | 1.23 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3643017)** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | 0.0005 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0075 | 0.0078 | 3.82 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | 0.0016 | 0.0016 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.843 | 0.974 | 14.4 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | 0.0216 | 0.0204 | 5.88 | 0% - 20% |
| ES2115092-011 | A_SB12_1.0 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0008 | 0.0008 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3646366)** | | | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0012 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0127 | 0.0133 | 4.67 | 0% - 20% |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3646366) - continued** | | | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3643017)** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0010 | 0.0009 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0012 | 0.0012 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0012 | 0.0013 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0040 | 0.0042 | 5.10 | 0% - 20% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | 0.0014 | 0.0015 | 9.68 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | 0.0014 | 0.0015 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | 0.0004 | 0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | 0.0003 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2115092-011 | A_SB12_1.0 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | 0.0007 | 0.0007 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | 0.0004 | 0.0004 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0006 | 0.0006 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3646366)** | | | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3643017)** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | 0.0066 | 0.0068 | 3.33 | 0% - 20% |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3643017) - continued** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2115092-011 | A_SB12_1.0 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3646366)** | | | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3643017)** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3643017) - continued** | | | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | 0.0019 | 0.0021 | 10.6 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2115092-011 | A_SB12_1.0 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3646366)** | | | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| ES2115102-003 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.04 | 0.04 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 0.02 | 0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3652658)** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3652658) - continued** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| ES2115102-003 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3652658)** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115102-003 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3652658)** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3645716)** | | | | | | | | | |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3645716) - continued** | | | | | | | | | |
| ES2115102-002 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115102-003 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3652658)** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | 0.32 | 0.31 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.03 | 0.04 | 28.6 | No Limit |
| ES2115102-003 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.06 | 0.06 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3652658)** | | | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.35 | 0.34 | 2.90 | 0% - 20% |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3643017)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.4 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.2 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 88.4 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.6 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 106 | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3646366)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 74.4 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 84.8 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 78.0 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.6 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.4 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 79.6 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3643017)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 93.9 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 104 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 98.0 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.8 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 82.8 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 78.4 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.2 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 74.4 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 95.0 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3646366)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 89.8 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 80.4 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 83.6 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 95.6 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.4 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 64.0 | 136 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3646366) - continued** | | | | | | | | |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 93.6 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 115 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 90.4 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3643017)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.0 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 105 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 92.0 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 96.3 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 80.0 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 90.4 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 100 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3646366)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 98.1 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 102 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 87.0 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 88.3 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 86.0 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3643017)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 89.2 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 76.8 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 86.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 98.4 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3646366)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 84.4 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 96.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 94.8 | 65.0 | 137 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 99.2 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method Blank (MB) Report | Laboratory Control Spike (LCS) Report Spike | Spike Recovery (%) | Acceptable Limits (%) |
|---|---|---|---|

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 101 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3647844)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.4 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.6 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.8 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 88.4 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3648622)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 90.6 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.4 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.6 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 92.6 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 75.6 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 86.8 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 80.8 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3652658)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 100 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 92.4 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 110 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 72.0 | 129 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3645716) - continued** | | | | | | | | |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 123 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3647844)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 96.5 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 114 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 105 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3648622)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 91.2 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 106 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 100 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 101 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 104 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 120 | 71.0 | 133 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3648629) - continued** | | | | | | | | |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 82.0 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 79.0 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 80.4 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 120 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3652658)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 101 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 113 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.0 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.8 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.0 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.6 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 119 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 112 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 111 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3647844)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 102 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 86.7 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.5 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 95.1 | 57.6 | 145 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3647844) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.8 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3648622)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 102 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 108 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 81.1 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 103 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 87.8 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 84.6 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.4 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 87.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.8 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 124 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.6 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3652658)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 81.9 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 84.3 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 86.4 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 84.2 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 65.0 | 136 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3652658) - continued** | | | | | | | | |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 121 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 105 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3647844)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.4 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 117 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 94.8 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3648622)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 92.6 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 101 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 114 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 85.2 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 108 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 124 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 112 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3652658)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 105 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 100 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3643017)** | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 90.4 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 84.0 | 73.0 | 123 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3643017) - continued** | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | # Not Determined | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 93.6 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | # Not Determined | 59.0 | 134 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3646366)** | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 80.4 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 86.4 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 84.0 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 97.6 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | # Not Determined | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 90.0 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3643017)** | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 92.5 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 80.0 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 85.6 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 98.8 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 84.8 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 117 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 104 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 92.4 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 76.4 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 102 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 96.3 | 69.0 | 133 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3646366)** | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 101 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 101 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 78.0 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 104 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 91.6 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 105 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 112 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 93.2 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 90.4 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 98.4 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 93.6 | 69.0 | 133 |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3643017)** | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | # Not Determined | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 113 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 104 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 108 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 87.7 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 106 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 96.0 | 61.0 | 139 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3646366)** | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 98.8 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 97.4 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 100 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 86.7 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 82.8 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 114 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 100 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3643017)** | | | | | | | |
| ES2115092-001 | A_SB01_1.0 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 85.2 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 85.6 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 107 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 105 | 69.2 | 143 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3646366)** | | | | | | | |
| ES2115092-021 | A_SB26_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 82.8 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 96.4 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 86.4 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 90.4 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 105 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 105 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 104 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 105 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 89.6 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 105 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3652658)** | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 114 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 114 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 121 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 117 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 112 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 113 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 96.4 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 109 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 114 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 106 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 115 | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 109 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 111 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 122 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 120 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 102 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 101 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3652658)** | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 95.0 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 112 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 114 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 125 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 123 | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 129 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 122 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 106 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 99.2 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 110 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 119 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716)** | | | | | | | |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716) - continued** | | | | | | | |
| ES2115102-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 120 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 105 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 88.5 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 103 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 102 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 103 | 65.0 | 136 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 94.0 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3652658)** | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 127 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 110 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 87.0 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 102 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 78.5 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 99.2 | 65.0 | 136 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 120 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 107 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 119 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 110 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 96.0 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3652658)** | | | | | | | |
| ES2115389-002 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 113 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 93.0 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 124 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 84.4 | 71.4 | 144 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115092** | Page | : 1 of 14 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 06-May-2021 |
| Sampler | : ---- | No. of samples received | : 61 |
| Order number | : ---- | No. of samples analysed | : 61 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2115092--001 | A_SB01_1.0 | **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2115092--001 | A_SB01_1.0 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2115092--021 | A_SB26_0.5 | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | ES2115092--001 | A_SB01_1.0 | **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231C: Perfluoroalkyl Sulfonamides | ES2115092--001 | A_SB01_1.0 | **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| *Method* | | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| **Container** / Client Sample ID(s) | | *Date extracted* | *Due for extraction* | ***Days overdue*** | *Date analysed* | *Due for analysis* | ***Days overdue*** |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| A_SB01_1.0, A_SB04_1.0, A_SB07_1.5, A_SB09_1.5, | A_SB02_1.5, A_SB05_1.0, A_SB08_1.0, A_SB10_1.5 | ---- | ---- | ---- | 28-Apr-2021 | 23-Mar-2021 | **36** |
| **HDPE Soil Jar** | | | | | | | |
| A_SB11_1.1 | | ---- | ---- | ---- | 05-May-2021 | 24-Mar-2021 | **42** |
| **HDPE Soil Jar** | | | | | | | |
| A_SB12_1.0, A_SB16_1.0, A_SB18_1.5, A_SB21_1.0, | A_SB15_1.0, A_SB17_1.5, A_SB19_1.0, A_SB22_1.5 | ---- | ---- | ---- | 28-Apr-2021 | 24-Mar-2021 | **35** |
| **HDPE Soil Jar** | | | | | | | |
| A_SB23_1.5, A_SB26_0.5 | A_SB25_1.0, | ---- | ---- | ---- | 28-Apr-2021 | 29-Mar-2021 | **30** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| **Laboratory Duplicates (DUP)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 3 | 91 | 3.30 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 2 | 91 | 2.20 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

## *Analysis Holding Time Compliance*

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / ***Container*** / *Client Sample ID(s)* | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar (EA055)**<br>A_SB01_1.0, A_SB02_1.5,<br>A_SB04_1.0, A_SB05_1.0,<br>A_SB07_1.5, A_SB08_1.0,<br>A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **----** | ---- | ---- | **28-Apr-2021** | 23-Mar-2021 | × |
| **HDPE Soil Jar (EA055)**<br>A_SB11_1.1 | **10-Mar-2021** | **----** | ---- | ---- | **05-May-2021** | 24-Mar-2021 | × |
| **HDPE Soil Jar (EA055)**<br>A_SB12_1.0, A_SB15_1.0,<br>A_SB16_1.0, A_SB17_1.5,<br>A_SB18_1.5, A_SB19_1.0,<br>A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **----** | ---- | ---- | **28-Apr-2021** | 24-Mar-2021 | × |
| **HDPE Soil Jar (EA055)**<br>A_SB23_1.5, A_SB25_1.0,<br>A_SB26_0.5 | **15-Mar-2021** | **----** | ---- | ---- | **28-Apr-2021** | 29-Mar-2021 | × |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **26-Apr-2021** | 05-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5, A_SB07_0.1 | **09-Mar-2021** | **27-Apr-2021** | 05-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **10-Mar-2021** | **26-Apr-2021** | 06-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **10-Mar-2021** | **27-Apr-2021** | 06-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **27-Apr-2021** | 11-Sep-2021 | ✓ | **----** | ---- | ---- |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **28-Apr-2021** | 05-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0, A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **28-Apr-2021** | 06-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **28-Apr-2021** | 05-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0, A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **28-Apr-2021** | 06-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **28-Apr-2021** | 05-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0, A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **28-Apr-2021** | 06-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **28-Apr-2021** | 05-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0, A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **28-Apr-2021** | 06-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE Soil Jar (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5 | **09-Mar-2021** | **28-Apr-2021** | 05-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0, A_SB17_1.5, A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5 | **10-Mar-2021** | **28-Apr-2021** | 06-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |
| **HDPE Soil Jar (EP231X)**<br>A_SB23_1.5, A_SB25_1.0, A_SB26_0.5 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **28-Apr-2021** | 07-Jun-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5, A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB17_1.5 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **03-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB23_1.5, A_SB25_1.0, A_SB26_0.5, A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5 | **27-Apr-2021** | **29-Apr-2021** | 24-Oct-2021 | ✓ | **29-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB07_0.1, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5, A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB17_1.5 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **03-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB23_1.5, A_SB25_1.0, A_SB26_0.5, A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5 | **27-Apr-2021** | **29-Apr-2021** | 24-Oct-2021 | ✓ | **29-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB07_0.1, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5, A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB17_1.5 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **03-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB23_1.5, A_SB25_1.0, A_SB26_0.5, A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5 | **27-Apr-2021** | **29-Apr-2021** | 24-Oct-2021 | ✓ | **29-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB07_0.1, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5, A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB17_1.5 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **03-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB23_1.5, A_SB25_1.0, A_SB26_0.5, A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5 | **27-Apr-2021** | **29-Apr-2021** | 24-Oct-2021 | ✓ | **29-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB07_0.1, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB01_1.0, A_SB02_1.5, A_SB04_1.0, A_SB05_1.0, A_SB06_1.5, A_SB07_1.5, A_SB08_1.0, A_SB09_1.5, A_SB10_1.5, A_SB11_1.1, A_SB12_1.0, A_SB15_1.0, A_SB16_1.0 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB17_1.5 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **03-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB18_1.5, A_SB19_1.0, A_SB21_1.0, A_SB22_1.5, A_SB23_1.5, A_SB25_1.0, A_SB26_0.5, A_SB01_0.1, A_SB01_0.5, A_SB02_0.1, A_SB02_0.5, A_SB03_0.1, A_SB03_0.4, A_SB04_0.1, A_SB04_0.5, A_SB05_0.1, A_SB05_0.4, A_SB06_0.1, A_SB06_0.5 | **27-Apr-2021** | **29-Apr-2021** | 24-Oct-2021 | ✓ | **29-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB07_0.1, A_SB07_0.4, QC04, A_SB08_0.4, A_SB09_0.1, A_SB09_0.5, QC08, A_SB10_0.5, QC11, A_SB11_0.5, A_SB12_0.1, A_SB12_0.5, A_SB13_0.1, A_SB14_0.1, A_SB15_0.1, A_SB15_0.5, A_SB16_0.1, A_SB16_0.5, A_SB17_0.1, A_SB17_0.5, A_SB18_0.1, A_SB18_0.5, A_SB19_0.1, A_SB19_0.5, A_SB20_0.1, A_SB21_0.1, A_SB21_0.5, A_SB22_0.1 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |

## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 4 | 38 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 21 | **14.29** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 21 | **9.52** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 21 | **9.52** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 21 | **9.52** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 91 | **3.30** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 5 | 91 | **5.49** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 5 | 91 | **5.49** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 91 | **2.20** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Deionised Water Leach - Plastic Leaching Vessel | EN60-DIa-P | SOIL | In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates |
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | SOIL | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2115092**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 26-Apr-2021 |
| Client Requested Due Date | : 30-Apr-2021 | Scheduled Reporting Date | : **30-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Samples On Hand | Security Seal | : Not Available |
| No. of coolers/boxes | : ---- | Temperature | : ---- |
| Receipt Detail | : | No. of samples received / analysed | : 61 / 61 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 26/4/21: This is an updated SRN which indicates the new scheduled release date for this work order.
- **This is a rebatch of ES2111279, ES2111280 & ES2111268.**
- **This workorder has been split into ES2115099 due to the large number of samples.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EA055-103 Moisture Content | SOIL - EN60-Dla-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|---|
| ES2115092-001 | 09-Mar-2021 00:00 | A_SB01_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-002 | 09-Mar-2021 00:00 | A_SB02_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-003 | 09-Mar-2021 00:00 | A_SB04_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-004 | 09-Mar-2021 00:00 | A_SB05_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-005 | 09-Mar-2021 00:00 | A_SB06_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-006 | 09-Mar-2021 00:00 | A_SB07_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-007 | 09-Mar-2021 00:00 | A_SB08_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-008 | 09-Mar-2021 00:00 | A_SB09_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-009 | 09-Mar-2021 00:00 | A_SB10_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-010 | 10-Mar-2021 00:00 | A_SB11_1.1 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-011 | 10-Mar-2021 00:00 | A_SB12_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-012 | 10-Mar-2021 00:00 | A_SB15_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-013 | 10-Mar-2021 00:00 | A_SB16_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-014 | 10-Mar-2021 00:00 | A_SB17_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-015 | 10-Mar-2021 00:00 | A_SB18_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-016 | 10-Mar-2021 00:00 | A_SB19_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-017 | 10-Mar-2021 00:00 | A_SB21_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-018 | 10-Mar-2021 00:00 | A_SB22_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-019 | 15-Mar-2021 00:00 | A_SB23_1.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-020 | 15-Mar-2021 00:00 | A_SB25_1.0 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-021 | 15-Mar-2021 00:00 | A_SB26_0.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115092-022 | 09-Mar-2021 00:00 | A_SB01_0.1 | | ✓ | | ✓ |
| ES2115092-023 | 09-Mar-2021 00:00 | A_SB01_0.5 | | ✓ | | ✓ |
| ES2115092-024 | 09-Mar-2021 00:00 | A_SB02_0.1 | | ✓ | | ✓ |
| ES2115092-025 | 09-Mar-2021 00:00 | A_SB02_0.5 | | ✓ | | ✓ |
| ES2115092-026 | 09-Mar-2021 00:00 | A_SB03_0.1 | | ✓ | | ✓ |
| ES2115092-027 | 09-Mar-2021 00:00 | A_SB03_0.4 | | ✓ | | ✓ |
| ES2115092-028 | 09-Mar-2021 00:00 | A_SB04_0.1 | | ✓ | | ✓ |
| ES2115092-029 | 09-Mar-2021 00:00 | A_SB04_0.5 | | ✓ | | ✓ |
| ES2115092-030 | 09-Mar-2021 00:00 | A_SB05_0.1 | | ✓ | | ✓ |
| ES2115092-031 | 09-Mar-2021 00:00 | A_SB05_0.4 | | ✓ | | ✓ |
| ES2115092-032 | 09-Mar-2021 00:00 | A_SB06_0.1 | | ✓ | | ✓ |
| ES2115092-033 | 09-Mar-2021 00:00 | A_SB06_0.5 | | ✓ | | ✓ |
| ES2115092-034 | 09-Mar-2021 00:00 | A_SB07_0.1 | | ✓ | | ✓ |
| ES2115092-035 | 10-Mar-2021 00:00 | A_SB07_0.4 | | ✓ | | ✓ |

| | | | SOIL - EA055-103 Moisture Content | SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|---|
| ES2115092-036 | 10-Mar-2021 00:00 | QC04 | | ✓ | | ✓ |
| ES2115092-037 | 10-Mar-2021 00:00 | A_SB08_0.4 | | ✓ | | ✓ |
| ES2115092-038 | 10-Mar-2021 00:00 | A_SB09_0.1 | | ✓ | | ✓ |
| ES2115092-039 | 10-Mar-2021 00:00 | A_SB09_0.5 | | ✓ | | ✓ |
| ES2115092-040 | 10-Mar-2021 00:00 | QC08 | | ✓ | | ✓ |
| ES2115092-041 | 10-Mar-2021 00:00 | A_SB10_0.5 | | ✓ | | ✓ |
| ES2115092-042 | 10-Mar-2021 00:00 | QC11 | | ✓ | | ✓ |
| ES2115092-043 | 10-Mar-2021 00:00 | A_SB11_0.5 | | ✓ | | ✓ |
| ES2115092-044 | 10-Mar-2021 00:00 | A_SB12_0.1 | | ✓ | | ✓ |
| ES2115092-045 | 10-Mar-2021 00:00 | A_SB12_0.5 | | ✓ | | ✓ |
| ES2115092-046 | 10-Mar-2021 00:00 | A_SB13_0.1 | | ✓ | | ✓ |
| ES2115092-047 | 10-Mar-2021 00:00 | A_SB14_0.1 | | ✓ | | ✓ |
| ES2115092-048 | 10-Mar-2021 00:00 | A_SB15_0.1 | | ✓ | | ✓ |
| ES2115092-049 | 10-Mar-2021 00:00 | A_SB15_0.5 | | ✓ | | ✓ |
| ES2115092-050 | 10-Mar-2021 00:00 | A_SB16_0.1 | | ✓ | | ✓ |
| ES2115092-051 | 10-Mar-2021 00:00 | A_SB16_0.5 | | ✓ | | ✓ |
| ES2115092-052 | 10-Mar-2021 00:00 | A_SB17_0.1 | | ✓ | | ✓ |
| ES2115092-053 | 10-Mar-2021 00:00 | A_SB17_0.5 | | ✓ | | ✓ |
| ES2115092-054 | 10-Mar-2021 00:00 | A_SB18_0.1 | | ✓ | | ✓ |
| ES2115092-055 | 10-Mar-2021 00:00 | A_SB18_0.5 | | ✓ | | ✓ |
| ES2115092-056 | 10-Mar-2021 00:00 | A_SB19_0.1 | | ✓ | | ✓ |
| ES2115092-057 | 10-Mar-2021 00:00 | A_SB19_0.5 | | ✓ | | ✓ |
| ES2115092-058 | 10-Mar-2021 00:00 | A_SB20_0.1 | | ✓ | | ✓ |
| ES2115092-059 | 10-Mar-2021 00:00 | A_SB21_0.1 | | ✓ | | ✓ |
| ES2115092-060 | 10-Mar-2021 00:00 | A_SB21_0.5 | | ✓ | | ✓ |
| ES2115092-061 | 10-Mar-2021 00:00 | A_SB22_0.1 | | ✓ | | ✓ |

## *Proactive Holding Time Report*

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / **Client Sample ID(s)** | **Container** | **Due for extraction** | **Due for analysis** | **Samples Received** | | **Instructions Received** | |
|---|---|---|---|---|---|---|---|
| | | | | **Date** | **Evaluation** | **Date** | **Evaluation** |
| **EA055: Moisture Content** | | | | | | | |
| A_SB01_1.0 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB02_1.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB04_1.0 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB05_1.0 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB06_1.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB07_1.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB08_1.0 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB09_1.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |
| A_SB10_1.5 | HDPE Soil Jar | ---- | 23-Mar-2021 | 26-Mar-2021 | × | 21-Apr-2021 | × |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A_SB11_1.1 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB12_1.0 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB15_1.0 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB16_1.0 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB17_1.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB18_1.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB19_1.0 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB21_1.0 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB22_1.5 | HDPE Soil Jar | ---- | 24-Mar-2021 | 26-Mar-2021 | ✗ | 21-Apr-2021 | ✗ |
| A_SB23_1.5 | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 21-Apr-2021 | ✗ |
| A_SB25_1.0 | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 21-Apr-2021 | ✗ |
| A_SB26_0.5 | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 21-Apr-2021 | ✗ |

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |

**CHRIS SANDIFORD**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | Chris.Sandiford@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | Chris.Sandiford@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | Chris.Sandiford@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | Chris.Sandiford@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | Chris.Sandiford@senversa.com.au |

**HEBBIE PEDERSON**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | hebbie.pederson@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | hebbie.pederson@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | hebbie.pederson@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | hebbie.pederson@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | hebbie.pederson@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

**Fadi Soro**

Tmz
21/4/21
10:30am

**From:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Sent:** Wednesday, 21 April 2021 10:01 AM
**To:** Tyler Anderson
**Cc:** Christopher Sandiford; Carlyn Williams
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Tyler – thanks for checking!

Are you able to do ASLP at a neutral pH please? We want to simulate "natural" leaching conditions.

Yep, assumed the reporting date would be greater – just let me know what is realistic timeframe for these results so we can plan accordingly.

Many thanks

senversa

Hebbie Pederson
**Senior Environmental Scientist**

M. **+61 419 806 879**
T: **+61 3 9606 0070**
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**From:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Sent:** Tuesday, 20 April 2021 5:33 PM
**To:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Hebbie,

Thank you for sending this through. Can you please confirm if this was just a TCLP that you were requiring? Due to the amount of samples, this may cause our due date to extend past 5 days (which is our standard TAT). I will have a chat with the lab tomorrow to find out what the TAT we can provide is.

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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D +61 2 8784 8501
tyler.anderson@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

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**Fadi Soro**

FADI
21/4/21
10:30

**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:37 PM
**To:** Wael Saleh; Fadi Soro; Helen Simpson; Jessie Blake
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please ensure that Chris, Hebbie, and Carlyn are all report recipients on these rebatches?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:36 PM
**To:** Wael Saleh <Wael.Saleh@alsglobal.com>; Fadi Soro <fadi.soro@alsglobal.com>; Helen Simpson <helen.simpson@alsglobal.com>; Jessie Blake <jessie.blake@ALSGlobal.com>; Barbara Hanna <Barbara.Hanna@alsglobal.com>; Franco Lentini <Franco.Lentini@alsglobal.com>; Nanthini Coilparampil <Nanthini.Coilparampil@alsglobal.com>; Wisam Marassa <Wissam.Aboumaraseh@alsglobal.com>
**Subject:** FW: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please organise the below for TCLPs and PFAS.
21 samples for total and leachable PFAS
115 samples for leachable PFAS

Hi lab team,

Obviously this is a lot of samples. What is the best "standard" TAT we can provide for this many samples?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**From:** Hebbie Pederson [mailto:Hebbie.Pederson@senversa.com.au]
**Sent:** Tuesday, 20 April 2021 4:58 PM
**To:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** [EXTERNAL] - 17776 - Additional Analysis

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Hi Tyler,

Can I please organise the additional analysis for PFAS on batches already reported, as per the tables below. The first table is for total concentrations and leachability, whilst the other tables are leachability analysis only. The quote is the same as the other batches/samples ( SV-665-19 v2).

Given the large number of samples, what do you think would be a realistic reporting date for these on standard turn around?

You can report these all within one batch, however we need the last table (ID013 samples only) reported as a separate batch please.

Let me know if you have any queries.

Many thanks

Total concentrations and leachability analysis

| SAMPLE ID (currently on HOLD) | Batch ID |
|---|---|
| A_SB01_1.0 · 1 | ES2111279 |
| A_SB02_1.4 ! 0.5 2 | ES2111279 |
| A_SB04_1.0 · 3 | ES2111279 |
| A_SB05_1.0 · 4 | ES2111279 |
| A_SB06_1.4 ! 0.5 5 | ES2111279 |
| A_SB07_1.4 ! 0.5 6 | ES2111279 |
| A_SB08_1.0 · 7 | ES2111279 |

ES2111279 → ~~QC1, QC5, QC7, QC9~~, QS31, 25, 22, 17, 30, 27, QW20
#3, 13, 18, 31, 39, 45, 57, 65, 77, 1, 2, 5, 6, 9, 10, 11, 12, 16, 17, 21, 22, 25,
26, 29, 30, 33, 34, 41, 37, 43, 40, 43, 44, 47, 51, 55, 56, 63, 64, 67, 68,
71, 72, 75, 76, 79, 80, 81, 83, 84 41

ES2111280 → QS22, 18, 20, QW20, 21, 11
#14, 18, 7, 8, 9, 11, 12, 47, 16, 17, 5, 6, 35, 36,

| | | | | |
|---|---|---|---|---|
| 8 | A_SB09_1.4 | ! | 8 | ES2111279 |
| 8 | A_SB10_1.4 | ! | 9 | ES2111279 |
| 10 | A_SB11_1.1 | - | 10 | ES2111279 |
| 11 | A_SB12_1.0 | - | 11 | ES2111279 |
| 12 | A_SB15_1.0 | - | 12 | ES2111279 |
| 13 | A_SB16_1.0 | - | 13 | ES2111279 |
| 14 | A_SB17_1.4 | ! | 14 | ES2111279 |
| 15 | A_SB18_1.4 | ! | 15 | ES2111279 |
| 16 | A_SB19_1.0 | - | 16 | ES2111279 |
| 17 | A_SB21_0.9 | ! | 17 | ES2111279 |
| 18 | A_SB22_1.4 | ! | 18 | ES2111279 |
| 19 | A_SB23_1.4 | ! | 19 | ES2111280 |
| 20 | A_SB25_1.0 | - | 20 | ES2111280 |
| 21 | A_SB26_0.5 | - | 21 | ES2111280 |

ES2111268 → Q42, Q514,24

#80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 31, 32, 33, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 1, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 22, 24, 26, 28, 30, 34, 37, 39, 41, 49, 51, 53, 56

**Leachability analysis only**

| | SAMPLE ID | Batch ID |
|---|---|---|
| 22 | A_SB01_0.1 - | ES2111279 |
| 23 | A_SB01_0.5 - | ES2111279 |
| 24 | A_SB02_0.1 - | ES2111279 |
| 25 | A_SB02_0.5 - | ES2111279 |
| 26 | A_SB03_0.1 - | ES2111279 |
| 27 | A_SB03_0.4 - | ES2111279 |
| 28 | A_SB04_0.1 - | ES2111279 |
| 29 | A_SB04_0.5 - | ES2111279 |
| 30 | A_SB05_0.1 - | ES2111279 |
| 31 | A_SB05_0.4 - | ES2111279 |
| 32 | A_SB06_0.1 - | ES2111279 |
| 33 | A_SB06_0.5 - | ES2111279 |
| 34 | A_SB07_0.1 - | ES2111279 |

| | |
|---|---|
| A_SB07_0.4 | ES2111279 |
| QC04 | ES2111279 |
| A_SB08_0.4 | ES2111279 |
| A_SB09_0.1 | ES2111279 |
| A_SB09_0.5 | ES2111279 |
| QC08 | ES2111279 |
| A_SB10_0.5 | ES2111279 |
| QC11 | ES2111279 |
| A_SB11_0.5 | ES2111279 |
| A_SB12_0.1 | ES2111279 |
| A_SB12_0.5 | ES2111279 |
| A_SB13_0.1 | ES2111279 |
| A_SB14_0.1 | ES2111279 |
| A_SB15_0.1 | ES2111279 |
| A_SB15_0.5 | ES2111279 |
| A_SB16_0.1 | ES2111279 |
| A_SB16_0.5 | ES2111279 |
| A_SB17_0.1 | ES2111279 |
| A_SB17_0.5 | ES2111279 |
| A_SB18_0.1 | ES2111279 |
| A_SB18_0.5 | ES2111279 |
| A_SB19_0.1 | ES2111279 |
| A_SB19_0.5 | ES2111279 |
| A_SB20_0.1 | ES2111279 |
| A_SB21_0.1 | ES2111279 |
| A_SB21_0.5 | ES2111279 |
| A_SB22_0.1 | ES2111279 |

| | |
|---|---|
| A_SB22_0.5 | ES2111279 |
| A_SB23_0.1 | ES2111280 |
| A_SB23_0.5 | ES2111280 |
| A_SB23_1.0 | ES2111280 |
| A_SB24_0.1 | ES2111280 |
| A_SB25_0.1 | ES2111280 |
| QC48 | ES2111280 |
| A_SB26_0.1 | ES2111280 |
| A_SB26_0.3 | ES2111280 |
| A_SS123 | ES2111268_1 |
| A_SS124 | ES2111268_1 |
| A_SS125 | ES2111268_1 |
| A_SS126 | ES2111268_1 |
| A_SS127 | ES2111268_1 |
| A_SS128 | ES2111268_1 |
| A_SS129 | ES2111268_1 |
| A_SS130 | ES2111268_1 |
| A_SS131 | ES2111268_1 |
| A_SS132 | ES2111268_1 |
| A_SS133 | ES2111268_1 |
| A_SS134 | ES2111268_1 |
| A_SS135 | ES2111268_1 |
| A_SS140 | ES_2111280 |
| A_SS141 | ES_2111280 |
| TC_SS01 | ES2111268 |
| TC_SS02 | ES2111268 |
| TC_SS03 | ES2111268 |

5099

| | |
|---|---|
| A_STP_SS01 | ES2111268 |
| A_STP_SS02 | ES2111268 |
| A_STP_SS03 | ES2111268 |
| A_STP_SS04 | ES2111268 |
| A_STP_SS05 | ES2111268 |
| A_STP_SS06 | ES2111268 |
| A_STP_SS07 | ES2111268 |
| A_STP_SS08 | ES2111268 |
| A_STP_SS09 | ES2111268 |
| A_STP_SS10 | ES2111268 |
| MC_SD04 | ES2111268 |
| MC_SD07 | ES2111268 |
| MC_SD11 | ES2111268 |
| MC_SD12 | ES2111268 |
| MC_SD13 | ES2111268 |
| MC_SD14 | ES2111268 |
| MC_SD15 | ES2111268 |
| MC_SD16 | ES2111268 |
| MC_SD17 | ES2111268 |
| MC_SD18 | ES2111268 |
| MC_SD19 | ES2111268 |
| MC_SD20 | ES2111268 |
| MC_SD21 | ES2111268 |
| MC_SD22 | ES2111268 |
| MC_SD23 | ES2111268 |
| MC_SD24 | ES2111268 |
| MC_SD25 | ES2111268 |
| MC_SD26 | ES2111268 |
| MC_SD27 | ES2111268 |
| MC_SD28 | ES2111268 |
| MC_SD29 | ES2111268 |

| | |
|---|---|
| TC_SD02 | ES2111268 |
| TC_SD04 | ES2111268 |
| TC_SD05 | ES2111268 |
| TC_SD06 | ES2111268 |
| TC_SD12 | ES2111268 |
| TC_SD13 | ES2111268 |
| BBC_SD02 | ES2111280 |
| BBC_SD03 | ES2111280 |
| BBC_SD04 | ES2111268 |
| BBC_SD06 | ES2111268 |

**Leachability analysis only (please report in standalone batch)**

| SAMPLE ID | Batch ID |
|---|---|
| ID013_SS01 (1) | ES2111261 |
| ID013_SS02 (2) | ES2111261 |
| ID013_SS03 (3) | ES2111261 |
| ID013_SS04 (4) | ES2111261 |
| ID013_SS05 (5) | ES2111261 |
| ID013_SS06 (6) | ES2111261 |
| ID013_SS07 (7) | ES2111261 |

ES2111261 → QS29, 24, QW2

# 9, 10, 11, 12, 13, 14, 15

split

Hebbie Pederson
**Senior Environmental Scientist**

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ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115099** | Page | : 1 of 45 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 27-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 07-May-2021 14:22 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 68 | | |
| No. of samples analysed | : 68 | | |

Accreditation No. 825
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ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB22_0.5 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB24_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-001 | ES2115099-002 | ES2115099-003 | ES2115099-004 | ES2115099-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.08** | **0.12** | **0.07** | **0.22** | **0.03** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.03** | <0.02 | <0.02 | **0.10** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **2.52** | **3.04** | **10.4** | **4.59** | **2.15** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | **0.08** | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | **0.1** | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.10** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.04** | <0.02 | **0.02** | **0.02** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.05** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.09** | **0.02** | **0.02** | **0.11** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | **0.14** | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB22_0.5 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB24_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-001 | ES2115099-002 | ES2115099-003 | ES2115099-004 | ES2115099-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **3.05** | **3.40** | **10.5** | **5.04** | **2.18** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **2.60** | **3.16** | **10.5** | **4.81** | **2.18** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.98** | **3.18** | **10.5** | **4.94** | **2.18** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **110** | **119** | **113** | **89.5** | **88.6** |
| 13C8-PFOA | ---- | 0.02 | % | **84.3** | **91.2** | **85.9** | **85.8** | **84.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB25_0.1 | QC48 | A_SB26_0.1 | A_SB26_0.3 | A_SS123 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-006 | ES2115099-007 | ES2115099-008 | ES2115099-009 | ES2115099-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | **0.12** | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.48** | **0.06** | **0.07** | **0.36** | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SB25_0.1 | QC48 | A_SB26_0.1 | A_SB26_0.3 | A_SS123 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-006 | ES2115099-007 | ES2115099-008 | ES2115099-009 | ES2115099-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.48** | **0.18** | **0.07** | **0.36** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.48** | **0.18** | **0.07** | **0.36** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.48** | **0.18** | **0.07** | **0.36** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **89.7** | **86.9** | **89.6** | **86.4** | **87.6** |
| 13C8-PFOA | ---- | 0.02 | % | **82.8** | **84.5** | **86.1** | **86.1** | **83.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS124 | A_SS125 | A_SS126 | A_SS127 | A_SS128 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-011 | ES2115099-012 | ES2115099-013 | ES2115099-014 | ES2115099-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.07** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS124 | A_SS125 | A_SS126 | A_SS127 | A_SS128 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-011 | ES2115099-012 | ES2115099-013 | ES2115099-014 | ES2115099-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.07** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.07** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.07** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **88.1** | **85.1** | **90.0** | **85.3** | **86.5** |
| 13C8-PFOA | ---- | 0.02 | % | **88.2** | **85.9** | **85.2** | **83.3** | **86.6** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS129 | A_SS130 | A_SS131 | A_SS132 | A_SS133 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-016 | ES2115099-017 | ES2115099-018 | ES2115099-019 | ES2115099-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.01** | <0.01 | <0.01 | **0.08** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.05** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS129 | A_SS130 | A_SS131 | A_SS132 | A_SS133 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-016 | ES2115099-017 | ES2115099-018 | ES2115099-019 | ES2115099-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.01** | <0.01 | <0.01 | **0.18** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.01** | <0.01 | <0.01 | **0.11** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.01** | <0.01 | <0.01 | **0.18** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **90.9** | **110** | **87.9** | **90.7** | **89.9** |
| 13C8-PFOA | ---- | 0.02 | % | **87.7** | **100** | **85.8** | **86.8** | **86.8** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS134 | A_SS135 | A_SS140 | A_SS141 | TC_SS01 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-021 | ES2115099-022 | ES2115099-023 | ES2115099-024 | ES2115099-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.03** | <0.01 | <0.01 | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS134 | A_SS135 | A_SS140 | A_SS141 | TC_SS01 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-021 | ES2115099-022 | ES2115099-023 | ES2115099-024 | ES2115099-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.03** | <0.01 | <0.01 | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.03** | <0.01 | <0.01 | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.03** | <0.01 | <0.01 | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **89.3** | **85.6** | **88.3** | **91.3** | **88.9** |
| 13C8-PFOA | ---- | 0.02 | % | **84.9** | **85.3** | **87.9** | **82.1** | **86.1** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | TC_SS02 | TC_SS03 | A_STP_SS01 | A_STP_SS02 | A_STP_SS03 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-026 | ES2115099-027 | ES2115099-028 | ES2115099-029 | ES2115099-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.03** | <0.01 | **0.15** | <0.01 | **0.02** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.02** | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | TC_SS02 | TC_SS03 | A_STP_SS01 | A_STP_SS02 | A_STP_SS03 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-026 | ES2115099-027 | ES2115099-028 | ES2115099-029 | ES2115099-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.05** | <0.01 | **0.21** | <0.01 | **0.02** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.05** | <0.01 | **0.15** | <0.01 | **0.02** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.05** | <0.01 | **0.19** | <0.01 | **0.02** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **89.3** | **87.3** | **91.4** | **86.7** | **91.1** |
| 13C8-PFOA | ---- | 0.02 | % | **85.6** | **81.1** | **86.7** | **80.1** | **86.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-031 | ES2115099-032 | ES2115099-033 | ES2115099-034 | ES2115099-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | **0.05** | **0.04** | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.16** | **0.08** | **0.03** | **0.15** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.02** | <0.01 | <0.01 | **0.01** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-031 | ES2115099-032 | ES2115099-033 | ES2115099-034 | ES2115099-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.23** | **0.12** | **0.03** | **0.16** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.21** | **0.12** | **0.03** | **0.15** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.23** | **0.12** | **0.03** | **0.16** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **90.9** | **85.1** | **92.8** | **83.5** | **93.2** |
| 13C8-PFOA | ---- | 0.02 | % | **86.7** | **84.0** | **85.8** | **83.5** | **87.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_STP_SS09 | A_STP_SS10 | MC_SD04 | MC_SD07 | MC_SD11 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-036 | ES2115099-037 | ES2115099-038 | ES2115099-039 | ES2115099-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | **0.04** | **0.03** | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.03** | **0.05** | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.13** | **0.48** | **0.19** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | **0.02** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.04** | **0.07** | **0.06** | **0.52** | **0.78** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.04** | **0.03** | **0.03** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.02** | **0.02** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_STP_SS09 | A_STP_SS10 | MC_SD04 | MC_SD07 | MC_SD11 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-036 | ES2115099-037 | ES2115099-038 | ES2115099-039 | ES2115099-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.04** | **0.07** | **0.30** | **1.16** | **1.04** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.04** | **0.07** | **0.19** | **1.00** | **0.97** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.04** | **0.07** | **0.27** | **1.08** | **1.02** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **86.3** | **93.2** | **89.6** | **92.0** | **89.9** |
| 13C8-PFOA | ---- | 0.02 | % | **82.7** | **86.7** | **85.1** | **83.0** | **88.1** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-041 | ES2115099-042 | ES2115099-043 | ES2115099-044 | ES2115099-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.03** | <0.02 | **0.03** | **0.02** | **0.02** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.04** | <0.02 | **0.04** | **0.03** | **0.03** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.45** | **0.14** | **0.41** | **0.33** | **0.24** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.04** | <0.02 | **0.04** | **0.03** | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **1.83** | **0.46** | **0.76** | **1.07** | **0.28** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.04** | <0.02 | **0.02** | <0.02 | **0.02** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.02** | <0.01 | **0.02** | **0.02** | **0.01** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-041 | ES2115099-042 | ES2115099-043 | ES2115099-044 | ES2115099-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **2.45** | **0.60** | **1.32** | **1.50** | **0.60** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **2.28** | **0.60** | **1.17** | **1.40** | **0.52** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **2.37** | **0.60** | **1.24** | **1.44** | **0.57** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **87.8** | **89.7** | **92.4** | **92.2** | **89.5** |
| 13C8-PFOA | ---- | 0.02 | % | **86.2** | **84.6** | **87.0** | **84.9** | **83.4** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD17 | MC_SD18 | MC_SD19 | MC_SD20 | MC_SD21 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-046 | ES2115099-047 | ES2115099-048 | ES2115099-049 | ES2115099-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | **0.08** | **0.05** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | **0.09** | **0.05** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.32** | **0.16** | **0.09** | **1.04** | **0.46** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | **0.09** | **0.03** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.39** | **0.65** | **0.46** | **5.05** | **1.18** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.04** | **0.02** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.12** | **0.08** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.04** | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.01** | **0.13** | **0.04** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD17 | MC_SD18 | MC_SD19 | MC_SD20 | MC_SD21 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-046 | ES2115099-047 | ES2115099-048 | ES2115099-049 | ES2115099-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.81** | **0.81** | **0.56** | **6.68** | **1.91** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.71** | **0.81** | **0.55** | **6.09** | **1.64** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.75** | **0.81** | **0.56** | **6.50** | **1.83** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **91.5** | **90.9** | **89.2** | **90.9** | **91.7** |
| 13C8-PFOA | ---- | 0.02 | % | **84.2** | **85.2** | **86.4** | **84.3** | **86.0** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD22 | MC_SD23 | MC_SD24 | MC_SD25 | MC_SD26 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-051 | ES2115099-052 | ES2115099-053 | ES2115099-054 | ES2115099-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **0.03** | **0.03** | **0.08** | **0.02** | **0.36** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **0.01** | **0.02** | **0.02** | **0.02** | **1.42** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.02** |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD22 | MC_SD23 | MC_SD24 | MC_SD25 | MC_SD26 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-051 | ES2115099-052 | ES2115099-053 | ES2115099-054 | ES2115099-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.04** | **0.05** | **0.10** | **0.04** | **1.92** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.04** | **0.05** | **0.10** | **0.04** | **1.78** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.04** | **0.05** | **0.10** | **0.04** | **1.85** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **91.4** | **88.5** | **88.2** | **84.8** | **88.7** |
| 13C8-PFOA | ---- | 0.02 | % | **87.2** | **83.4** | **84.5** | **84.4** | **84.1** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD27 | MC_SD28 | MC_SD29 | TC_SD02 | TC_SD04 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 12-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-056 | ES2115099-057 | ES2115099-058 | ES2115099-059 | ES2115099-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | 0.02 | µg/L | **0.04** | **0.02** | <0.02 | <0.02 | <0.02 |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.02 | µg/L | **0.05** | **0.03** | <0.02 | <0.02 | <0.02 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.02 | µg/L | **0.62** | **0.30** | <0.02 | **0.07** | **0.04** |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.02 | µg/L | **0.06** | **0.04** | <0.02 | <0.02 | <0.02 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.01 | µg/L | **2.56** | **1.77** | **0.02** | **0.02** | **0.03** |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.02 | µg/L | **0.07** | **0.03** | <0.02 | <0.02 | <0.02 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.01 | µg/L | **0.04** | **0.02** | <0.01 | <0.01 | <0.01 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | MC_SD27 | MC_SD28 | MC_SD29 | TC_SD02 | TC_SD04 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 12-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-056 | ES2115099-057 | ES2115099-058 | ES2115099-059 | ES2115099-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **3.44** | **2.21** | **0.02** | **0.09** | **0.07** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **3.18** | **2.07** | **0.02** | **0.09** | **0.07** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **3.33** | **2.14** | **0.02** | **0.09** | **0.07** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **91.3** | **89.6** | **91.2** | **91.4** | **89.4** |
| 13C8-PFOA | ---- | 0.02 | % | **84.2** | **84.4** | **84.8** | **85.5** | **84.7** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | TC_SD05 | TC_SD06 | TC_SD12 | TC_SD13 | BBC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-061 | ES2115099-062 | ES2115099-063 | ES2115099-064 | ES2115099-065 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | **0.06** | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.03** | **0.01** | **0.03** | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | TC_SD05 | TC_SD06 | TC_SD12 | TC_SD13 | BBC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-061 | ES2115099-062 | ES2115099-063 | ES2115099-064 | ES2115099-065 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.09** | **0.01** | **0.03** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.09** | **0.01** | **0.03** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.09** | **0.01** | **0.03** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **94.3** | **86.3** | **88.8** | **93.2** | **102** |
| 13C8-PFOA | ---- | 0.02 | % | **86.6** | **83.6** | **91.5** | **86.0** | **88.2** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | BBC_SD03 | BBC_SD04 | BBC_SD06 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115099-066 | ES2115099-067 | ES2115099-068 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | BBC_SD03 | BBC_SD04 | BBC_SD06 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115099-066 | ES2115099-067 | ES2115099-068 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | 89.2 | 94.3 | 89.9 | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | 88.0 | 87.2 | 93.2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB22_0.5 | A_SB23_0.1 | A_SB23_0.5 | A_SB23_1.0 | A_SB24_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-001 | ES2115099-002 | ES2115099-003 | ES2115099-004 | ES2115099-005 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.1** | **7.8** | **5.1** | **5.1** | **7.9** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SB25_0.1 | QC48 | A_SB26_0.1 | A_SB26_0.3 | A_SS123 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-006 | ES2115099-007 | ES2115099-008 | ES2115099-009 | ES2115099-010 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.4** | **5.0** | **8.0** | **7.6** | **6.9** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS124 | A_SS125 | A_SS126 | A_SS127 | A_SS128 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-011 | ES2115099-012 | ES2115099-013 | ES2115099-014 | ES2115099-015 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.2** | **7.8** | **7.2** | **7.9** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS129 | A_SS130 | A_SS131 | A_SS132 | A_SS133 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-016 | ES2115099-017 | ES2115099-018 | ES2115099-019 | ES2115099-020 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.8** | **8.1** | **6.8** | **6.4** | **6.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS134 | A_SS135 | A_SS140 | A_SS141 | TC_SS01 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-021 | ES2115099-022 | ES2115099-023 | ES2115099-024 | ES2115099-025 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.1** | **7.9** | **7.2** | **7.2** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SS02 | TC_SS03 | A_STP_SS01 | A_STP_SS02 | A_STP_SS03 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-026 | ES2115099-027 | ES2115099-028 | ES2115099-029 | ES2115099-030 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.1** | **6.8** | **7.1** | **6.4** | **6.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS04 | A_STP_SS05 | A_STP_SS06 | A_STP_SS07 | A_STP_SS08 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-031 | ES2115099-032 | ES2115099-033 | ES2115099-034 | ES2115099-035 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.9** | **6.7** | **7.8** | **6.8** | **7.9** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_STP_SS09 | A_STP_SS10 | MC_SD04 | MC_SD07 | MC_SD11 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-036 | ES2115099-037 | ES2115099-038 | ES2115099-039 | ES2115099-040 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.9** | **7.0** | **3.1** | **4.6** | **6.6** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD12 | MC_SD13 | MC_SD14 | MC_SD15 | MC_SD16 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-041 | ES2115099-042 | ES2115099-043 | ES2115099-044 | ES2115099-045 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.3** | **6.1** | **5.2** | **6.3** | **4.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD17 | MC_SD18 | MC_SD19 | MC_SD20 | MC_SD21 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-046 | ES2115099-047 | ES2115099-048 | ES2115099-049 | ES2115099-050 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.6** | **6.3** | **6.0** | **6.8** | **6.6** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD22 | MC_SD23 | MC_SD24 | MC_SD25 | MC_SD26 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 13-Mar-2021 00:00 | 17-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-051 | ES2115099-052 | ES2115099-053 | ES2115099-054 | ES2115099-055 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.9** | **6.1** | **5.3** | **6.5** | **6.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | MC_SD27 | MC_SD28 | MC_SD29 | TC_SD02 | TC_SD04 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 17-Mar-2021 00:00 | 15-Mar-2021 00:00 | 16-Mar-2021 00:00 | 12-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-056 | ES2115099-057 | ES2115099-058 | ES2115099-059 | ES2115099-060 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.2** | **6.3** | **7.5** | **6.2** | **6.3** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | TC_SD05 | TC_SD06 | TC_SD12 | TC_SD13 | BBC_SD02 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 12-Mar-2021 00:00 | 12-Mar-2021 00:00 | 15-Mar-2021 00:00 | 17-Mar-2021 00:00 | 14-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115099-061 | ES2115099-062 | ES2115099-063 | ES2115099-064 | ES2115099-065 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.4** | **6.5** | **6.7** | **7.0** | **5.6** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | BBC_SD03 | BBC_SD04 | BBC_SD06 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 17-Mar-2021 00:00 | 18-Mar-2021 00:00 | 18-Mar-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115099-066 | ES2115099-067 | ES2115099-068 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.7** | **7.8** | **7.4** | **----** | **----** |

## Surrogate Control Limits

| Sub-Matrix: **DI WATER LEACHATE** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115099** | Page | : 1 of 10 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 27-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 07-May-2021 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 68 | | |
| No. of samples analysed | : 68 | | |

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3655510)** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 208 | 201 | 3.35 | 0% - 20% |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | 15.3 | 16.8 | 9.20 | 0% - 20% |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | 24.1 | 27.5 | 12.9 | 0% - 20% |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 305 | 318 | 4.18 | 0% - 20% |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | 17.5 | 18.1 | 3.32 | 0% - 20% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | 0.23 | 0.24 | 4.26 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3655510)** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | 10.7 | 11.3 | 5.18 | 0% - 20% |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | 9.95 | 10.3 | 3.26 | 0% - 20% |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | 76.7 | 80.7 | 5.08 | 0% - 20% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | 6.19 | 6.74 | 8.51 | 0% - 20% |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | 0.10 | 0.10 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.25 | <0.25 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | 4.3 | 4.6 | 7.64 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3655510)** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Laboratory Duplicate (DUP) Report | | | | | |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3655510) - continued** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.25 | <0.25 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.25 | <0.25 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.25 | <0.25 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.25 | <0.25 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3655510)** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.10 | <0.10 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3655510)** | | | | | | | | | |
| EB2111284-001 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 678 | 695 | 2.52 | 0% - 20% |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 80.8 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 112 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3653759)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 92.2 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 97.0 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.0 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.6 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3653827)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.2 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.8 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.8 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.4 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 84.4 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.0 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3655014)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 97.0 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3655510)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 102 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 53.0 | 142 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 104 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 120 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 82.0 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 79.0 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 80.4 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 120 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3653759)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 91.7 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 108 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 99.9 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3653827)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 90.6 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 106 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 109 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 102 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3655014)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 105 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 129 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3655014) - continued** | | | | | | | | |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 123 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 110 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3655510)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 104 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 126 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 123 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 116 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3648629)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 87.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 77.8 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 124 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.6 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3653759)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 97.0 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 84.6 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 85.0 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 87.8 | 66.0 | 145 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3653759) - continued** | | | | | | | | |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 91.8 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.6 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.4 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3653827)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.1 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 94.1 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 92.0 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 94.1 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 97.2 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3655014)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 112 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 97.8 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 111 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3655510)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 118 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 95.1 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 96.6 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 57.6 | 145 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3655510) - continued** | | | | | | | | |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3648629)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 115 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 108 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 124 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 112 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3653759)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 92.6 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 101 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 97.4 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3653827)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 98.0 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 106 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 95.2 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3655014)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 97.4 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 108 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 107 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3655510)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 99.6 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 120 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 101 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3655510)** | | | | | | | |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3655510) - continued** | | | | | | | |
| EB2111284-004 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | # Not Determined | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | # Not Determined | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | # Not Determined | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | # Not Determined | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | # Not Determined | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 142 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3655510)** | | | | | | | |
| EB2111284-004 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 91.2 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | # Not Determined | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | # Not Determined | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | # Not Determined | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | # Not Determined | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 98.0 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 96.0 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 106 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 94.0 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 98.0 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 109 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3655510)** | | | | | | | |
| EB2111284-004 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 108 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 118 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 96.8 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 100 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 85.6 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 118 | 65.0 | 136 |

Sub-Matrix: **WATER**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3655510) - continued** | | | | | | | |
| EB2111284-004 | Anonymous | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 126 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3655510)** | | | | | | | |
| EB2111284-004 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 100 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 100 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 118 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 114 | 71.4 | 144 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115099** | Page | : 1 of 11 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 07-May-2021 |
| Sampler | : ---- | No. of samples received | : 68 |
| Order number | : ---- | No. of samples analysed | : 68 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **WATER**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231A: Perfluoroalkyl Sulfonic Acids | EB2111284--004 | Anonymous | **Perfluorobutane sulfonic acid (PFBS)** | 375-73-5 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | EB2111284--004 | Anonymous | **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | EB2111284--004 | Anonymous | **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | EB2111284--004 | Anonymous | **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231A: Perfluoroalkyl Sulfonic Acids | EB2111284--004 | Anonymous | **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | EB2111284--004 | Anonymous | **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | EB2111284--004 | Anonymous | **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | EB2111284--004 | Anonymous | **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |
| EP231B: Perfluoroalkyl Carboxylic Acids | EB2111284--004 | Anonymous | **Perfluorooctanoic acid (PFOA)** | 335-67-1 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|
| Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 1 | 90 | 1.11 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 1 | 90 | 1.11 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| *Method* / *Container / Client Sample ID(s)* | *Sample Date* | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | *Date extracted* | *Due for extraction* | *Evaluation* | *Date analysed* | *Due for analysis* | *Evaluation* |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB22_0.5 | **10-Mar-2021** | **27-Apr-2021** | 06-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>TC_SD04, TC_SD05,<br>TC_SD06 | **12-Mar-2021** | **28-Apr-2021** | 08-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14,<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25 | **13-Mar-2021** | **28-Apr-2021** | 09-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>BBC_SD02 | **14-Mar-2021** | **28-Apr-2021** | 10-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB23_0.1, A_SB23_0.5,<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **15-Mar-2021** | **27-Apr-2021** | 11-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)**<br>A_SB26_0.1, A_SB26_0.3,<br>TC_SS01, TC_SS02,<br>TC_SS03, MC_SD29,<br>TC_SD12 | **15-Mar-2021** | **28-Apr-2021** | 11-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel) - Continued** | | | | | | | |
| A_SS123, A_SS124, A_SS125, A_SS126, A_SS127, A_SS128, A_SS129, A_SS130, A_SS131, A_SS132, A_SS133, A_SS134, A_SS135, A_STP_SS01, A_STP_SS02, A_STP_SS03, A_STP_SS04, A_STP_SS05, A_STP_SS06, A_STP_SS07, A_STP_SS08, A_STP_SS09, A_STP_SS10, TC_SD02 | **16-Mar-2021** | **28-Apr-2021** | 12-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)** | | | | | | | |
| A_SS140, A_SS141, MC_SD26, MC_SD27, MC_SD28, TC_SD13, BBC_SD03 | **17-Mar-2021** | **28-Apr-2021** | 13-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)** | | | | | | | |
| BBC_SD04, BBC_SD06 | **18-Mar-2021** | **28-Apr-2021** | 14-Sep-2021 | ✓ | **----** | ---- | ---- |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **04-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB22_0.5, A_SB23_0.1,<br>A_SB23_0.5 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB26_0.1, A_SB26_0.3,<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135, A_SS140,<br>A_SS141, TC_SS01,<br>TC_SS02, TC_SS03,<br>A_STP_SS01, A_STP_SS02,<br>A_STP_SS03, A_STP_SS04,<br>A_STP_SS05, A_STP_SS06,<br>A_STP_SS07, A_STP_SS08,<br>A_STP_SS09, A_STP_SS10,<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14 | **28-Apr-2021** | **03-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, MC_SD26,<br>MC_SD27, MC_SD28,<br>MC_SD29, TC_SD02,<br>TC_SD04, TC_SD05,<br>TC_SD06 | **28-Apr-2021** | **04-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SD12, TC_SD13,<br>BBC_SD02, BBC_SD03,<br>BBC_SD04, BBC_SD06 | **28-Apr-2021** | **05-May-2021** | 25-Oct-2021 | ✓ | **05-May-2021** | 25-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **04-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB22_0.5, A_SB23_0.1,<br>A_SB23_0.5 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB26_0.1, A_SB26_0.3,<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135, A_SS140,<br>A_SS141, TC_SS01,<br>TC_SS02, TC_SS03,<br>A_STP_SS01, A_STP_SS02,<br>A_STP_SS03, A_STP_SS04,<br>A_STP_SS05, A_STP_SS06,<br>A_STP_SS07, A_STP_SS08,<br>A_STP_SS09, A_STP_SS10,<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14 | **28-Apr-2021** | **03-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, MC_SD26,<br>MC_SD27, MC_SD28,<br>MC_SD29, TC_SD02,<br>TC_SD04, TC_SD05,<br>TC_SD06 | **28-Apr-2021** | **04-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SD12, TC_SD13,<br>BBC_SD02, BBC_SD03,<br>BBC_SD04, BBC_SD06 | **28-Apr-2021** | **05-May-2021** | 25-Oct-2021 | ✓ | **05-May-2021** | 25-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **04-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB22_0.5, A_SB23_0.1,<br>A_SB23_0.5 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB26_0.1, A_SB26_0.3,<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135, A_SS140,<br>A_SS141, TC_SS01,<br>TC_SS02, TC_SS03,<br>A_STP_SS01, A_STP_SS02,<br>A_STP_SS03, A_STP_SS04,<br>A_STP_SS05, A_STP_SS06,<br>A_STP_SS07, A_STP_SS08,<br>A_STP_SS09, A_STP_SS10,<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14 | **28-Apr-2021** | **03-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, MC_SD26,<br>MC_SD27, MC_SD28,<br>MC_SD29, TC_SD02,<br>TC_SD04, TC_SD05,<br>TC_SD06 | **28-Apr-2021** | **04-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SD12, TC_SD13,<br>BBC_SD02, BBC_SD03,<br>BBC_SD04, BBC_SD06 | **28-Apr-2021** | **05-May-2021** | 25-Oct-2021 | ✓ | **05-May-2021** | 25-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **04-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB22_0.5, A_SB23_0.1,<br>A_SB23_0.5 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB26_0.1, A_SB26_0.3,<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135, A_SS140,<br>A_SS141, TC_SS01,<br>TC_SS02, TC_SS03,<br>A_STP_SS01, A_STP_SS02,<br>A_STP_SS03, A_STP_SS04,<br>A_STP_SS05, A_STP_SS06,<br>A_STP_SS07, A_STP_SS08,<br>A_STP_SS09, A_STP_SS10,<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14 | **28-Apr-2021** | **03-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, MC_SD26,<br>MC_SD27, MC_SD28,<br>MC_SD29, TC_SD02,<br>TC_SD04, TC_SD05,<br>TC_SD06 | **28-Apr-2021** | **04-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SD12, TC_SD13,<br>BBC_SD02, BBC_SD03,<br>BBC_SD04, BBC_SD06 | **28-Apr-2021** | **05-May-2021** | 25-Oct-2021 | ✓ | **05-May-2021** | 25-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SB23_1.0, A_SB24_0.1,<br>A_SB25_0.1, QC48 | **27-Apr-2021** | **03-May-2021** | 24-Oct-2021 | ✓ | **04-May-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB22_0.5, A_SB23_0.1,<br>A_SB23_0.5 | **27-Apr-2021** | **30-Apr-2021** | 24-Oct-2021 | ✓ | **30-Apr-2021** | 24-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>A_SB26_0.1, A_SB26_0.3,<br>A_SS123, A_SS124,<br>A_SS125, A_SS126,<br>A_SS127, A_SS128,<br>A_SS129, A_SS130,<br>A_SS131, A_SS132,<br>A_SS133, A_SS134,<br>A_SS135, A_SS140,<br>A_SS141, TC_SS01,<br>TC_SS02, TC_SS03,<br>A_STP_SS01, A_STP_SS02,<br>A_STP_SS03, A_STP_SS04,<br>A_STP_SS05, A_STP_SS06,<br>A_STP_SS07, A_STP_SS08,<br>A_STP_SS09, A_STP_SS10,<br>MC_SD04, MC_SD07,<br>MC_SD11, MC_SD12,<br>MC_SD13, MC_SD14 | **28-Apr-2021** | **03-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>MC_SD15, MC_SD16,<br>MC_SD17, MC_SD18,<br>MC_SD19, MC_SD20,<br>MC_SD21, MC_SD22,<br>MC_SD23, MC_SD24,<br>MC_SD25, MC_SD26,<br>MC_SD27, MC_SD28,<br>MC_SD29, TC_SD02,<br>TC_SD04, TC_SD05,<br>TC_SD06 | **28-Apr-2021** | **04-May-2021** | 25-Oct-2021 | ✓ | **04-May-2021** | 25-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>TC_SD12, TC_SD13,<br>BBC_SD02, BBC_SD03,<br>BBC_SD04, BBC_SD06 | **28-Apr-2021** | **05-May-2021** | 25-Oct-2021 | ✓ | **05-May-2021** | 25-Oct-2021 | ✓ |

## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 90 | **1.11** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 5 | 90 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 5 | 90 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 90 | **1.11** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Deionised Water Leach - Plastic Leaching Vessel | EN60-DIa-P | SOIL | In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | SOIL | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2115099**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 23-Apr-2021 |
| Client Requested Due Date | : 30-Apr-2021 | Scheduled Reporting Date | : **30-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Samples On Hand | Security Seal | : Not Available |
| No. of coolers/boxes | : ---- | Temperature | : ---- |
| Receipt Detail | : | No. of samples received / analysed | : 68 / 68 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is a rebatch of ES2111279, ES2111280 & ES2111268.**
- **This workorder has been split into ES2115092 due to the large number of samples.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EN60-DIa-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2115099-001 | 10-Mar-2021 00:00 | A_SB22_0.5 | ✓ | ✓ |
| ES2115099-002 | 15-Mar-2021 00:00 | A_SB23_0.1 | ✓ | ✓ |
| ES2115099-003 | 15-Mar-2021 00:00 | A_SB23_0.5 | ✓ | ✓ |
| ES2115099-004 | 15-Mar-2021 00:00 | A_SB23_1.0 | ✓ | ✓ |
| ES2115099-005 | 15-Mar-2021 00:00 | A_SB24_0.1 | ✓ | ✓ |
| ES2115099-006 | 15-Mar-2021 00:00 | A_SB25_0.1 | ✓ | ✓ |
| ES2115099-007 | 15-Mar-2021 00:00 | QC48 | ✓ | ✓ |
| ES2115099-008 | 15-Mar-2021 00:00 | A_SB26_0.1 | ✓ | ✓ |
| ES2115099-009 | 15-Mar-2021 00:00 | A_SB26_0.3 | ✓ | ✓ |
| ES2115099-010 | 16-Mar-2021 00:00 | A_SS123 | ✓ | ✓ |
| ES2115099-011 | 16-Mar-2021 00:00 | A_SS124 | ✓ | ✓ |
| ES2115099-012 | 16-Mar-2021 00:00 | A_SS125 | ✓ | ✓ |
| ES2115099-013 | 16-Mar-2021 00:00 | A_SS126 | ✓ | ✓ |
| ES2115099-014 | 16-Mar-2021 00:00 | A_SS127 | ✓ | ✓ |
| ES2115099-015 | 16-Mar-2021 00:00 | A_SS128 | ✓ | ✓ |
| ES2115099-016 | 16-Mar-2021 00:00 | A_SS129 | ✓ | ✓ |
| ES2115099-017 | 16-Mar-2021 00:00 | A_SS130 | ✓ | ✓ |
| ES2115099-018 | 16-Mar-2021 00:00 | A_SS131 | ✓ | ✓ |
| ES2115099-019 | 16-Mar-2021 00:00 | A_SS132 | ✓ | ✓ |
| ES2115099-020 | 16-Mar-2021 00:00 | A_SS133 | ✓ | ✓ |
| ES2115099-021 | 16-Mar-2021 00:00 | A_SS134 | ✓ | ✓ |
| ES2115099-022 | 16-Mar-2021 00:00 | A_SS135 | ✓ | ✓ |
| ES2115099-023 | 17-Mar-2021 00:00 | A_SS140 | ✓ | ✓ |
| ES2115099-024 | 17-Mar-2021 00:00 | A_SS141 | ✓ | ✓ |
| ES2115099-025 | 15-Mar-2021 00:00 | TC_SS01 | ✓ | ✓ |
| ES2115099-026 | 15-Mar-2021 00:00 | TC_SS02 | ✓ | ✓ |
| ES2115099-027 | 15-Mar-2021 00:00 | TC_SS03 | ✓ | ✓ |
| ES2115099-028 | 16-Mar-2021 00:00 | A_STP_SS01 | ✓ | ✓ |
| ES2115099-029 | 16-Mar-2021 00:00 | A_STP_SS02 | ✓ | ✓ |
| ES2115099-030 | 16-Mar-2021 00:00 | A_STP_SS03 | ✓ | ✓ |
| ES2115099-031 | 16-Mar-2021 00:00 | A_STP_SS04 | ✓ | ✓ |
| ES2115099-032 | 16-Mar-2021 00:00 | A_STP_SS05 | ✓ | ✓ |
| ES2115099-033 | 16-Mar-2021 00:00 | A_STP_SS06 | ✓ | ✓ |
| ES2115099-034 | 16-Mar-2021 00:00 | A_STP_SS07 | ✓ | ✓ |
| ES2115099-035 | 16-Mar-2021 00:00 | A_STP_SS08 | ✓ | ✓ |

| | | | SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2115099-036 | 16-Mar-2021 00:00 | A_STP_SS09 | ✓ | ✓ |
| ES2115099-037 | 16-Mar-2021 00:00 | A_STP_SS10 | ✓ | ✓ |
| ES2115099-038 | 13-Mar-2021 00:00 | MC_SD04 | ✓ | ✓ |
| ES2115099-039 | 13-Mar-2021 00:00 | MC_SD07 | ✓ | ✓ |
| ES2115099-040 | 13-Mar-2021 00:00 | MC_SD11 | ✓ | ✓ |
| ES2115099-041 | 13-Mar-2021 00:00 | MC_SD12 | ✓ | ✓ |
| ES2115099-042 | 13-Mar-2021 00:00 | MC_SD13 | ✓ | ✓ |
| ES2115099-043 | 13-Mar-2021 00:00 | MC_SD14 | ✓ | ✓ |
| ES2115099-044 | 13-Mar-2021 00:00 | MC_SD15 | ✓ | ✓ |
| ES2115099-045 | 13-Mar-2021 00:00 | MC_SD16 | ✓ | ✓ |
| ES2115099-046 | 13-Mar-2021 00:00 | MC_SD17 | ✓ | ✓ |
| ES2115099-047 | 13-Mar-2021 00:00 | MC_SD18 | ✓ | ✓ |
| ES2115099-048 | 13-Mar-2021 00:00 | MC_SD19 | ✓ | ✓ |
| ES2115099-049 | 13-Mar-2021 00:00 | MC_SD20 | ✓ | ✓ |
| ES2115099-050 | 13-Mar-2021 00:00 | MC_SD21 | ✓ | ✓ |
| ES2115099-051 | 13-Mar-2021 00:00 | MC_SD22 | ✓ | ✓ |
| ES2115099-052 | 13-Mar-2021 00:00 | MC_SD23 | ✓ | ✓ |
| ES2115099-053 | 13-Mar-2021 00:00 | MC_SD24 | ✓ | ✓ |
| ES2115099-054 | 13-Mar-2021 00:00 | MC_SD25 | ✓ | ✓ |
| ES2115099-055 | 17-Mar-2021 00:00 | MC_SD26 | ✓ | ✓ |
| ES2115099-056 | 17-Mar-2021 00:00 | MC_SD27 | ✓ | ✓ |
| ES2115099-057 | 17-Mar-2021 00:00 | MC_SD28 | ✓ | ✓ |
| ES2115099-058 | 15-Mar-2021 00:00 | MC_SD29 | ✓ | ✓ |
| ES2115099-059 | 16-Mar-2021 00:00 | TC_SD02 | ✓ | ✓ |
| ES2115099-060 | 12-Mar-2021 00:00 | TC_SD04 | ✓ | ✓ |
| ES2115099-061 | 12-Mar-2021 00:00 | TC_SD05 | ✓ | ✓ |
| ES2115099-062 | 12-Mar-2021 00:00 | TC_SD06 | ✓ | ✓ |
| ES2115099-063 | 15-Mar-2021 00:00 | TC_SD12 | ✓ | ✓ |
| ES2115099-064 | 17-Mar-2021 00:00 | TC_SD13 | ✓ | ✓ |
| ES2115099-065 | 14-Mar-2021 00:00 | BBC_SD02 | ✓ | ✓ |
| ES2115099-066 | 17-Mar-2021 00:00 | BBC_SD03 | ✓ | ✓ |
| ES2115099-067 | 18-Mar-2021 00:00 | BBC_SD04 | ✓ | ✓ |
| ES2115099-068 | 18-Mar-2021 00:00 | BBC_SD06 | ✓ | ✓ |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |

**CHRIS SANDIFORD**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | Chris.Sandiford@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | Chris.Sandiford@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | Chris.Sandiford@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | Chris.Sandiford@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | Chris.Sandiford@senversa.com.au |

**HEBBIE PEDERSON**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | hebbie.pederson@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | hebbie.pederson@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | hebbie.pederson@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | hebbie.pederson@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | hebbie.pederson@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2115099**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 26-Apr-2021 |
| Client Requested Due Date | : 06-May-2021 | Scheduled Reporting Date | : **06-May-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Samples On Hand | Security Seal | : Not Available |
| No. of coolers/boxes | : ---- | Temperature | : ---- |
| Receipt Detail | : | No. of samples received / analysed | : 68 / 68 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 26/4/21: This is an updated SRN which indicates the new scheduled release date for this work order.
- **This is a rebatch of ES2111279, ES2111280 & ES2111268.**
- **This workorder has been split into ES2115092 due to the large number of samples.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EN60-Dla-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2115099-001 | 10-Mar-2021 00:00 | A_SB22_0.5 | ✓ | ✓ |
| ES2115099-002 | 15-Mar-2021 00:00 | A_SB23_0.1 | ✓ | ✓ |
| ES2115099-003 | 15-Mar-2021 00:00 | A_SB23_0.5 | ✓ | ✓ |
| ES2115099-004 | 15-Mar-2021 00:00 | A_SB23_1.0 | ✓ | ✓ |
| ES2115099-005 | 15-Mar-2021 00:00 | A_SB24_0.1 | ✓ | ✓ |
| ES2115099-006 | 15-Mar-2021 00:00 | A_SB25_0.1 | ✓ | ✓ |
| ES2115099-007 | 15-Mar-2021 00:00 | QC48 | ✓ | ✓ |
| ES2115099-008 | 15-Mar-2021 00:00 | A_SB26_0.1 | ✓ | ✓ |
| ES2115099-009 | 15-Mar-2021 00:00 | A_SB26_0.3 | ✓ | ✓ |
| ES2115099-010 | 16-Mar-2021 00:00 | A_SS123 | ✓ | ✓ |
| ES2115099-011 | 16-Mar-2021 00:00 | A_SS124 | ✓ | ✓ |
| ES2115099-012 | 16-Mar-2021 00:00 | A_SS125 | ✓ | ✓ |
| ES2115099-013 | 16-Mar-2021 00:00 | A_SS126 | ✓ | ✓ |
| ES2115099-014 | 16-Mar-2021 00:00 | A_SS127 | ✓ | ✓ |
| ES2115099-015 | 16-Mar-2021 00:00 | A_SS128 | ✓ | ✓ |
| ES2115099-016 | 16-Mar-2021 00:00 | A_SS129 | ✓ | ✓ |
| ES2115099-017 | 16-Mar-2021 00:00 | A_SS130 | ✓ | ✓ |
| ES2115099-018 | 16-Mar-2021 00:00 | A_SS131 | ✓ | ✓ |
| ES2115099-019 | 16-Mar-2021 00:00 | A_SS132 | ✓ | ✓ |
| ES2115099-020 | 16-Mar-2021 00:00 | A_SS133 | ✓ | ✓ |
| ES2115099-021 | 16-Mar-2021 00:00 | A_SS134 | ✓ | ✓ |
| ES2115099-022 | 16-Mar-2021 00:00 | A_SS135 | ✓ | ✓ |
| ES2115099-023 | 17-Mar-2021 00:00 | A_SS140 | ✓ | ✓ |
| ES2115099-024 | 17-Mar-2021 00:00 | A_SS141 | ✓ | ✓ |
| ES2115099-025 | 15-Mar-2021 00:00 | TC_SS01 | ✓ | ✓ |
| ES2115099-026 | 15-Mar-2021 00:00 | TC_SS02 | ✓ | ✓ |
| ES2115099-027 | 15-Mar-2021 00:00 | TC_SS03 | ✓ | ✓ |
| ES2115099-028 | 16-Mar-2021 00:00 | A_STP_SS01 | ✓ | ✓ |
| ES2115099-029 | 16-Mar-2021 00:00 | A_STP_SS02 | ✓ | ✓ |
| ES2115099-030 | 16-Mar-2021 00:00 | A_STP_SS03 | ✓ | ✓ |
| ES2115099-031 | 16-Mar-2021 00:00 | A_STP_SS04 | ✓ | ✓ |
| ES2115099-032 | 16-Mar-2021 00:00 | A_STP_SS05 | ✓ | ✓ |
| ES2115099-033 | 16-Mar-2021 00:00 | A_STP_SS06 | ✓ | ✓ |
| ES2115099-034 | 16-Mar-2021 00:00 | A_STP_SS07 | ✓ | ✓ |
| ES2115099-035 | 16-Mar-2021 00:00 | A_STP_SS08 | ✓ | ✓ |

| | | | SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2115099-036 | 16-Mar-2021 00:00 | A_STP_SS09 | ✓ | ✓ |
| ES2115099-037 | 16-Mar-2021 00:00 | A_STP_SS10 | ✓ | ✓ |
| ES2115099-038 | 13-Mar-2021 00:00 | MC_SD04 | ✓ | ✓ |
| ES2115099-039 | 13-Mar-2021 00:00 | MC_SD07 | ✓ | ✓ |
| ES2115099-040 | 13-Mar-2021 00:00 | MC_SD11 | ✓ | ✓ |
| ES2115099-041 | 13-Mar-2021 00:00 | MC_SD12 | ✓ | ✓ |
| ES2115099-042 | 13-Mar-2021 00:00 | MC_SD13 | ✓ | ✓ |
| ES2115099-043 | 13-Mar-2021 00:00 | MC_SD14 | ✓ | ✓ |
| ES2115099-044 | 13-Mar-2021 00:00 | MC_SD15 | ✓ | ✓ |
| ES2115099-045 | 13-Mar-2021 00:00 | MC_SD16 | ✓ | ✓ |
| ES2115099-046 | 13-Mar-2021 00:00 | MC_SD17 | ✓ | ✓ |
| ES2115099-047 | 13-Mar-2021 00:00 | MC_SD18 | ✓ | ✓ |
| ES2115099-048 | 13-Mar-2021 00:00 | MC_SD19 | ✓ | ✓ |
| ES2115099-049 | 13-Mar-2021 00:00 | MC_SD20 | ✓ | ✓ |
| ES2115099-050 | 13-Mar-2021 00:00 | MC_SD21 | ✓ | ✓ |
| ES2115099-051 | 13-Mar-2021 00:00 | MC_SD22 | ✓ | ✓ |
| ES2115099-052 | 13-Mar-2021 00:00 | MC_SD23 | ✓ | ✓ |
| ES2115099-053 | 13-Mar-2021 00:00 | MC_SD24 | ✓ | ✓ |
| ES2115099-054 | 13-Mar-2021 00:00 | MC_SD25 | ✓ | ✓ |
| ES2115099-055 | 17-Mar-2021 00:00 | MC_SD26 | ✓ | ✓ |
| ES2115099-056 | 17-Mar-2021 00:00 | MC_SD27 | ✓ | ✓ |
| ES2115099-057 | 17-Mar-2021 00:00 | MC_SD28 | ✓ | ✓ |
| ES2115099-058 | 15-Mar-2021 00:00 | MC_SD29 | ✓ | ✓ |
| ES2115099-059 | 16-Mar-2021 00:00 | TC_SD02 | ✓ | ✓ |
| ES2115099-060 | 12-Mar-2021 00:00 | TC_SD04 | ✓ | ✓ |
| ES2115099-061 | 12-Mar-2021 00:00 | TC_SD05 | ✓ | ✓ |
| ES2115099-062 | 12-Mar-2021 00:00 | TC_SD06 | ✓ | ✓ |
| ES2115099-063 | 15-Mar-2021 00:00 | TC_SD12 | ✓ | ✓ |
| ES2115099-064 | 17-Mar-2021 00:00 | TC_SD13 | ✓ | ✓ |
| ES2115099-065 | 14-Mar-2021 00:00 | BBC_SD02 | ✓ | ✓ |
| ES2115099-066 | 17-Mar-2021 00:00 | BBC_SD03 | ✓ | ✓ |
| ES2115099-067 | 18-Mar-2021 00:00 | BBC_SD04 | ✓ | ✓ |
| ES2115099-068 | 18-Mar-2021 00:00 | BBC_SD06 | ✓ | ✓ |

## *Proactive Holding Time Report*

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |

**CHRIS SANDIFORD**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | Chris.Sandiford@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | Chris.Sandiford@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | Chris.Sandiford@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | Chris.Sandiford@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | Chris.Sandiford@senversa.com.au |

**HEBBIE PEDERSON**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | hebbie.pederson@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | hebbie.pederson@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | hebbie.pederson@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | hebbie.pederson@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | hebbie.pederson@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

**Fadi Soro**

Tmz
21/4/21
10:20am

**From:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Sent:** Wednesday, 21 April 2021 10:01 AM
**To:** Tyler Anderson
**Cc:** Christopher Sandiford; Carlyn Williams
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Tyler – thanks for checking!

Are you able to do ASLP at a neutral pH please? We want to simulate "natural" leaching conditions.

Yep, assumed the reporting date would be greater – just let me know what is realistic timeframe for these results so we can plan accordingly.

Many thanks

senversa

Hebbie Pederson
**Senior Environmental Scientist**

M: **+61 419 806 879**
T: **+61 3 9606 0070**
E: hebbie.pederson@senversa.com.au

**Level 6, 15 William Street**
**Melbourne, VIC 3000**
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Environmental Division
Sydney
Work Order Reference
ES2115099

Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO ES2115092
Lab / Analysis:
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Relinquished By / Date:
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**From:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Sent:** Tuesday, 20 April 2021 5:33 PM
**To:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Hebbie,

Thank you for sending this through. Can you please confirm if this was just a TCLP that you were requiring? Due to the amount of samples, this may cause our due date to extend past 5 days (which is our standard TAT). I will have a chat with the lab tomorrow to find out what the TAT we can provide is.

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

T +61 2 8784 8555 F +61 2 8784 8500
D +61 2 8784 8501
tyler.anderson@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

We are keen for your feedback!

**Fadi Soro**

Fadi
21/4/21
10:30

**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:37 PM
**To:** Wael Saleh; Fadi Soro; Helen Simpson; Jessie Blake
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please ensure that Chris, Hebbie, and Carlyn are all report recipients on these rebatches?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**EnviroMail™ 128** – Revised PFAS Bottle Requirements

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**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:36 PM
**To:** Wael Saleh <Wael.Saleh@alsglobal.com>; Fadi Soro <fadi.soro@alsglobal.com>; Helen Simpson <helen.simpson@alsglobal.com>; Jessie Blake <jessie.blake@ALSGlobal.com>; Barbara Hanna <Barbara.Hanna@alsglobal.com>; Franco Lentini <Franco.Lentini@alsglobal.com>; Nanthini Coilparampil <Nanthini.Coilparampil@alsglobal.com>; Wisam Marassa <Wissam.Aboumaraseh@alsglobal.com>
**Subject:** FW: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please organise the below for TCLPs and PFAS.
21 samples for total and leachable PFAS
115 samples for leachable PFAS

Hi lab team,

Obviously this is a lot of samples. What is the best "standard" TAT we can provide for this many samples?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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D +61 2 8784 8501

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**EnviroMail™ 128** – Revised PFAS Bottle Requirements

**From:** Hebbie Pederson [mailto:Hebbie.Pederson@senversa.com.au]
**Sent:** Tuesday, 20 April 2021 4:58 PM
**To:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** [EXTERNAL] - 17776 - Additional Analysis

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Hi Tyler,

Can I please organise the additional analysis for PFAS on batches already reported, as per the tables below. The first table is for total concentrations and leachability, whilst the other tables are leachability analysis only. The quote is the same as the other batches/samples ( SV-665-19 v2).

Given the large number of samples, what do you think would be a realistic reporting date for these on standard turn around?

You can report these all within one batch, however we need the last table (ID013 samples only) reported as a separate batch please.

Let me know if you have any queries.

Many thanks

Total concentrations and leachability analysis

| SAMPLE ID (currently on HOLD) | Batch ID |
|---|---|
| A_SB01_1.0 | ES2111279 |
| A_SB02_1.4 | ES2111279 |
| A_SB04_1.0 | ES2111279 |
| A_SB05_1.0 | ES2111279 |
| A_SB06_1.4 | ES2111279 |
| A_SB07_1.4 | ES2111279 |
| A_SB08_1.0 | ES2111279 |

ES2111279 → ~~[illegible]~~, QS31, 25, 22, 17, 30, 22, QW'20
#3, 13, 18, 31, 39, 45, 57, 65, 77, 1, 2, 5, 6, 9, 10, 11, 12, 16, 17, 21, 22, 25,
26, 29, 30, 33, 34, 41, 37, 43, 40, 43, 44, 47, 51, 55, 56, 63, 64, 67, 68,
71, 72, 75, 76, 79, 80, 81, 83, 87

ES2111280 → QS22, 48, 20, QW'20, 21, 11
#14, 13, 7, 8, 9, 11, 12, 47, 16, 17, 5, 6, 35, 36,

| | | |
|---|---|---|
| 8 | A_SB09_1.4 | ES2111279 |
| 9 | A_SB10_1.4 | ES2111279 |
| 10 | A_SB11_1.1 | ES2111279 |
| 11 | A_SB12_1.0 | ES2111279 |
| 12 | A_SB15_1.0 | ES2111279 |
| 13 | A_SB16_1.0 | ES2111279 |
| 14 | A_SB17_1.4 | ES2111279 |
| 15 | A_SB18_1.4 | ES2111279 |
| 16 | A_SB19_1.0 | ES2111279 |
| 17 | A_SB21_0.9 | ES2111279 |
| 18 | A_SB22_1.4 | ES2111279 |
| 19 | A_SB23_1.4 | ES2111280 |
| 20 | A_SB25_1.0 | ES2111280 |
| 21 | A_SB26_0.5 | ES2111280 |

Leachability analysis only

| | SAMPLE ID | Batch ID |
|---|---|---|
| 22 | A_SB01_0.1 | ES2111279 |
| 23 | A_SB01_0.5 | ES2111279 |
| 24 | A_SB02_0.1 | ES2111279 |
| 25 | A_SB02_0.5 | ES2111279 |
| 26 | A_SB03_0.1 | ES2111279 |
| 27 | A_SB03_0.4 | ES2111279 |
| 28 | A_SB04_0.1 | ES2111279 |
| 29 | A_SB04_0.5 | ES2111279 |
| 30 | A_SB05_0.1 | ES2111279 |
| 31 | A_SB05_0.4 | ES2111279 |
| 32 | A_SB06_0.1 | ES2111279 |
| 33 | A_SB06_0.5 | ES2111279 |
| 34 | A_SB07_0.1 | ES2111279 |

ES2111268 → Qw2, GS14, 24

#80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 31, 32, 33, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 1, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 22, 24, 26, 28, 30, 34, 37, 39, 41, 49, 51, 53, 56

| | |
|---|---|
| A_SB07_0.4 | ES2111279 |
| QC04 | ES2111279 |
| A_SB08_0.4 | ES2111279 |
| A_SB09_0.1 | ES2111279 |
| A_SB09_0.5 | ES2111279 |
| QC08 | ES2111279 |
| A_SB10_0.5 | ES2111279 |
| QC11 | ES2111279 |
| A_SB11_0.5 | ES2111279 |
| A_SB12_0.1 | ES2111279 |
| A_SB12_0.5 | ES2111279 |
| A_SB13_0.1 | ES2111279 |
| A_SB14_0.1 | ES2111279 |
| A_SB15_0.1 | ES2111279 |
| A_SB15_0.5 | ES2111279 |
| A_SB16_0.1 | ES2111279 |
| A_SB16_0.5 | ES2111279 |
| A_SB17_0.1 | ES2111279 |
| A_SB17_0.5 | ES2111279 |
| A_SB18_0.1 | ES2111279 |
| A_SB18_0.5 | ES2111279 |
| A_SB19_0.1 | ES2111279 |
| A_SB19_0.5 | ES2111279 |
| A_SB20_0.1 | ES2111279 |
| A_SB21_0.1 | ES2111279 |
| A_SB21_0.5 | ES2111279 |
| A_SB22_0.1 | ES2111279 |

| | |
|---|---|
| A_SB22_0.5 | ES2111279 |
| A_SB23_0.1 | ES2111280 |
| A_SB23_0.5 | ES2111280 |
| A_SB23_1.0 | ES2111280 |
| A_SB24_0.1 | ES2111280 |
| A_SB25_0.1 | ES2111280 |
| QC48 | ES2111280 |
| A_SB26_0.1 | ES2111280 |
| A_SB26_0.3 | ES2111280 |
| A_SS123 | ES2111268_1 |
| A_SS124 | ES2111268_1 |
| A_SS125 | ES2111268_1 |
| A_SS126 | ES2111268_1 |
| A_SS127 | ES2111268_1 |
| A_SS128 | ES2111268_1 |
| A_SS129 | ES2111268_1 |
| A_SS130 | ES2111268_1 |
| A_SS131 | ES2111268_1 |
| A_SS132 | ES2111268_1 |
| A_SS133 | ES2111268_1 |
| A_SS134 | ES2111268_1 |
| A_SS135 | ES2111268_1 |
| A_SS140 | ES_2111280 |
| A_SS141 | ES_2111280 |
| TC_SS01 | ES2111268 |
| TC_SS02 | ES2111268 |
| TC_SS03 | ES2111268 |

5099

| | |
|---|---|
| A_STP_SS01 | ES2111268 |
| A_STP_SS02 | ES2111268 |
| A_STP_SS03 | ES2111268 |
| A_STP_SS04 | ES2111268 |
| A_STP_SS05 | ES2111268 |
| A_STP_SS06 | ES2111268 |
| A_STP_SS07 | ES2111268 |
| A_STP_SS08 | ES2111268 |
| A_STP_SS09 | ES2111268 |
| A_STP_SS10 | ES2111268 |
| MC_SD04 | ES2111268 |
| MC_SD07 | ES2111268 |
| MC_SD11 | ES2111268 |
| MC_SD12 | ES2111268 |
| MC_SD13 | ES2111268 |
| MC_SD14 | ES2111268 |
| MC_SD15 | ES2111268 |
| MC_SD16 | ES2111268 |
| MC_SD17 | ES2111268 |
| MC_SD18 | ES2111268 |
| MC_SD19 | ES2111268 |
| MC_SD20 | ES2111268 |
| MC_SD21 | ES2111268 |
| MC_SD22 | ES2111268 |
| MC_SD23 | ES2111268 |
| MC_SD24 | ES2111268 |
| MC_SD25 | ES2111268 |
| MC_SD26 | ES2111268 |
| MC_SD27 | ES2111268 |
| MC_SD28 | ES2111268 |
| MC_SD29 | ES2111268 |

| | |
|---|---|
| TC_SD02 | ES2111268 |
| TC_SD04 | ES2111268 |
| TC_SD05 | ES2111268 |
| TC_SD06 | ES2111268 |
| TC_SD12 | ES2111268 |
| TC_SD13 | ES2111268 |
| BBC_SD02 | ES2111280 |
| BBC_SD03 | ES2111280 |
| BBC_SD04 | ES2111268 |
| BBC_SD06 | ES2111268 |

Leachability analysis only (please report in standalone batch)

| SAMPLE ID | Batch ID |
|---|---|
| ID013_SS01 (1) | ES2111261 |
| ID013_SS02 (2) | ES2111261 |
| ID013_SS03 (3) | ES2111261 |
| ID013_SS04 (4) | ES2111261 |
| ID013_SS05 (5) | ES2111261 |
| ID013_SS06 (6) | ES2111261 |
| ID013_SS07 (7) | ES2111261 |

ES2111261 → QS29, 24, QW2

# 9, 10, 11, 12, 13, 14, 15

split

**Senior Environmental Scientist**

senversa

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**Level 6, 15 William Street**
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ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115102** | Page | : 1 of 9 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 26-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 30-Apr-2021 11:38 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 7 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115102-001 | ES2115102-002 | ES2115102-003 | ES2115102-004 | ES2115102-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.02** | **0.02** | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.01** | **0.03** | **0.04** | **0.06** | **0.01** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115102-001 | ES2115102-002 | ES2115102-003 | ES2115102-004 | ES2115102-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.01** | **0.03** | **0.06** | **0.08** | **0.01** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.01** | **0.03** | **0.06** | **0.08** | **0.01** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.01** | **0.03** | **0.06** | **0.08** | **0.01** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **97.1** | **110** | **108** | **103** | **108** |
| 13C8-PFOA | ---- | 0.02 | % | **109** | **109** | **108** | **109** | **111** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | ID013_SS06 | ID013_SS07 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115102-006 | ES2115102-007 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.09** | <0.01 | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | ID013_SS06 | ID013_SS07 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115102-006 | ES2115102-007 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.09** | <0.01 | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.09** | <0.01 | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.09** | <0.01 | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **108** | **108** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **107** | **113** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS01 | ID013_SS02 | ID013_SS03 | ID013_SS04 | ID013_SS05 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115102-001 | ES2115102-002 | ES2115102-003 | ES2115102-004 | ES2115102-005 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.0** | **6.0** | **6.4** | **6.0** | **6.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | ID013_SS06 | ID013_SS07 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 11-Mar-2021 00:00 | 11-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115102-006 | ES2115102-007 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.0** | **7.0** | **----** | **----** | **----** |

## Surrogate Control Limits

| Sub-Matrix: DI WATER LEACHATE | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 60 | 120 |
| **13C8-PFOA** | ---- | 60 | 120 |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115102** | Page | : 1 of 7 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 26-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 30-Apr-2021 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 7 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| ES2115102-003 | ID013_SS03 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.04 | 0.04 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 0.02 | 0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| ES2115102-003 | ID013_SS03 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3645716) - continued** | | | | | | | | | |
| ES2115102-003 | ID013_SS03 | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115102-003 | ID013_SS03 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3645716) - continued** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115102-003 | ID013_SS03 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3645716)** | | | | | | | | | |
| ES2115102-002 | ID013_SS02 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.03 | 0.04 | 28.6 | No Limit |
| ES2115102-003 | ID013_SS03 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.06 | 0.06 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 101 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 110 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 123 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 114 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 112 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 111 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 110 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3645716)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 121 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 111 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 126 | 67.0 | 138 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3645716) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 105 | 71.4 | 144 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | Acceptable Limits (%) High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | ID013_SS01 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 105 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 105 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 104 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 105 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 89.6 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 105 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | ID013_SS01 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 96.4 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 109 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 114 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 106 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 115 | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 109 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 111 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 122 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 120 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 102 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 101 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | ID013_SS01 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 120 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 105 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 88.5 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 103 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 102 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 103 | 65.0 | 136 |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3645716) - continued** | | | | | | | |
| ES2115102-001 | ID013_SS01 | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 94.0 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3645716)** | | | | | | | |
| ES2115102-001 | ID013_SS01 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 107 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 119 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 110 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 96.0 | 71.4 | 144 |

ALS Environmental

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115102** | Page | : 1 of 5 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 30-Apr-2021 |
| Sampler | : ---- | No. of samples received | : 7 |
| Order number | : ---- | No. of samples analysed | : 7 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **NO Quality Control Sample Frequency Outliers exist.**

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>ID013_SS01, ID013_SS02,<br>ID013_SS03, ID013_SS04,<br>ID013_SS05, ID013_SS06,<br>ID013_SS07 | **11-Mar-2021** | **26-Apr-2021** | 07-Sep-2021 | ✓ | **----** | ---- | ---- |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SS01, ID013_SS02,<br>ID013_SS03, ID013_SS04,<br>ID013_SS05, ID013_SS06,<br>ID013_SS07 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SS01, ID013_SS02,<br>ID013_SS03, ID013_SS04,<br>ID013_SS05, ID013_SS06,<br>ID013_SS07 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>ID013_SS01, ID013_SS02,<br>ID013_SS03, ID013_SS04,<br>ID013_SS05, ID013_SS06,<br>ID013_SS07 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | |
| ID013_SS01, ID013_SS02, ID013_SS03, ID013_SS04, ID013_SS05, ID013_SS06, ID013_SS07 | **26-Apr-2021** | **29-Apr-2021** | 23-Oct-2021 | ✓ | **29-Apr-2021** | 23-Oct-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Deionised Water Leach - Plastic Leaching Vessel | EN60-DIa-P | SOIL | In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | SOIL | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2115102**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 2 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 23-Apr-2021 |
| Client Requested Due Date | : 30-Apr-2021 | Scheduled Reporting Date | : **30-Apr-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Samples On Hand | Security Seal | : Not Available |
| No. of coolers/boxes | : ---- | Temperature | : ---- |
| Receipt Detail | : | No. of samples received / analysed | : 7 / 7 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is a rebatch of ES2111261.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EN60-DIa-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|
| ES2115102-001 | 11-Mar-2021 00:00 | ID013_SS01 | ✓ | ✓ |
| ES2115102-002 | 11-Mar-2021 00:00 | ID013_SS02 | ✓ | ✓ |
| ES2115102-003 | 11-Mar-2021 00:00 | ID013_SS03 | ✓ | ✓ |
| ES2115102-004 | 11-Mar-2021 00:00 | ID013_SS04 | ✓ | ✓ |
| ES2115102-005 | 11-Mar-2021 00:00 | ID013_SS05 | ✓ | ✓ |
| ES2115102-006 | 11-Mar-2021 00:00 | ID013_SS06 | ✓ | ✓ |
| ES2115102-007 | 11-Mar-2021 00:00 | ID013_SS07 | ✓ | ✓ |

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |

**CHRIS SANDIFORD**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | Chris.Sandiford@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | Chris.Sandiford@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | Chris.Sandiford@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | Chris.Sandiford@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | Chris.Sandiford@senversa.com.au |

**HEBBIE PEDERSON**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | hebbie.pederson@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | hebbie.pederson@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | hebbie.pederson@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | hebbie.pederson@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | hebbie.pederson@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

**Fadi Soro**

Fadi
21/4/21 [illegible]

**From:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Sent:** Wednesday, 21 April 2021 10:01 AM
**To:** Tyler Anderson
**Cc:** Christopher Sandiford; Carlyn Williams
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Tyler – thanks for checking!

Are you able to do ASLP at a neutral pH please? We want to simulate "natural" leaching conditions.

Yep, assumed the reporting date would be greater – just let me know what is realistic timeframe for these results so we can plan accordingly.

Many thanks


senversa

Hebbie Pederson
**Senior Environmental Scientist**

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E: hebbie.pederson@senversa.com.au

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Environmental Division
Sydney
Work Order Reference
ES2115102

Telephone : +61-2-8784 856

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**From:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Sent:** Tuesday, 20 April 2021 5:33 PM
**To:** Hebbie Pederson <Hebbie.Pederson@senversa.com.au>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Hebbie,

Thank you for sending this through. Can you please confirm if this was just a TCLP that you were requiring? Due to the amount of samples, this may cause our due date to extend past 5 days (which is our standard TAT). I will have a chat with the lab tomorrow to find out what the TAT we can provide is.

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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D +61 2 8784 8501
tyler.anderson@alsglobal.com
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Smithfield NSW 2164 AUSTRALIA

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**Fadi Soro**

FADI
21/4/21
10:30

**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:37 PM
**To:** Wael Saleh; Fadi Soro; Helen Simpson; Jessie Blake
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please ensure that Chris, Hebbie, and Carlyn are all report recipients on these rebatches?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**From:** Tyler Anderson
**Sent:** Tuesday, 20 April 2021 5:36 PM
**To:** Wael Saleh <Wael.Saleh@alsglobal.com>; Fadi Soro <fadi.soro@alsglobal.com>; Helen Simpson <helen.simpson@alsglobal.com>; Jessie Blake <jessie.blake@ALSGlobal.com>; Barbara Hanna <Barbara.Hanna@alsglobal.com>; Franco Lentini <Franco.Lentini@alsglobal.com>; Nanthini Coilparampil <Nanthini.Coilparampil@alsglobal.com>; Wisam Marassa <Wissam.Aboumaraseh@alsglobal.com>
**Subject:** FW: [EXTERNAL] - 17776 - Additional Analysis

Hi SR team,

Can you please organise the below for TCLPs and PFAS.
21 samples for total and leachable PFAS
115 samples for leachable PFAS

Hi lab team,

Obviously this is a lot of samples. What is the best "standard" TAT we can provide for this many samples?

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**Fadi Soro**

**From:** Tyler Anderson
**Sent:** Wednesday, 21 April 2021 5:23 PM
**To:** Fadi Soro; Wael Saleh; Helen Simpson; Jessie Blake
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Corrected:

QS31, 25, 27, 17, 30, 21, QW20

#8, 24, 28, 35, 38, 70, 74, 82, 86

A_SB02_1.4 – ES2111279 – A_SB02_1.5
A_SB06_1.4 – ES2111279 – A_SB06_1.5
A_SB07_1.4 – ES2111279 – A_SB07_1.5
A_SB09_1.4 – ES2111279 – A_SB09_1.5
A_SB10_1.4 – ES2111279 – A_SB10_1.5
A_SB17_1.4 – ES2111279 – A_SB17_1.5
A_SB18_1.4 – ES2111279 – A_SB18_1.5
A_SB21_0.9 – ES2111279 – A_SB21_1.0
A_SB22_1.4 – ES2111279 – A_SB22_1.5
A_SB23_1.4 – ES2111280 – A_SB23_1.5

QS22, 18, 20, QW21, 29, 11, 59, 43
23
#10

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

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**We are keen for your feedback!** Please click here for your 3 minute survey

**From:** Hebbie Pederson [mailto:Hebbie.Pederson@senversa.com.au]
**Sent:** Tuesday, 20 April 2021 4:58 PM
**To:** Tyler Anderson <tyler.anderson@alsglobal.com>
**Cc:** Christopher Sandiford <Christopher.Sandiford@Senversa.com.au>; Carlyn Williams <Carlyn.Williams@senversa.com.au>
**Subject:** [EXTERNAL] - 17776 - Additional Analysis

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Hi Tyler,

Can I please organise the additional analysis for PFAS on batches already reported, as per the tables below. The first table is for total concentrations and leachability, whilst the other tables are leachability analysis only. The quote is the same as the other batches/samples ( SV-665-19 v2).

Given the large number of samples, what do you think would be a realistic reporting date for these on standard turn around?

You can report these all within one batch, however we need the last table (ID013 samples only) reported as a separate batch please.

Let me know if you have any queries.

Many thanks

**Total concentrations and leachability analysis**

| | SAMPLE ID (currently on HOLD) | Batch ID |
|---|---|---|
| 1 | A_SB01_1.0 - | ES2111279 |
| 2 | A_SB02_1.4 ? | ES2111279 |
| 3 | A_SB04_1.0 - | ES2111279 |
| 4 | A_SB05_1.0 - | ES2111279 |
| 5 | A_SB06_1.4 ? | ES2111279 |
| 6 | A_SB07_1.4 ? | ES2111279 |
| 7 | A_SB08_1.0 - | ES2111279 |

ES2111279 → ~~QC7, QC5, QC9, QC9~~, QS31, 15, 27, 17, 30, 22, QW20
#3, 13, 18, 31, 39, 45, 57, 65, 77, 1, 2, 5, 6, 9, 10, 11, 12, 16, 17, 21, 22, 25,
26, 29, 30, 33, 34, 41, 37, 43, 40, 43, 44, 47, 51, 55, 56, 63, 64, 67, 68,
71, 72, 75, 76, 79, 80, 81, 83, 84

ES2111280 → QS22, 48, 20, QW20, 21, 11
#14, 18, 7, 8, 9, 11, 12, 47, 16, 17, 5, 6, 35, 36,

| | | | | |
|---|---|---|---|---|
| 8 | A_SB09_1.4 | ? | | ES2111279 |
| 9 | A_SB10_1.4 | ? | | ES2111279 |
| 10 | A_SB11_1.1 | - | | ES2111279 |
| 11 | A_SB12_1.0 | - | | ES2111279 |
| 12 | A_SB15_1.0 | - | | ES2111279 |
| 13 | A_SB16_1.0 | - | | ES2111279 |
| 14 | A_SB17_1.4 | ? | | ES2111279 |
| 15 | A_SB18_1.4 | ? | | ES2111279 |
| 16 | A_SB19_1.0 | - | | ES2111279 |
| 17 | A_SB21_0.9 | ? | | ES2111279 |
| 18 | A_SB22_1.4 | ? | | ES2111279 |
| 19 | A_SB23_1.4 | ? | | ES2111280 |
| 20 | A_SB25_1.0 | - | | ES2111280 |
| 21 | A_SB26_0.5 | - | | ES2111280 |

**Leachability analysis only**

| | SAMPLE ID | | Batch ID |
|---|---|---|---|
| 22 | A_SB01_0.1 | - | ES2111279 |
| 23 | A_SB01_0.5 | - | ES2111279 |
| 24 | A_SB02_0.1 | - | ES2111279 |
| 25 | A_SB02_0.5 | - | ES2111279 |
| 26 | A_SB03_0.1 | - | ES2111279 |
| 27 | A_SB03_0.4 | - | ES2111279 |
| 28 | A_SB04_0.1 | - | ES2111279 |
| 29 | A_SB04_0.5 | - | ES2111279 |
| 30 | A_SB05_0.1 | - | ES2111279 |
| 31 | A_SB05_0.4 | - | ES2111279 |
| 32 | A_SB06_0.1 | - | ES2111279 |
| 33 | A_SB06_0.5 | - | ES2111279 |
| 34 | A_SB07_0.1 | - | ES2111279 |

ES2111268 → Q42, Q514, 24

#80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 31, 32, 33, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 1, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 22, 24, 26, 28, 30, 34, 37, 39, 41, 49, 51, 53, 56

| | | |
|---|---|---|
| 35 | A_SB07_0.4 | ES2111279 |
| 36 | QC04 | ES2111279 |
| 37 | A_SB08_0.4 | ES2111279 |
| 38 | A_SB09_0.1 | ES2111279 |
| 39 | A_SB09_0.5 | ES2111279 |
| 40 | QC08 | ES2111279 |
| 41 | A_SB10_0.5 | ES2111279 |
| 42 | QC11 | ES2111279 |
| 43 | A_SB11_0.5 | ES2111279 |
| 44 | A_SB12_0.1 | ES2111279 |
| 45 | A_SB12_0.5 | ES2111279 |
| 46 | A_SB13_0.1 | ES2111279 |
| 47 | A_SB14_0.1 | ES2111279 |
| 48 | A_SB15_0.1 | ES2111279 |
| 49 | A_SB15_0.5 | ES2111279 |
| 50 | A_SB16_0.1 | ES2111279 |
| 51 | A_SB16_0.5 | ES2111279 |
| 52 | A_SB17_0.1 | ES2111279 |
| 53 | A_SB17_0.5 | ES2111279 |
| 54 | A_SB18_0.1 | ES2111279 |
| 55 | A_SB18_0.5 | ES2111279 |
| 56 | A_SB19_0.1 | ES2111279 |
| 57 | A_SB19_0.5 | ES2111279 |
| 58 | A_SB20_0.1 | ES2111279 |
| 59 | A_SB21_0.1 | ES2111279 |
| 60 | A_SB21_0.5 | ES2111279 |
| 61 | A_SB22_0.1 | ES2111279 |

| | | |
|---|---|---|
| 62 | A_SB22_0.5 | ES2111279 |
| 63 | A_SB23_0.1 | ES2111280 |
| 64 | A_SB23_0.5 | ES2111280 |
| 65 | A_SB23_1.0 | ES2111280 |
| 66 | A_SB24_0.1 | ES2111280 |
| 67 | A_SB25_0.1 | ES2111280 |
| 68 | QC48 | ES2111280 |
| 69 | A_SB26_0.1 | ES2111280 |
| 70 | A_SB26_0.3 | ES2111280 |
| 71 | A_SS123 | ES2111268_1 |
| 72 | A_SS124 | ES2111268_1 |
| 73 | A_SS125 | ES2111268_1 |
| 74 | A_SS126 | ES2111268_1 |
| 75 | A_SS127 | ES2111268_1 |
| 76 | A_SS128 | ES2111268_1 |
| 77 | A_SS129 | ES2111268_1 |
| 78 | A_SS130 | ES2111268_1 |
| 79 | A_SS131 | ES2111268_1 |
| 80 | A_SS132 | ES2111268_1 |
| 81 | A_SS133 | ES2111268_1 |
| 82 | A_SS134 | ES2111268_1 |
| 83 | A_SS135 | ES2111268_1 |
| 84 | A_SS140 | ES_2111280 |
| 85 | A_SS141 | ES_2111280 |
| 86 | TC_SS01 | ES2111268 |
| 87 | TC_SS02 | ES2111268 |
| 88 | TC_SS03 | ES2111268 |

| | | |
|---|---|---|
| 89 | A_STP_SS01 | ES2111268 |
| 90 | A_STP_SS02 | ES2111268 |
| 91 | A_STP_SS03 | ES2111268 |
| 92 | A_STP_SS04 | ES2111268 |
| 93 | A_STP_SS05 | ES2111268 |
| 94 | A_STP_SS06 | ES2111268 |
| 95 | A_STP_SS07 | ES2111268 |
| 96 | A_STP_SS08 | ES2111268 |
| 97 | A_STP_SS09 | ES2111268 |
| 98 | A_STP_SS10 | ES2111268 |
| 99 | MC_SD04 | ES2111268 |
| 100 | MC_SD07 | ES2111268 |
| 101 | MC_SD11 | ES2111268 |
| 102 | MC_SD12 | ES2111268 |
| 103 | MC_SD13 | ES2111268 |
| 104 | MC_SD14 | ES2111268 |
| 105 | MC_SD15 | ES2111268 |
| 106 | MC_SD16 | ES2111268 |
| 107 | MC_SD17 | ES2111268 |
| 108 | MC_SD18 | ES2111268 |
| 109 | MC_SD19 | ES2111268 |
| 110 | MC_SD20 | ES2111268 |
| 111 | MC_SD21 | ES2111268 |
| 112 | MC_SD22 | ES2111268 |
| 113 | MC_SD23 | ES2111268 |
| 114 | MC_SD24 | ES2111268 |
| 115 | MC_SD25 | ES2111268 |
| 116 | MC_SD26 | ES2111268 |
| 117 | MC_SD27 | ES2111268 |
| 118 | MC_SD28 | ES2111268 |
| 119 | MC_SD29 | ES2111268 |

| | | |
|---|---|---|
| 120 | TC_SD02 | ES2111268 |
| 121 | TC_SD04 | ES2111268 |
| 122 | TC_SD05 | ES2111268 |
| 123 | TC_SD06 | ES2111268 |
| 124 | TC_SD12 | ES2111268 |
| 125 | TC_SD13 | ES2111268 |
| 126 | BBC_SD02 | ES2111280 |
| 127 | BBC_SD03 | ES2111280 |
| 128 | BBC_SD04 | ES2111268 |
| 129 | BBC_SD06 | ES2111268 |

**Leachability analysis only (please report in standalone batch)**

| | SAMPLE ID | Batch ID |
|---|---|---|
| 130 | ID013_SS01 | ES2111261 |
| 131 | ID013_SS02 | ES2111261 |
| 132 | ID013_SS03 | ES2111261 |
| 133 | ID013_SS04 | ES2111261 |
| 134 | ID013_SS05 | ES2111261 |
| 135 | ID013_SS06 | ES2111261 |
| 136 | ID013_SS07 | ES2111261 |

ES2111261 → QS29, 24, QW2

* 9, 10, 11, 12, 13, 14, 15

Hebbie Pederson
**Senior Environmental Scientist**

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ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115699** | Page | : 1 of 47 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 11:00 |
| Order number | : ---- | Date Analysis Commenced | : 30-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 10-May-2021 09:23 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 68 | | |
| No. of samples analysed | : 67 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: High Matrix Spike (MS) recovery for analyte "8:2 Fluorotelomer sulfonic acid (8:2 FTS) and Perfluorodecanoic acid (PFDA) "Sample are high in sediment (Internal standard suppression).
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | PWS_EB_TOILETS_0.1 | PWS_EB_TOILETS_0.5 | PWS_CAS_TOILETS_0.1 | PWS_CAS_TOILETS_0.5 | PWS_HEAD_TOILETS_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-001 | ES2115699-002 | ES2115699-003 | ES2115699-004 | ES2115699-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | <0.01 | <0.01 | **0.02** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.27** | **0.23** | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.28** | **0.22** | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.04** | **0.13** | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.04** | **0.09** | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.03** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.23** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | PWS_EB_TOILETS_0.1 | PWS_EB_TOILETS_0.5 | PWS_CAS_TOILETS_0.1 | PWS_CAS_TOILETS_0.5 | PWS_HEAD_TOILETS_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-001 | ES2115699-002 | ES2115699-003 | ES2115699-004 | ES2115699-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.91** | **0.69** | <0.01 | <0.01 | **0.02** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | <0.01 | <0.01 | **0.02** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.65** | **0.69** | <0.01 | <0.01 | **0.02** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **82.9** | **87.8** | **81.8** | **86.9** | **88.0** |
| 13C8-PFOA | ---- | 0.02 | % | **98.0** | **90.0** | **92.9** | **91.7** | **89.6** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS_0.5 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-006 | ES2115699-007 | ES2115699-008 | ES2115699-009 | ES2115699-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.06** | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | **0.03** | **0.03** | **0.15** | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.02** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | PWS_HEAD_TOILETS_0.5 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-006 | ES2115699-007 | ES2115699-008 | ES2115699-009 | ES2115699-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | **0.03** | **0.03** | **0.26** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | **0.03** | **0.03** | **0.21** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | **0.03** | **0.03** | **0.26** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **104** | **87.0** | **89.1** | **84.4** | **83.7** |
| 13C8-PFOA | ---- | 0.02 | % | **94.4** | **93.2** | **94.3** | **94.4** | **86.5** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-011 | ES2115699-012 | ES2115699-013 | ES2115699-014 | ES2115699-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.05** | **0.01** | **0.02** | **0.06** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-011 | ES2115699-012 | ES2115699-013 | ES2115699-014 | ES2115699-015 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.05** | **0.01** | **0.02** | **0.06** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.05** | **0.01** | **0.02** | **0.06** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.05** | **0.01** | **0.02** | **0.06** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **93.8** | **86.2** | **87.1** | **81.0** | **94.5** |
| 13C8-PFOA | ---- | 0.02 | % | **91.2** | **90.8** | **91.7** | **89.9** | **87.0** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-016 | ES2115699-017 | ES2115699-018 | ES2115699-019 | ES2115699-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.04** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.07** | **0.02** | **0.14** | <0.01 | **0.05** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.01** | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-016 | ES2115699-017 | ES2115699-018 | ES2115699-019 | ES2115699-020 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.11** | **0.02** | **0.15** | <0.01 | **0.05** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.11** | **0.02** | **0.14** | <0.01 | **0.05** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.11** | **0.02** | **0.15** | <0.01 | **0.05** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **82.4** | **84.2** | **83.6** | **95.1** | **85.4** |
| 13C8-PFOA | ---- | 0.02 | % | **94.7** | **88.9** | **94.8** | **104** | **106** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-021 | ES2115699-022 | ES2115699-023 | ES2115699-024 | ES2115699-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.04** | **0.03** | **0.05** | **0.04** | **0.06** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-021 | ES2115699-022 | ES2115699-023 | ES2115699-024 | ES2115699-025 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.04** | **0.03** | **0.05** | **0.04** | **0.06** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.04** | **0.03** | **0.05** | **0.04** | **0.06** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.04** | **0.03** | **0.05** | **0.04** | **0.06** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **77.5** | **90.4** | **77.9** | **81.6** | **72.4** |
| 13C8-PFOA | ---- | 0.02 | % | **114** | **111** | **108** | **111** | **107** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-026 | ES2115699-027 | ES2115699-028 | ES2115699-029 | ES2115699-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | **0.02** | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.06** | **0.05** | **0.14** | **0.13** | **0.01** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.01** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-026 | ES2115699-027 | ES2115699-028 | ES2115699-029 | ES2115699-030 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.08** | **0.05** | **0.14** | **0.16** | **0.01** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.08** | **0.05** | **0.14** | **0.15** | **0.01** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.08** | **0.05** | **0.14** | **0.16** | **0.01** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **108** | **102** | **107** | **102** | **103** |
| 13C8-PFOA | ---- | 0.02 | % | **71.3** | **74.4** | **73.8** | **77.2** | **79.6** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-031 | ES2115699-032 | ES2115699-033 | ES2115699-034 | ES2115699-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.08** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.01** | **0.13** | **0.08** | **0.05** | **0.19** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.01** | <0.01 | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-031 | ES2115699-032 | ES2115699-033 | ES2115699-034 | ES2115699-035 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.01** | **0.14** | **0.08** | **0.05** | **0.27** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.01** | **0.13** | **0.08** | **0.05** | **0.27** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.01** | **0.14** | **0.08** | **0.05** | **0.27** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **95.4** | **99.7** | **99.6** | **101** | **94.9** |
| 13C8-PFOA | ---- | 0.02 | % | **82.6** | **86.8** | **89.8** | **93.1** | **91.7** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-036 | ES2115699-037 | ES2115699-038 | ES2115699-039 | ES2115699-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.07** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | **0.18** | **0.06** | **0.83** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.06** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | **0.01** | <0.01 | **0.06** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.03** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-036 | ES2115699-037 | ES2115699-038 | ES2115699-039 | ES2115699-040 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.02** | **0.02** | **0.19** | **0.06** | **1.07** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.02** | **0.02** | **0.18** | **0.06** | **0.90** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.02** | **0.02** | **0.19** | **0.06** | **1.04** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **84.5** | **99.7** | **97.7** | **115** | **107** |
| 13C8-PFOA | ---- | 0.02 | % | **90.8** | **65.2** | **67.2** | **61.8** | **63.1** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-041 | ES2115699-042 | ES2115699-043 | ES2115699-044 | ES2115699-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | **0.03** | **0.15** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.20** | **19.5** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.20** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.05** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.07** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | **0.11** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.05** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.08** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.02** |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-041 | ES2115699-042 | ES2115699-043 | ES2115699-044 | ES2115699-045 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | **1.16** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.23** | **21.5** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.23** | **19.6** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | <0.01 | <0.01 | <0.01 | **0.23** | **21.1** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **100** | **102** | **99.5** | **99.8** | **112** |
| 13C8-PFOA | ---- | 0.02 | % | **65.9** | **64.9** | **67.4** | **63.6** | **64.0** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-046 | ES2115699-047 | ES2115699-048 | ES2115699-049 | ES2115699-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **0.03** | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.10** | **1.46** | **0.07** | <0.02 | **0.05** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.08** | **0.08** | **0.03** | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **19.5** | **7.23** | **1.03** | **0.40** | **0.10** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.07** | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.2** | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.04** | **0.45** | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.03** | **0.17** | <0.02 | <0.02 | **0.04** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.03** | **0.13** | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.17** | **0.85** | **0.05** | **0.05** | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.49** | **0.15** | **0.02** | **0.02** | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.58** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | **0.05** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | **0.02** | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-046 | ES2115699-047 | ES2115699-048 | ES2115699-049 | ES2115699-050 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | **0.06** | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **1.27** | **1.20** | **0.48** | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **22.4** | **12.0** | **1.68** | **0.47** | **0.19** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **19.6** | **8.69** | **1.10** | **0.40** | **0.15** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **21.1** | **11.8** | **1.63** | **0.45** | **0.19** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **107** | **102** | **116** | **92.5** | **110** |
| 13C8-PFOA | ---- | 0.02 | % | **66.4** | **73.1** | **73.9** | **76.5** | **76.9** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-051 | ES2115699-052 | ES2115699-053 | ES2115699-054 | ES2115699-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | **0.31** | **0.05** | **0.15** | **0.09** |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | **0.20** | **0.03** | **0.59** | **0.08** |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.24** | **1.96** | **0.28** | **37.5** | **1.40** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.03** | **0.54** | **0.06** | **8.61** | **0.34** |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **5.53** | **226** | **53.5** | **83.8** | **1.43** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.06** | **0.61** | **0.59** | <0.02 | **0.03** |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | **0.4** | **0.3** | **0.1** | **0.1** |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.03** | **0.94** | **0.73** | **0.33** | **0.27** |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.08** | **2.69** | **0.97** | **1.01** | **0.55** |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.05** | **0.12** | **0.08** | **0.25** | **0.35** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.11** | **0.26** | **0.18** | **5.64** | **1.16** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.03** | **0.03** | **0.14** | **0.06** | **0.16** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.03** | **0.02** | **0.12** | <0.02 | **0.04** |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | **0.02** | **1.15** | **0.16** | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-051 | ES2115699-052 | ES2115699-053 | ES2115699-054 | ES2115699-055 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **0.30** | <0.05 | **1.34** | <0.05 | **0.12** |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **6.51** | **235** | **58.5** | **138** | **6.12** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **5.77** | **228** | **53.8** | **121** | **2.83** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **6.34** | **233** | **57.4** | **129** | **5.47** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **119** | **75.2** | **102** | **97.2** | **117** |
| 13C8-PFOA | ---- | 0.02 | % | **75.0** | **71.1** | **74.9** | **80.0** | **75.6** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS113 | A_SS114 | A_SS115 | A_SS136 | A_SS137 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-056 | ES2115699-057 | ES2115699-058 | ES2115699-059 | ES2115699-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.08** | **0.03** | **0.07** | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.02** | <0.02 | **0.05** | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.51** | **1.12** | **7.70** | **0.01** | <0.01 |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | **0.06** | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | **0.02** | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.04** | **0.05** | **0.10** | <0.01 | <0.01 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.02** | **0.02** | <0.02 | <0.02 | <0.02 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS113 | A_SS114 | A_SS115 | A_SS136 | A_SS137 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-056 | ES2115699-057 | ES2115699-058 | ES2115699-059 | ES2115699-060 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | **0.14** | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.67** | **1.38** | **7.98** | **0.01** | <0.01 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.59** | **1.15** | **7.77** | **0.01** | <0.01 |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.63** | **1.36** | **7.93** | **0.01** | <0.01 |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **98.8** | **106** | **95.1** | **101** | **98.1** |
| 13C8-PFOA | ---- | 0.02 | % | **92.1** | **95.3** | **96.5** | **99.0** | **95.8** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS138 | A_SS139 | QC13 | QC02 | QC17 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-061 | ES2115699-062 | ES2115699-063 | ES2115699-064 | ES2115699-065 |
| | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.11** | <0.02 | **0.02** | **0.09** | **0.06** |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **0.12** | **0.09** | **0.05** | **0.11** | **0.62** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | **0.01** | <0.01 | <0.01 | **0.06** |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | **0.04** |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | A_SS138 | A_SS139 | QC13 | QC02 | QC17 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-061 | ES2115699-062 | ES2115699-063 | ES2115699-064 | ES2115699-065 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **0.23** | **0.10** | **0.07** | **0.20** | **0.82** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **0.23** | **0.09** | **0.07** | **0.20** | **0.68** |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **0.23** | **0.10** | **0.07** | **0.20** | **0.78** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **102** | **104** | **99.7** | **95.4** | **95.3** |
| 13C8-PFOA | ---- | 0.02 | % | **93.3** | **94.6** | **97.1** | **93.7** | **95.2** |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | QC23 | QC19 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115699-067 | ES2115699-068 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | **0.02** | <0.02 | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | **0.23** | **0.05** | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | **0.05** | **0.09** | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | **6.12** | **9.86** | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | **0.06** | <0.02 | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | **0.04** | **0.04** | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | **0.06** | <0.02 | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | **0.05** | **0.02** | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | **0.12** | **0.09** | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | **0.06** | **0.46** | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | **0.04** | **0.66** | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: DI WATER LEACHATE (Matrix: WATER) | | | Sample ID | QC23 | QC19 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115699-067 | ES2115699-068 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | **0.16** | **0.59** | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.01 | µg/L | **7.01** | **11.9** | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.01 | µg/L | **6.35** | **9.91** | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.01 | µg/L | **6.80** | **10.6** | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.02 | % | **105** | **102** | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.02 | % | **96.5** | **95.3** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | PWS_EB_TOILETS_0.1 | PWS_EB_TOILETS_0.5 | PWS_CAS_TOILETS_0.1 | PWS_CAS_TOILETS_0.5 | PWS_HEAD_TOILETS_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-001 | ES2115699-002 | ES2115699-003 | ES2115699-004 | ES2115699-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | **7.4** | **7.6** | **14.4** | **23.6** | **20.9** |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | **9.3** | **9.6** | **8.8** | **8.6** | **8.3** |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | **0.0005** | **0.0003** | **0.0003** | <0.0002 | **0.0004** |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | **0.001** | <0.001 | <0.001 | <0.001 | <0.001 |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | **0.0035** | **0.0021** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | **0.0041** | **0.0021** | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | **0.0009** | **0.0015** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | **0.0008** | **0.0008** | <0.0002 | <0.0002 | <0.0002 |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | **0.0009** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | **0.0098** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | **0.0004** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | **0.0007** | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | PWS_EB_TOILETS_0.1 | PWS_EB_TOILETS_0.5 | PWS_CAS_TOILETS_0.1 | PWS_CAS_TOILETS_0.5 | PWS_HEAD_TOILETS_0.1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 | 15-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-001 | ES2115699-002 | ES2115699-003 | ES2115699-004 | ES2115699-005 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | **0.0226** | **0.0068** | **0.0003** | <0.0002 | **0.0004** |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | **0.0005** | **0.0003** | **0.0003** | <0.0002 | **0.0004** |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | **0.0108** | **0.0068** | **0.0003** | <0.0002 | **0.0004** |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **77.0** | **72.5** | **88.5** | **87.5** | **92.0** |
| 13C8-PFOA | ---- | 0.0002 | % | **94.5** | **100** | **95.5** | **103** | **104** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | PWS_HEAD_TOILETS_0.5 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-006 | ES2115699-007 | ES2115699-008 | ES2115699-009 | ES2115699-010 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 21.1 | ---- | ---- | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| Final pH | ---- | 0.1 | pH Unit | 8.3 | 7.9 | 7.6 | 7.8 | 8.0 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | ---- | ---- | ---- | ---- |
| Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | PWS_HEAD_TOILETS_0.5 | A_SS64 | A_SS65 | A_SS66 | A_SS67 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 15-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-006 | ES2115699-007 | ES2115699-008 | ES2115699-009 | ES2115699-010 |
| | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | ---- | ---- | ---- | ---- |
| **EP231P: PFAS Sums** | | | | | | | | |
| Sum of PFAS | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| Sum of PFAS (WA DER List) | ---- | 0.0002 | mg/kg | <0.0002 | ---- | ---- | ---- | ---- |
| **EP231S: PFAS Surrogate** | | | | | | | | |
| 13C4-PFOS | ---- | 0.0002 | % | **87.0** | ---- | ---- | ---- | ---- |
| 13C8-PFOA | ---- | 0.0002 | % | **104** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS68 | A_SS69 | A_SS70 | A_SS71 | A_SS72 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-011 | ES2115699-012 | ES2115699-013 | ES2115699-014 | ES2115699-015 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.1** | **8.1** | **8.0** | **8.1** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS73 | A_SS74 | A_SS75 | A_SS76 | A_SS77 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-016 | ES2115699-017 | ES2115699-018 | ES2115699-019 | ES2115699-020 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.9** | **7.8** | **7.7** | **7.8** | **7.8** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS78 | A_SS79 | A_SS80 | A_SS81 | A_SS82 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-021 | ES2115699-022 | ES2115699-023 | ES2115699-024 | ES2115699-025 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.5** | **7.4** | **7.6** | **7.9** | **8.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS83 | A_SS84 | A_SS85 | A_SS86 | A_SS87 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-026 | ES2115699-027 | ES2115699-028 | ES2115699-029 | ES2115699-030 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.6** | **7.6** | **7.3** | **7.4** | **6.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS88 | A_SS89 | A_SS90 | A_SS91 | A_SS92 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-031 | ES2115699-032 | ES2115699-033 | ES2115699-034 | ES2115699-035 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.1** | **6.7** | **6.0** | **6.0** | **6.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS93 | A_SS94 | A_SS95 | A_SS96 | A_SS97 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-036 | ES2115699-037 | ES2115699-038 | ES2115699-039 | ES2115699-040 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.0** | **6.4** | **6.4** | **5.7** | **7.0** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS98 | A_SS99 | A_SS100 | A_SS101 | A_SS102 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-041 | ES2115699-042 | ES2115699-043 | ES2115699-044 | ES2115699-045 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.9** | **6.9** | **7.7** | **8.6** | **7.9** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS103 | A_SS104 | A_SS105 | A_SS106 | A_SS107 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-046 | ES2115699-047 | ES2115699-048 | ES2115699-049 | ES2115699-050 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **7.3** | **8.1** | **6.6** | **5.0** | **9.2** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS108 | A_SS109 | A_SS110 | A_SS111 | A_SS112 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-051 | ES2115699-052 | ES2115699-053 | ES2115699-054 | ES2115699-055 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.4** | **8.3** | **8.6** | **5.5** | **5.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS113 | A_SS114 | A_SS115 | A_SS136 | A_SS137 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-056 | ES2115699-057 | ES2115699-058 | ES2115699-059 | ES2115699-060 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.0** | **6.4** | **4.9** | **7.5** | **6.5** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | A_SS138 | A_SS139 | QC13 | QC02 | QC17 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 16-Mar-2021 00:00 | 16-Mar-2021 00:00 | 09-Mar-2021 00:00 | 09-Mar-2021 00:00 | 10-Mar-2021 00:00 |
| Compound | CAS Number | LOR | Unit | ES2115699-061 | ES2115699-062 | ES2115699-063 | ES2115699-064 | ES2115699-065 |
| | | | | Result | Result | Result | Result | Result |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **6.9** | **7.7** | **6.0** | **6.4** | **7.1** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Sample ID | QC23 | QC19 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 10-Mar-2021 00:00 | 10-Mar-2021 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2115699-067 | ES2115699-068 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | | |
| **Final pH** | ---- | 0.1 | pH Unit | **8.3** | **7.3** | **----** | **----** | **----** |

## Surrogate Control Limits

| Sub-Matrix: DI WATER LEACHATE | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

| Sub-Matrix: SOIL | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP231S: PFAS Surrogate** | | | |
| 13C4-PFOS | ---- | 60 | 120 |
| 13C8-PFOA | ---- | 60 | 120 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115699** | Page | : 1 of 19 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Order number | : ---- | Date Analysis Commenced | : 30-Apr-2021 |
| C-O-C number | : ---- | Issue Date | : 10-May-2021 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : SY/665/19 | | |
| No. of samples received | : 68 | | |
| No. of samples analysed | : 67 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3660225)** | | | | | | | | | |
| ES2115222-054 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 33.2 | 32.6 | 2.05 | 0% - 20% |
| ES2116632-003 | Anonymous | EA055: Moisture Content | ---- | 0.1 | % | 19.1 | 21.1 | 9.72 | 0% - 20% |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3656758)** | | | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0034 | 0.0033 | 0.00 | 0% - 50% |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| ES2115516-016 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | 0.0002 | 0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | 0.0019 | 0.0018 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3656758)** | | | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | 0.0003 | 0.0003 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3656758) - continued** | | | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| ES2115516-016 | Anonymous | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | <0.001 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3656758)** | | | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2115516-016 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | <0.0002 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3656758)** | | | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| ES2115516-016 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | <0.0005 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3660212)** | | | | | | | | | |
| ES2115699-001 | PWS_EB_TOILETS_0.1 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.02 | 0.03 | 55.6 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| ES2115699-011 | A_SS68 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.02 | 0.01 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3660603)** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| ES2115699-029 | A_SS86 | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | 0.13 | 0.15 | 9.9 | 0% - 50% |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3660603) - continued** | | | | | | | | | |
| ES2115699-029 | A_SS86 | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | 0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3661461)** | | | | | | | | | |
| EB2111376-034 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| ES2114948-001 | Anonymous | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3660212)** | | | | | | | | | |
| ES2115699-001 | PWS_EB_TOILETS_0.1 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | 0.04 | 0.04 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | 0.27 | 0.26 | 0.00 | 0% - 50% |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | 0.28 | 0.28 | 0.00 | 0% - 50% |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | 0.04 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | 0.03 | 0.03 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | 0.23 | 0.19 | 17.1 | 0% - 50% |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| ES2115699-011 | A_SS68 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3660603)** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.0 | No Limit |
| ES2115699-029 | A_SS86 | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | 0.01 | 0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.0 | No Limit |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3661461)** | | | | | | | | | |
| EB2111376-034 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| ES2114948-001 | Anonymous | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3661461) - continued** | | | | | | | | | |
| ES2114948-001 | Anonymous | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | <0.1 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3660212)** | | | | | | | | | |
| ES2115699-001 | PWS_EB_TOILETS_0.1 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115699-011 | A_SS68 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3660603)** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3660603) - continued** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| ES2115699-029 | A_SS86 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3661461)** | | | | | | | | | |
| EB2111376-034 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2114948-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | <0.02 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3661461) - continued** | | | | | | | | | |
| ES2114948-001 | Anonymous | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3660212)** | | | | | | | | | |
| ES2115699-001 | PWS_EB_TOILETS_0.1 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2115699-011 | A_SS68 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3660603)** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| ES2115699-029 | A_SS86 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3661461)** | | | | | | | | | |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
|---|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3661461) - continued** | | | | | | | | | |
| EB2111376-034 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| ES2114948-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | <0.05 | 0.00 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3660212)** | | | | | | | | | |
| ES2115699-001 | PWS_EB_TOILETS_0.1 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.91 | 0.86 | 5.65 | 0% - 20% |
| ES2115699-011 | A_SS68 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.02 | 0.01 | 66.7 | No Limit |
| **EP231P: PFAS Sums (QC Lot: 3660603)** | | | | | | | | | |
| ES2115699-019 | A_SS76 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | 0.0 | No Limit |
| ES2115699-029 | A_SS86 | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | 0.16 | 0.17 | 6.1 | 0% - 50% |
| **EP231P: PFAS Sums (QC Lot: 3661461)** | | | | | | | | | |
| EB2111376-034 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |
| ES2114948-001 | Anonymous | EP231X: Sum of PFAS | ---- | 0.01 | µg/L | <0.01 | <0.01 | 0.00 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3656758)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 87.2 | 72.0 | 128 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.8 | 73.0 | 123 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 85.6 | 67.0 | 130 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 84.4 | 70.0 | 132 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 91.6 | 68.0 | 136 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 84.8 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3656758)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.001 | mg/kg | <0.001 | 0.00625 mg/kg | 98.6 | 71.0 | 135 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 69.0 | 132 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 92.8 | 70.0 | 132 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 94.4 | 71.0 | 131 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 96.0 | 69.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 97.6 | 72.0 | 129 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 69.0 | 133 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 64.0 | 136 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 110 | 69.0 | 135 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 105 | 66.0 | 139 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 92.6 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3656758)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 102 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 99.7 | 71.6 | 129 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 111 | 69.8 | 131 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 97.1 | 68.7 | 130 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.0005 | mg/kg | <0.0005 | 0.00312 mg/kg | 110 | 65.1 | 134 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 103 | 63.0 | 144 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.0002 | mg/kg | <0.0002 | 0.00125 mg/kg | 101 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3656758)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 90.4 | 62.0 | 145 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 90.4 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 96.8 | 65.0 | 137 |

Sub-Matrix: **SOIL**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3656758) - continued** | | | | | | | | |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.0005 | mg/kg | <0.0005 | 0.00125 mg/kg | 87.2 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3660212)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 127 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 95.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3660603)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 102 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.0 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 90.2 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 95.4 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 105 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3660820)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 85.4 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 83.4 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 81.8 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 131 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 114 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 84.0 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3661461)** | | | | | | | | |
| EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 96.4 | 72.0 | 130 |
| EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 101 | 71.0 | 127 |
| EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 94.4 | 68.0 | 131 |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 130 | 69.0 | 134 |
| EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 93.8 | 65.0 | 140 |
| EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660212)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 114 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 117 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 121 | 71.0 | 133 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report Result | Laboratory Control Spike (LCS) Report Spike Concentration | Spike Recovery (%) LCS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660212) - continued** | | | | | | | | |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 129 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 133 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660603)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 112 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 105 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 97.8 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 103 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 118 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 108 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 103 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660820)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 114 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 102 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 85.8 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 99.8 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 104 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 78.2 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 86.0 | 71.0 | 129 |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 98.4 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 82.2 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 142 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3661461)** | | | | | | | | |
| EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.1 | µg/L | <0.1 | 1.25 µg/L | 97.8 | 73.0 | 129 |
| EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 115 | 72.0 | 129 |
| EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 72.0 | 129 |
| EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 109 | 72.0 | 130 |
| EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.01 | µg/L | <0.01 | 0.25 µg/L | 121 | 71.0 | 133 |
| EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 114 | 69.0 | 130 |
| EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 126 | 71.0 | 129 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3661461) - continued** | | | | | | | | |
| EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 69.0 | 133 |
| EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 122 | 72.0 | 134 |
| EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 124 | 65.0 | 144 |
| EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 108 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660212)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 125 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 89.4 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 87.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 112 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 103 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 116 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 121 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660603)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 119 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 107 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 120 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 113 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 113 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 104 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660820)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 107 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 106 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 90.7 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 68.9 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 124 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 93.4 | 65.0 | 136 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660820) - continued** | | | | | | | | |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 88.2 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3661461)** | | | | | | | | |
| EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 103 | 67.0 | 137 |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 96.3 | 68.0 | 141 |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 97.8 | 62.6 | 147 |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 116 | 66.0 | 145 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.05 | µg/L | <0.05 | 0.625 µg/L | 98.3 | 57.6 | 145 |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 120 | 65.0 | 136 |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.02 | µg/L | <0.02 | 0.25 µg/L | 132 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3660212)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 110 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 121 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 125 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 142 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3660603)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 109 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 99.8 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 98.2 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 98.8 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3660820)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 127 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 106 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 120 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3661461)** | | | | | | | | |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 97.0 | 63.0 | 143 |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 92.0 | 64.0 | 140 |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 119 | 67.0 | 138 |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.05 | µg/L | <0.05 | 0.25 µg/L | 94.0 | 71.4 | 144 |

## *Matrix Spike (MS) Report*

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3656758)** | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.00125 mg/kg | 91.6 | 72.0 | 128 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.00125 mg/kg | 102 | 73.0 | 123 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.00125 mg/kg | 89.2 | 67.0 | 130 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.00125 mg/kg | 88.8 | 70.0 | 132 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.00125 mg/kg | 107 | 68.0 | 136 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.00125 mg/kg | 92.8 | 59.0 | 134 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3656758)** | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 0.00625 mg/kg | 106 | 71.0 | 135 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.00125 mg/kg | 108 | 69.0 | 132 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.00125 mg/kg | 96.4 | 70.0 | 132 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.00125 mg/kg | 104 | 71.0 | 131 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.00125 mg/kg | 103 | 69.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.00125 mg/kg | 110 | 72.0 | 129 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.00125 mg/kg | 103 | 69.0 | 133 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.00125 mg/kg | 112 | 64.0 | 136 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.00125 mg/kg | 127 | 69.0 | 135 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.00125 mg/kg | 109 | 66.0 | 139 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.00312 mg/kg | 101 | 69.0 | 133 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3656758)** | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.00125 mg/kg | 108 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.00312 mg/kg | 105 | 71.6 | 129 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.00312 mg/kg | 112 | 69.8 | 131 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.00312 mg/kg | 112 | 68.7 | 130 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.00312 mg/kg | 102 | 65.1 | 134 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.00125 mg/kg | 88.8 | 63.0 | 144 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.00125 mg/kg | 96.4 | 61.0 | 139 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3656758)** | | | | | | | |
| EB2111571-001 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.00125 mg/kg | 99.6 | 62.0 | 145 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.00125 mg/kg | 94.4 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.00125 mg/kg | 109 | 65.0 | 137 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.00125 mg/kg | 106 | 69.2 | 143 |

Sub-Matrix: **WATER**

| Matrix Spike (MS) Report: Spike | SpikeRecovery(%) | Acceptable Limits (%) |
|---|---|---|

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3660212)** | | | | | | | |
| ES2115699-002 | PWS_EB_TOILETS_0.5 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 129 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 126 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 113 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 118 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 94.0 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 129 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3660603)** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 126 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 105 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 102 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 113 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 95.4 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 124 | 53.0 | 142 |
| **EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3661461)** | | | | | | | |
| EB2111376-035 | Anonymous | EP231X: Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.25 µg/L | 118 | 72.0 | 130 |
| | | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4 | 0.25 µg/L | 114 | 71.0 | 127 |
| | | EP231X: Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | 0.25 µg/L | 107 | 68.0 | 131 |
| | | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | 0.25 µg/L | 120 | 69.0 | 134 |
| | | EP231X: Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | 0.25 µg/L | 96.4 | 65.0 | 140 |
| | | EP231X: Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | 0.25 µg/L | 138 | 53.0 | 142 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660212)** | | | | | | | |
| ES2115699-002 | PWS_EB_TOILETS_0.5 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 120 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 106 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 122 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 121 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 120 | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 130 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | # 186 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 133 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 127 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 124 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 120 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660603)** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 110 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 111 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 112 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 114 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 117 | 71.0 | 133 |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3660603) - continued** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 122 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 127 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 128 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 110 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 121 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 116 | 71.0 | 132 |
| **EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3661461)** | | | | | | | |
| EB2111376-035 | Anonymous | EP231X: Perfluorobutanoic acid (PFBA) | 375-22-4 | 1.25 µg/L | 110 | 73.0 | 129 |
| | | EP231X: Perfluoropentanoic acid (PFPeA) | 2706-90-3 | 0.25 µg/L | 128 | 72.0 | 129 |
| | | EP231X: Perfluorohexanoic acid (PFHxA) | 307-24-4 | 0.25 µg/L | 124 | 72.0 | 129 |
| | | EP231X: Perfluoroheptanoic acid (PFHpA) | 375-85-9 | 0.25 µg/L | 127 | 72.0 | 130 |
| | | EP231X: Perfluorooctanoic acid (PFOA) | 335-67-1 | 0.25 µg/L | 131 | 71.0 | 133 |
| | | EP231X: Perfluorononanoic acid (PFNA) | 375-95-1 | 0.25 µg/L | 120 | 69.0 | 130 |
| | | EP231X: Perfluorodecanoic acid (PFDA) | 335-76-2 | 0.25 µg/L | 123 | 71.0 | 129 |
| | | EP231X: Perfluoroundecanoic acid (PFUnDA) | 2058-94-8 | 0.25 µg/L | 131 | 69.0 | 133 |
| | | EP231X: Perfluorododecanoic acid (PFDoDA) | 307-55-1 | 0.25 µg/L | 131 | 72.0 | 134 |
| | | EP231X: Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | 0.25 µg/L | 133 | 65.0 | 144 |
| | | EP231X: Perfluorotetradecanoic acid (PFTeDA) | 376-06-7 | 0.625 µg/L | 116 | 71.0 | 132 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660212)** | | | | | | | |
| ES2115699-002 | PWS_EB_TOILETS_0.5 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 131 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 107 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 107 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 116 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 130 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 120 | 65.0 | 136 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 114 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660603)** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 125 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 116 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 123 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 124 | 66.0 | 145 |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%) MS | Acceptable Limits (%) Low | High |
|---|---|---|---|---|---|---|---|
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3660603) - continued** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 124 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 125 | 65.0 | 136 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 115 | 61.0 | 135 |
| **EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3661461)** | | | | | | | |
| EB2111376-035 | Anonymous | EP231X: Perfluorooctane sulfonamide (FOSA) | 754-91-6 | 0.25 µg/L | 103 | 67.0 | 137 |
| | | EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA) | 31506-32-8 | 0.625 µg/L | 101 | 68.0 | 141 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2 | 0.625 µg/L | 109 | 62.6 | 147 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | 24448-09-7 | 0.625 µg/L | 100 | 66.0 | 145 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.625 µg/L | 104 | 57.6 | 145 |
| | | EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.25 µg/L | 132 | 65.0 | 136 |
| | | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.25 µg/L | 128 | 61.0 | 135 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3660212)** | | | | | | | |
| ES2115699-002 | PWS_EB_TOILETS_0.5 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 112 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 118 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | # 145 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 71.6 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3660603)** | | | | | | | |
| ES2115699-020 | A_SS77 | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 105 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 122 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 120 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | 127 | 71.4 | 144 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3661461)** | | | | | | | |
| EB2111376-035 | Anonymous | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.25 µg/L | 121 | 63.0 | 143 |
| | | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.25 µg/L | 117 | 64.0 | 140 |
| | | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.25 µg/L | 112 | 67.0 | 138 |
| | | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.25 µg/L | # 150 | 71.4 | 144 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2115699** | Page | : 1 of 12 |
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Telephone | : +61 2 8784 8555 |
| Project | : S17776 DSI | Date Samples Received | : 26-Mar-2021 |
| Site | : ---- | Issue Date | : 10-May-2021 |
| Sampler | : ---- | No. of samples received | : 68 |
| Order number | : ---- | No. of samples analysed | : 67 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **WATER**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP231B: Perfluoroalkyl Carboxylic Acids | ES2115699--002 | PWS_EB_TOILETS_0.5 | **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 186 % | 71.0-129% | **Recovery greater than upper data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | ES2115699--002 | PWS_EB_TOILETS_0.5 | **8:2 Fluorotelomer sulfonic acid (8:2 FTS)** | 39108-34-4 | 145 % | 67.0-138% | **Recovery greater than upper data quality objective** |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids | EB2111376--035 | Anonymous | **10:2 Fluorotelomer sulfonic acid (10:2 FTS)** | 120226-60-0 | 150 % | 71.4-144% | **Recovery greater than upper data quality objective** |

## Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

| Method / Container / Client Sample ID(s) | | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **HDPE Soil Jar** | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | ---- | ---- | ---- | 05-May-2021 | 29-Mar-2021 | **37** |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type / Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 6 | 73 | 8.22 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | 3 | 73 | 4.11 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| **HDPE Soil Jar (EA055)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **----** | ---- | ---- | **05-May-2021** | 29-Mar-2021 | ✗ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)** | | | | | | | |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97, QC13, QC02 | **09-Mar-2021** | **02-May-2021** | 05-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82 | **09-Mar-2021** | **30-Apr-2021** | 05-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>A_SS87, A_SS88, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, QC17, QC23, QC19 | **10-Mar-2021** | **02-May-2021** | 06-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>A_SS83, A_SS84, A_SS85, A_SS86 | **10-Mar-2021** | **30-Apr-2021** | 06-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>PWS_EB_TOILETS_0.1, PWS_EB_TOILETS_0.5, PWS_CAS_TOILETS_0.1, PWS_CAS_TOILETS_0.5, PWS_HEAD_TOILETS_0.1, PWS_HEAD_TOILETS_0.5 | **15-Mar-2021** | **30-Apr-2021** | 11-Sep-2021 | ✓ | **----** | ---- | ---- |
| **Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)**<br>A_SS136, A_SS137, A_SS138, A_SS139 | **16-Mar-2021** | **02-May-2021** | 12-Sep-2021 | ✓ | **----** | ---- | ---- |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **04-May-2021** | 11-Sep-2021 | ✓ | **05-May-2021** | 13-Jun-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **04-May-2021** | 11-Sep-2021 | ✓ | **05-May-2021** | 13-Jun-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **04-May-2021** | 11-Sep-2021 | ✓ | **05-May-2021** | 13-Jun-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **04-May-2021** | 11-Sep-2021 | ✓ | **05-May-2021** | 13-Jun-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |
| **EP231P: PFAS Sums** | | | | | | | | |
| **HDPE Soil Jar (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **15-Mar-2021** | **04-May-2021** | 11-Sep-2021 | ✓ | **05-May-2021** | 13-Jun-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5 | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_SS87, | A_SS88, | **02-May-2021** | **06-May-2021** | 29-Oct-2021 | ✓ | **06-May-2021** | 29-Oct-2021 | ✓ |
| A_SS89, | A_SS90, | | | | | | | |
| A_SS91, | A_SS92, | | | | | | | |
| A_SS93, | A_SS94, | | | | | | | |
| A_SS95, | A_SS96, | | | | | | | |
| A_SS97, | A_SS98, | | | | | | | |
| A_SS99, | A_SS100, | | | | | | | |
| A_SS101, | A_SS102, | | | | | | | |
| A_SS103, | A_SS104, | | | | | | | |
| A_SS105, | A_SS106, | | | | | | | |
| A_SS107, | A_SS108, | | | | | | | |
| A_SS109, | A_SS110, | | | | | | | |
| A_SS111, | A_SS112, | | | | | | | |
| A_SS113, | A_SS114, | | | | | | | |
| A_SS115, | A_SS136, | | | | | | | |
| A_SS137, | A_SS138, | | | | | | | |
| A_SS139, | QC13, | | | | | | | |
| QC02, | QC17, | | | | | | | |
| QC23, | QC19 | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **30-Apr-2021** | **06-May-2021** | 27-Oct-2021 | ✓ | **06-May-2021** | 27-Oct-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5, | | | | | | | |
| A_SS64, | A_SS65, | | | | | | | |
| A_SS66, | A_SS67, | | | | | | | |
| A_SS68, | A_SS69, | | | | | | | |
| A_SS70, | A_SS71, | | | | | | | |
| A_SS72, | A_SS73, | | | | | | | |
| A_SS74, | A_SS75, | | | | | | | |
| A_SS76, | A_SS77, | | | | | | | |
| A_SS78, | A_SS79, | | | | | | | |
| A_SS80, | A_SS81, | | | | | | | |
| A_SS82, | A_SS83, | | | | | | | |
| A_SS84, | A_SS85, | | | | | | | |
| A_SS86 | | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SS87, A_SS88, A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, A_SS136, A_SS137, A_SS138, A_SS139, QC13, QC02, QC17, QC23, QC19 | **02-May-2021** | **06-May-2021** | 29-Oct-2021 | ✓ | **06-May-2021** | 29-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS_0.1, PWS_EB_TOILETS_0.5, PWS_CAS_TOILETS_0.1, PWS_CAS_TOILETS_0.5, PWS_HEAD_TOILETS_0.1, PWS_HEAD_TOILETS_0.5, A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82, A_SS83, A_SS84, A_SS85, A_SS86 | **30-Apr-2021** | **06-May-2021** | 27-Oct-2021 | ✓ | **06-May-2021** | 27-Oct-2021 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_SS87, | A_SS88, | **02-May-2021** | **06-May-2021** | 29-Oct-2021 | ✓ | **06-May-2021** | 29-Oct-2021 | ✓ |
| A_SS89, | A_SS90, | | | | | | | |
| A_SS91, | A_SS92, | | | | | | | |
| A_SS93, | A_SS94, | | | | | | | |
| A_SS95, | A_SS96, | | | | | | | |
| A_SS97, | A_SS98, | | | | | | | |
| A_SS99, | A_SS100, | | | | | | | |
| A_SS101, | A_SS102, | | | | | | | |
| A_SS103, | A_SS104, | | | | | | | |
| A_SS105, | A_SS106, | | | | | | | |
| A_SS107, | A_SS108, | | | | | | | |
| A_SS109, | A_SS110, | | | | | | | |
| A_SS111, | A_SS112, | | | | | | | |
| A_SS113, | A_SS114, | | | | | | | |
| A_SS115, | A_SS136, | | | | | | | |
| A_SS137, | A_SS138, | | | | | | | |
| A_SS139, | QC13, | | | | | | | |
| QC02, | QC17, | | | | | | | |
| QC23, | QC19 | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **30-Apr-2021** | **06-May-2021** | 27-Oct-2021 | ✓ | **06-May-2021** | 27-Oct-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5, | | | | | | | |
| A_SS64, | A_SS65, | | | | | | | |
| A_SS66, | A_SS67, | | | | | | | |
| A_SS68, | A_SS69, | | | | | | | |
| A_SS70, | A_SS71, | | | | | | | |
| A_SS72, | A_SS73, | | | | | | | |
| A_SS74, | A_SS75, | | | | | | | |
| A_SS76, | A_SS77, | | | | | | | |
| A_SS78, | A_SS79, | | | | | | | |
| A_SS80, | A_SS81, | | | | | | | |
| A_SS82, | A_SS83, | | | | | | | |
| A_SS84, | A_SS85, | | | | | | | |
| A_SS86 | | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| A_SS87, | A_SS88, | **02-May-2021** | **06-May-2021** | 29-Oct-2021 | ✓ | **06-May-2021** | 29-Oct-2021 | ✓ |
| A_SS89, | A_SS90, | | | | | | | |
| A_SS91, | A_SS92, | | | | | | | |
| A_SS93, | A_SS94, | | | | | | | |
| A_SS95, | A_SS96, | | | | | | | |
| A_SS97, | A_SS98, | | | | | | | |
| A_SS99, | A_SS100, | | | | | | | |
| A_SS101, | A_SS102, | | | | | | | |
| A_SS103, | A_SS104, | | | | | | | |
| A_SS105, | A_SS106, | | | | | | | |
| A_SS107, | A_SS108, | | | | | | | |
| A_SS109, | A_SS110, | | | | | | | |
| A_SS111, | A_SS112, | | | | | | | |
| A_SS113, | A_SS114, | | | | | | | |
| A_SS115, | A_SS136, | | | | | | | |
| A_SS137, | A_SS138, | | | | | | | |
| A_SS139, | QC13, | | | | | | | |
| QC02, | QC17, | | | | | | | |
| QC23, | QC19 | | | | | | | |
| **HDPE (no PTFE) (EP231X)** | | | | | | | | |
| PWS_EB_TOILETS_0.1, | PWS_EB_TOILETS_0.5, | **30-Apr-2021** | **06-May-2021** | 27-Oct-2021 | ✓ | **06-May-2021** | 27-Oct-2021 | ✓ |
| PWS_CAS_TOILETS_0.1, | PWS_CAS_TOILETS_0.5, | | | | | | | |
| PWS_HEAD_TOILETS_0.1, | PWS_HEAD_TOILETS_0.5, | | | | | | | |
| A_SS64, | A_SS65, | | | | | | | |
| A_SS66, | A_SS67, | | | | | | | |
| A_SS68, | A_SS69, | | | | | | | |
| A_SS70, | A_SS71, | | | | | | | |
| A_SS72, | A_SS73, | | | | | | | |
| A_SS74, | A_SS75, | | | | | | | |
| A_SS76, | A_SS77, | | | | | | | |
| A_SS78, | A_SS79, | | | | | | | |
| A_SS80, | A_SS81, | | | | | | | |
| A_SS82, | A_SS83, | | | | | | | |
| A_SS84, | A_SS85, | | | | | | | |
| A_SS86 | | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP231P: PFAS Sums** | | | | | | | |
| **HDPE (no PTFE) (EP231X)**<br>A_SS87, A_SS88, A_SS89, A_SS90, A_SS91, A_SS92, A_SS93, A_SS94, A_SS95, A_SS96, A_SS97, A_SS98, A_SS99, A_SS100, A_SS101, A_SS102, A_SS103, A_SS104, A_SS105, A_SS106, A_SS107, A_SS108, A_SS109, A_SS110, A_SS111, A_SS112, A_SS113, A_SS114, A_SS115, A_SS136, A_SS137, A_SS138, A_SS139, QC13, QC02, QC17, QC23, QC19 | **02-May-2021** | **06-May-2021** | 29-Oct-2021 | ✓ | **06-May-2021** | 29-Oct-2021 | ✓ |
| **HDPE (no PTFE) (EP231X)**<br>PWS_EB_TOILETS_0.1, PWS_EB_TOILETS_0.5, PWS_CAS_TOILETS_0.1, PWS_CAS_TOILETS_0.5, PWS_HEAD_TOILETS_0.1, PWS_HEAD_TOILETS_0.5, A_SS64, A_SS65, A_SS66, A_SS67, A_SS68, A_SS69, A_SS70, A_SS71, A_SS72, A_SS73, A_SS74, A_SS75, A_SS76, A_SS77, A_SS78, A_SS79, A_SS80, A_SS81, A_SS82, A_SS83, A_SS84, A_SS85, A_SS86 | **30-Apr-2021** | **06-May-2021** | 27-Oct-2021 | ✓ | **06-May-2021** | 27-Oct-2021 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 6 | 73 | **8.22** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 73 | **5.48** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 4 | 73 | **5.48** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | 3 | 73 | **4.11** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X | SOIL | In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Deionised Water Leach - Plastic Leaching Vessel | EN60-DIa-P | SOIL | In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates |
| QuECheRS Extraction of Solids | ORG71 | SOIL | In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent. |
| Solid Phase Extraction (SPE) for PFAS in water | ORG72 | SOIL | In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements. |

ALS Environmental

# SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : **ES2115699**

| | | | |
|---|---|---|---|
| Client | : **SENVERSA PTY LTD** | Laboratory | : Environmental Division Sydney |
| Contact | : CARLYN WILLIAMS | Contact | : Brenda Hong |
| Address | : Level 5, Grafton Bond Building 201 Kent Street SYDNEY NSW 2000 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| E-mail | : carlyn.williams@senversa.com.au | E-mail | : Brenda.Hong@ALSGlobal.com |
| Telephone | : ---- | Telephone | : +61 2 8784 8555 |
| Facsimile | : ---- | Facsimile | : +61-2-8784 8500 |
| Project | : S17776 DSI | Page | : 1 of 4 |
| Order number | : ---- | Quote number | : ES2019SENVER0020 (SY/665/19) |
| C-O-C number | : ---- | QC Level | : NEPM 2013 B3 & ALS QC Standard |
| Site | : ---- | | |
| Sampler | : | | |

## Dates

| | | | |
|---|---|---|---|
| Date Samples Received | : 26-Mar-2021 11:00 | Issue Date | : 30-Apr-2021 |
| Client Requested Due Date | : 07-May-2021 | Scheduled Reporting Date | : **07-May-2021** |

## Delivery Details

| | | | |
|---|---|---|---|
| Mode of Delivery | : Samples On Hand | Security Seal | : Not Available |
| No. of coolers/boxes | : ---- | Temperature | : ---- |
| Receipt Detail | : | No. of samples received / analysed | : 67 / 68 |
| | | No. of samples NOT collected | 1 |

## General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the addition of sample QC19.
- **This is a rebatch of ES2111280, ES2111278 & ES2111279.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Sample QC19 was not received due to the following reason: Sample not received
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2115699-005 : [ 15-Mar-2021 ] : PWS_HEAD_TOILETS_0.1
ES2115699-006 : [ 15-Mar-2021 ] : PWS_HEAD_TOILETS_0.5

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

| Laboratory sample ID | Sampling date / time | Sample ID | SOIL - EA055-103 Moisture Content | SOIL - EN60-Dla-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|---|
| ES2115699-001 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.1 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-002 | 15-Mar-2021 00:00 | PWS_EB_TOILETS_0.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-003 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.1 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-004 | 15-Mar-2021 00:00 | PWS_CAS_TOILETS_0.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-005 | 15-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.1 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-006 | 15-Mar-2021 00:00 | PWS_HEAD_TOILETS_0.5 | ✓ | ✓ | ✓ | ✓ |
| ES2115699-007 | 09-Mar-2021 00:00 | A_SS64 | | ✓ | | ✓ |
| ES2115699-008 | 09-Mar-2021 00:00 | A_SS65 | | ✓ | | ✓ |
| ES2115699-009 | 09-Mar-2021 00:00 | A_SS66 | | ✓ | | ✓ |
| ES2115699-010 | 09-Mar-2021 00:00 | A_SS67 | | ✓ | | ✓ |
| ES2115699-011 | 09-Mar-2021 00:00 | A_SS68 | | ✓ | | ✓ |
| ES2115699-012 | 09-Mar-2021 00:00 | A_SS69 | | ✓ | | ✓ |
| ES2115699-013 | 09-Mar-2021 00:00 | A_SS70 | | ✓ | | ✓ |
| ES2115699-014 | 09-Mar-2021 00:00 | A_SS71 | | ✓ | | ✓ |
| ES2115699-015 | 09-Mar-2021 00:00 | A_SS72 | | ✓ | | ✓ |
| ES2115699-016 | 09-Mar-2021 00:00 | A_SS73 | | ✓ | | ✓ |
| ES2115699-017 | 09-Mar-2021 00:00 | A_SS74 | | ✓ | | ✓ |
| ES2115699-018 | 09-Mar-2021 00:00 | A_SS75 | | ✓ | | ✓ |
| ES2115699-019 | 09-Mar-2021 00:00 | A_SS76 | | ✓ | | ✓ |
| ES2115699-020 | 09-Mar-2021 00:00 | A_SS77 | | ✓ | | ✓ |
| ES2115699-021 | 09-Mar-2021 00:00 | A_SS78 | | ✓ | | ✓ |
| ES2115699-022 | 09-Mar-2021 00:00 | A_SS79 | | ✓ | | ✓ |
| ES2115699-023 | 09-Mar-2021 00:00 | A_SS80 | | ✓ | | ✓ |
| ES2115699-024 | 09-Mar-2021 00:00 | A_SS81 | | ✓ | | ✓ |
| ES2115699-025 | 09-Mar-2021 00:00 | A_SS82 | | ✓ | | ✓ |
| ES2115699-026 | 10-Mar-2021 00:00 | A_SS83 | | ✓ | | ✓ |
| ES2115699-027 | 10-Mar-2021 00:00 | A_SS84 | | ✓ | | ✓ |
| ES2115699-028 | 10-Mar-2021 00:00 | A_SS85 | | ✓ | | ✓ |
| ES2115699-029 | 10-Mar-2021 00:00 | A_SS86 | | ✓ | | ✓ |
| ES2115699-030 | 10-Mar-2021 00:00 | A_SS87 | | ✓ | | ✓ |
| ES2115699-031 | 10-Mar-2021 00:00 | A_SS88 | | ✓ | | ✓ |
| ES2115699-032 | 09-Mar-2021 00:00 | A_SS89 | | ✓ | | ✓ |

| | | | SOIL - EA055-103 Moisture Content | SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel | SOIL - EP231X (solids) PFAS - Full Suite (28 analytes) | SOIL - EP231X PFAS - Full Suite (28 analytes) |
|---|---|---|---|---|---|---|
| ES2115699-033 | 09-Mar-2021 00:00 | A_SS90 | | ✓ | | ✓ |
| ES2115699-034 | 09-Mar-2021 00:00 | A_SS91 | | ✓ | | ✓ |
| ES2115699-035 | 09-Mar-2021 00:00 | A_SS92 | | ✓ | | ✓ |
| ES2115699-036 | 09-Mar-2021 00:00 | A_SS93 | | ✓ | | ✓ |
| ES2115699-037 | 09-Mar-2021 00:00 | A_SS94 | | ✓ | | ✓ |
| ES2115699-038 | 09-Mar-2021 00:00 | A_SS95 | | ✓ | | ✓ |
| ES2115699-039 | 09-Mar-2021 00:00 | A_SS96 | | ✓ | | ✓ |
| ES2115699-040 | 09-Mar-2021 00:00 | A_SS97 | | ✓ | | ✓ |
| ES2115699-041 | 10-Mar-2021 00:00 | A_SS98 | | ✓ | | ✓ |
| ES2115699-042 | 10-Mar-2021 00:00 | A_SS99 | | ✓ | | ✓ |
| ES2115699-043 | 10-Mar-2021 00:00 | A_SS100 | | ✓ | | ✓ |
| ES2115699-044 | 10-Mar-2021 00:00 | A_SS101 | | ✓ | | ✓ |
| ES2115699-045 | 10-Mar-2021 00:00 | A_SS102 | | ✓ | | ✓ |
| ES2115699-046 | 10-Mar-2021 00:00 | A_SS103 | | ✓ | | ✓ |
| ES2115699-047 | 10-Mar-2021 00:00 | A_SS104 | | ✓ | | ✓ |
| ES2115699-048 | 10-Mar-2021 00:00 | A_SS105 | | ✓ | | ✓ |
| ES2115699-049 | 10-Mar-2021 00:00 | A_SS106 | | ✓ | | ✓ |
| ES2115699-050 | 10-Mar-2021 00:00 | A_SS107 | | ✓ | | ✓ |
| ES2115699-051 | 10-Mar-2021 00:00 | A_SS108 | | ✓ | | ✓ |
| ES2115699-052 | 10-Mar-2021 00:00 | A_SS109 | | ✓ | | ✓ |
| ES2115699-053 | 10-Mar-2021 00:00 | A_SS110 | | ✓ | | ✓ |
| ES2115699-054 | 10-Mar-2021 00:00 | A_SS111 | | ✓ | | ✓ |
| ES2115699-055 | 10-Mar-2021 00:00 | A_SS112 | | ✓ | | ✓ |
| ES2115699-056 | 10-Mar-2021 00:00 | A_SS113 | | ✓ | | ✓ |
| ES2115699-057 | 10-Mar-2021 00:00 | A_SS114 | | ✓ | | ✓ |
| ES2115699-058 | 10-Mar-2021 00:00 | A_SS115 | | ✓ | | ✓ |
| ES2115699-059 | 16-Mar-2021 00:00 | A_SS136 | | ✓ | | ✓ |
| ES2115699-060 | 16-Mar-2021 00:00 | A_SS137 | | ✓ | | ✓ |
| ES2115699-061 | 16-Mar-2021 00:00 | A_SS138 | | ✓ | | ✓ |
| ES2115699-062 | 16-Mar-2021 00:00 | A_SS139 | | ✓ | | ✓ |
| ES2115699-063 | 09-Mar-2021 00:00 | QC13 | | ✓ | | ✓ |
| ES2115699-064 | 09-Mar-2021 00:00 | QC02 | | ✓ | | ✓ |
| ES2115699-065 | 10-Mar-2021 00:00 | QC17 | | ✓ | | ✓ |
| ES2115699-067 | 10-Mar-2021 00:00 | QC23 | | ✓ | | ✓ |
| ES2115699-068 | 10-Mar-2021 00:00 | QC19 | | ✓ | | ✓ |

## *Proactive Holding Time Report*

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Client Sample ID(s) / Method | Container | Due for extraction | Due for analysis | Samples Received Date | Samples Received Evaluation | Instructions Received Date | Instructions Received Evaluation |
|---|---|---|---|---|---|---|---|
| **EA055: Moisture Content** | | | | | | | |
| PWS_CAS_TOILETS | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |
| PWS_CAS_TOILETS | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |
| PWS_EB_TOILETS_ | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |
| PWS_EB_TOILETS_ | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |
| PWS_HEAD_TOILET | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |
| PWS_HEAD_TOILET | HDPE Soil Jar | ---- | 29-Mar-2021 | 26-Mar-2021 | ✓ | 26-Apr-2021 | ✗ |

## *Requested Deliverables*

**CARLYN WILLIAMS**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | carlyn.williams@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | carlyn.williams@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | carlyn.williams@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | carlyn.williams@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | carlyn.williams@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | carlyn.williams@senversa.com.au |

**CHRIS SANDIFORD**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | Chris.Sandiford@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | Chris.Sandiford@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | Chris.Sandiford@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | Chris.Sandiford@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | Chris.Sandiford@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | Chris.Sandiford@senversa.com.au |

**HEBBIE PEDERSON**

| | | |
|---|---|---|
| - *AU Certificate of Analysis - NATA (COA) | Email | hebbie.pederson@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | hebbie.pederson@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | hebbie.pederson@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | hebbie.pederson@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | hebbie.pederson@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | hebbie.pederson@senversa.com.au |

**LUCINDA TRICKEY**

| | | |
|---|---|---|
| - A4 - AU Tax Invoice (INV) | Email | lucinda.trickey@senversa.com.au |

**Fadi Soro**

FAD: 26/4/21

**From:** Tyler Anderson
**Sent:** Friday, 23 April 2021 4:57 PM
**To:** Jessie Blake; Fadi Soro
**Cc:** Helen Simpson
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Jessie,

As discussed, they would like more samples analysed now:

**Total concentrations and leachability analysis**

| | SAMPLE ID (currently on HOLD) | Batch ID |
|---|---|---|
| 1 | PWS_EB_TOILETS_0.1 | ES2111280 |
| 2 | PWS_EB_TOILETS_0.5 | ES2111280 |
| 3 | PWS_CAS_TOILETS_0.1 | ES2111280 |
| 4 | PWS_CAS_TOILETS_0.5 | ES2111280 |
| 5 | PWS_HEAD_TOILETS_0.1 | ES2111280 |
| 6 | PWS_HEAD_TOILETS_0.5 | ES2111280 |

**Leachability analysis only**

| | SAMPLE ID | Batch ID |
|---|---|---|
| 7 | A_SS64 9/3 | ES2111278_1 |
| 8 | A_SS65 | ES2111278_1 |
| 9 | A_SS66 | ES2111278_1 |
| 10 | A_SS67 | ES2111278_1 |
| 11 | A_SS68 | ES2111278_1 |
| 12 | A_SS69 | ES2111278_1 |
| 13 | A_SS70 | ES2111278_1 |
| 14 | A_SS71 | ES2111278_1 |
| 15 | A_SS72 | ES2111278_1 |

ES2111280

QS 23, 22, 20, 18, QW 11, 20, 21, 59, 43

#23, 24, 26, 27, 29, 30, 1, 2, 3, 4, 39.

ES2111279

QS 31, 25, 27, 17, 30, 22 QW 20

#94, 88, 98, 101

ES2111278

QW 1, 8, 2, 42, 6, 52, 56

# ~~21, 22, 23, 24, 25, 26, 27, 28, 29~~

#21-72

Environmental Division
Sydney
Work Order Reference
ES2115699

Telephone : +61-2-8784 8555

| | | | |
|---|---|---|---|
| 16 | A_SS73 | | ES2111278_1 |
| 17 | A_SS74 | | ES2111278_1 |
| 18 | A_SS75 | | ES2111278_1 |
| 19 | A_SS76 | | ES2111278_1 |
| 20 | A_SS77 | | ES2111278_1 |
| 21 | A_SS78 | | ES2111278_1 |
| 22 | A_SS79 | | ES2111278_1 |
| 23 | A_SS80 | | ES2111278_1 |
| 24 | A_SS81 | | ES2111278_1 |
| 25 | A_SS82 | | ES2111278_1 |
| 26 | A_SS83 | 10\3 | ES2111278_1 |
| 27 | A_SS84 | | ES2111278_1 |
| 28 | A_SS85 | | ES2111278_1 |
| 29 | A_SS86 | | ES2111278_1 |
| 30 | A_SS87 | | ES2111278_1 |
| 31 | A_SS88 | | ES2111278_1 |
| 32 | A_SS89 | 9\3 | ES2111278_1 |
| 33 | A_SS90 | | ES2111278_1 |
| 34 | A_SS91 | | ES2111278_1 |
| 35 | A_SS92 | | ES2111278_1 |
| 36 | A_SS93 | | ES2111278_1 |
| 37 | A_SS94 | | ES2111278_1 |
| 38 | A_SS95 | | ES2111278_1 |
| 39 | A_SS96 | | ES2111278_1 |
| 40 | A_SS97 | | ES2111278_1 |
| 41 | A_SS98 | 10\3 | ES2111278_1 |
| 42 | A_SS99 | | ES2111278_1 |
| 43 | A_SS100 | | ES2111278_1 |
| 44 | A_SS101 | | ES2111278_1 |
| 45 | A_SS102 | | ES2111278_1 |
| 46 | A_SS103 | | ES2111278_1 |
| 47 | A_SS104 | | ES2111278_1 |
| 48 | A_SS105 | | ES2111278_1 |

| | | | |
|---|---|---|---|
| 49 | A_SS106 | | ES2111278_1 |
| 50 | A_SS107 | | ES2111278_1 |
| 51 | A_SS108 | | ES2111278_1 |
| 52 | A_SS109 | | ES2111278_1 |
| 53 | A_SS110 | | ES2111278_1 |
| 54 | A_SS111 | | ES2111278_1 |
| 55 | A_SS112 | | ES2111278_1 |
| 56 | A_SS113 | | ES2111278_1 |
| 57 | A_SS114 | | ES2111278_1 |
| 58 | A_SS115 | | ES2111278_1 |
| 59 | A_SS136 | 16/3 | ES_2111280_1 |
| 60 | A_SS137 | | ES_2111280_1 |
| 61 | A_SS138 | | ES_2111280_1 |
| 62 | A_SS139 | | ES_2111280_1 |
| 63 | QC13 | 9/3 | ES2111279 |
| 64 | QC02 | | ES2111279 |
| 65 | QC17 | 10/3 | ES2111279 |
| 66 | QC19 | SWR | ES2111279 |
| 67 | QC23 | | ES2111279 |

**Total concentrations and ensure lab QCs are completed (matrix spike & lab dups) – if** there are any issues please give me a call and we can discuss options **if lab QCs** will not be met.

| | SAMPLE ID | Batch ID |
|---|---|---|
| x | DUCK_DAMA | ES2111280 |

They have also asked the leachates to have the appropriate additional bottles added so that the lab QC can be completed. Can you please organise to add the extra bottles to each sample and add a lab remark to ask them to complete the QC analysis.

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

**SAMPLE RECEIPT INFORMATION & BOTTLE TYPE**

**WORKORDER No:**

**To be completed by Sample Receipt**

**Sorting Times** *(Only record for BP, Mobil & URS)*

Time Sorting Commenced:

Time Placed in Fridge:

Sorting to Fridge Target Time <1 Hour

**Temperature Details**

Sample Temp: .....°C .....°C .....°C

Chilling Method -

☐ Ice

☐ Ice Bricks

☐ No Chilling

**Packaging**

**Security Seal Intact?** ***Circle below***

☐ **YES** (Security seal intact)

☐ **NO** (Security seal broken)

☐ **NA** (No security seal used)

| **Packaging Type** | **No.** |
|---|---|
| | |
| Hard Esky | |
| Foam Esky | |

Other:

**Courier Details** (Mandatory for Quarantine)

Carrier:

Con Note:

**Samples checked, labelled and put in trays by:**

Initial:

Client Code:

**Sample Receipt Advice Comments - To be completed by Sorting Staff**

VOC analysis may be compromised as sample containers contained **headspace** *(list)*:

Details of any samples damaged during transit:

**Other Information** (e.g. Were bottles received that weren't completely filled) (e.g. If sample temperature is above 6°C add further detail here - Internal use only - Not for SRN):

**Tray Numbers:**

7/5/21

**Fadi Soro**

FAn: 26/4/21

**From:** Tyler Anderson
**Sent:** Friday, 23 April 2021 4:57 PM
**To:** Jessie Blake; Fadi Soro
**Cc:** Helen Simpson
**Subject:** RE: [EXTERNAL] - 17776 - Additional Analysis

Hi Jessie,

As discussed, they would like more samples analysed now:

**Total concentrations and leachability analysis**

| | SAMPLE ID (currently on HOLD) | Batch ID |
|---|---|---|
| 1 | PWS_EB_TOILETS_0.1 | ES2111280 |
| 2 | PWS_EB_TOILETS_0.5 | ES2111280 |
| 3 | PWS_CAS_TOILETS_0.1 | ES2111280 |
| 4 | PWS_CAS_TOILETS_0.5 | ES2111280 |
| 5 | PWS_HEAD_TOILETS_0.1 | ES2111280 |
| 6 | PWS_HEAD_TOILETS_0.5 | ES2111280 |

**Leachability analysis only**

| | SAMPLE ID | Batch ID |
|---|---|---|
| 7 | A_SS64 9/2 | ES2111278_1 |
| 8 | A_SS65 | ES2111278_1 |
| 9 | A_SS66 | ES2111278_1 |
| 10 | A_SS67 | ES2111278_1 |
| 11 | A_SS68 | ES2111278_1 |
| 12 | A_SS69 | ES2111278_1 |
| 13 | A_SS70 | ES2111278_1 |
| 14 | A_SS71 | ES2111278_1 |
| 15 | A_SS72 | ES2111278_1 |

ES2111280

QS22,20,18, QW11,20,21,59,43

#23,24,26,27,29,30, 1,2,3,4,39.

ES2111279

QS31,25,27,17,30,22 QW20

#94,88,98,101

ES2111278

QW1,8,2,42,6,52,56

# ~~21,22,23,24,25,26,27,28,29~~

#21-72

Environmental Division
Sydney
Work Order Reference
ES2115699

Telephone : + 61-2-8784 8555

| | | | |
|---|---|---|---|
| 16 | A_SS73 | | ES2111278_1 |
| 17 | A_SS74 | | ES2111278_1 |
| 18 | A_SS75 | | ES2111278_1 |
| 19 | A_SS76 | | ES2111278_1 |
| 20 | A_SS77 | | ES2111278_1 |
| 21 | A_SS78 | | ES2111278_1 |
| 22 | A_SS79 | | ES2111278_1 |
| 23 | A_SS80 | | ES2111278_1 |
| 24 | A_SS81 | | ES2111278_1 |
| 25 | A_SS82 | | ES2111278_1 |
| 26 | A_SS83 | 10/3 | ES2111278_1 |
| 27 | A_SS84 | | ES2111278_1 |
| 28 | A_SS85 | | ES2111278_1 |
| 29 | A_SS86 | | ES2111278_1 |
| 30 | A_SS87 | | ES2111278_1 |
| 31 | A_SS88 | | ES2111278_1 |
| 32 | A_SS89 | 9/3 | ES2111278_1 |
| 33 | A_SS90 | | ES2111278_1 |
| 34 | A_SS91 | | ES2111278_1 |
| 35 | A_SS92 | | ES2111278_1 |
| 36 | A_SS93 | | ES2111278_1 |
| 37 | A_SS94 | | ES2111278_1 |
| 38 | A_SS95 | | ES2111278_1 |
| 39 | A_SS96 | | ES2111278_1 |
| 40 | A_SS97 | | ES2111278_1 |
| 41 | A_SS98 | 10/3 | ES2111278_1 |
| 42 | A_SS99 | | ES2111278_1 |
| 43 | A_SS100 | | ES2111278_1 |
| 44 | A_SS101 | | ES2111278_1 |
| 45 | A_SS102 | | ES2111278_1 |
| 46 | A_SS103 | | ES2111278_1 |
| 47 | A_SS104 | | ES2111278_1 |
| 48 | A_SS105 | | ES2111278_1 |

| | | | |
|---|---|---|---|
| 49 | A_SS106 | | ES2111278_1 |
| 50 | A_SS107 | | ES2111278_1 |
| 51 | A_SS108 | | ES2111278_1 |
| 52 | A_SS109 | | ES2111278_1 |
| 53 | A_SS110 | | ES2111278_1 |
| 54 | A_SS111 | | ES2111278_1 |
| 55 | A_SS112 | | ES2111278_1 |
| 56 | A_SS113 | | ES2111278_1 |
| 57 | A_SS114 | | ES2111278_1 |
| 58 | A_SS115 | | ES2111278_1 |
| 59 | A_SS136 | 16/3 | ES_2111280_1 |
| 60 | A_SS137 | | ES_2111280_1 |
| 61 | A_SS138 | | ES_2111280_1 |
| 62 | A_SS139 | | ES_2111280_1 |
| 63 | QC13 | 9/3 | ES2111279 |
| 64 | QC02 | | ES2111279 |
| 65 | QC17 | 10/3 | ES2111279 |
| 66 | QC19 | SWR | ES2111279 |
| 67 | QC23 | | ES2111279 |

**Total concentrations and ensure lab QCs are completed (matrix spike & lab dups) – if** there are any issues please give me a call and we can discuss options if lab QCs will not be met.

| | SAMPLE ID | Batch ID |
|---|---|---|
| x | DUCK_DAMA | ES2111280 |

They have also asked the leachates to have the appropriate additional bottles added so that the lab QC can be completed. Can you please organise to add the extra bottles to each sample and add a lab remark to ask them to complete the QC analysis.

Kind Regards,

**Tyler Anderson**

Client Services Coordinator, Environmental
Sydney

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# CERTIFICATE OF ANALYSIS 265845

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 1 Water |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265845-1 |
| Your Reference | UNITS | QC64 |
| Date Sampled | | 18/03/2021 |
| Type of sample | | Water |
| Date prepared | - | 08/04/2021 |
| Date analysed | - | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | <0.01 |
| Perfluoropentanesulfonic acid | µg/L | <0.01 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.02 |
| Perfluoroheptanesulfonic acid | µg/L | <0.01 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.05 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | <0.02 |
| Perfluoropentanoic acid | µg/L | <0.02 |
| Perfluorohexanoic acid | µg/L | <0.01 |
| Perfluoroheptanoic acid | µg/L | <0.01 |
| Perfluorooctanoic acid PFOA | µg/L | <0.01 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 94 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 106 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 73 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 83 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 103 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265845-1 |
| Your Reference | UNITS | QC64 |
| Date Sampled | | 18/03/2021 |
| Type of sample | | Water |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 89 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 76 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 80 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 86 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 80 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 77 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 78 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 98 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 76 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 79 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 86 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 86 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 98 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 91 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 74 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 70 |
| Total Positive PFHxS & PFOS | µg/L | 0.07 |
| Total Positive PFOA & PFOS | µg/L | 0.05 |
| Total Positive PFAS | µg/L | 0.07 |

| Method ID | Methodology Summary |
|---|---|
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Eurofins
Quarantine

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 10012_SD03 | S | 18/3 | AM | PFAS | 1 | X | | |
| 2 | 10012-SW03 | W | 18/3 | AM | PFAS | 2 | X | | |
| 3 | 10012_BIOT43 | BIOTA | 18/3 | AM | PFAS bag | 1 | [illegible] | X | |
| 4 | 10012-SD04 | S | 18/3 | AM | PFAS | 1 | X | | |
| 5 | 10012_SW04 | W | 18/3 | AM | PFAS | 2 | X | | |
| 6 | QC63 | S/W | 18/3 | AM | PFAS | 3 | X | | |
| - | QC64 | S/W | 18/3 | AM | PFAS | 3 | X | | please forward to eurofins |
| Total | | | | | | | 0 | | |

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins / QC64
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2111259
Telephone : +61-2-8784 8555

ENVIROLAB Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 265845
Date Received: 6/4/21
Time Received: 1700
Received By: AB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Sample Contact/Broken/None

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS
Signature:
Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: [illegible] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A. BUI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: ELS SYD | Time: ~~1510~~ 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

17776_COC_Blank

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265845** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

### QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

### HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

### COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

## QC Evaluation

| | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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www.envirolab.com.au

# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 265845 |
| **Date Sample Received** | 06/04/2021 |
| **Date Instructions Received** | 06/04/2021 |
| **Date Results Expected to be Reported** | 13/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | |
| **No. of Samples Provided** | 1 Water |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 16 |
| **Cooling Method** | |
| **Sampling Date Provided** | YES |

## Comments

Nil

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

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www.envirolab.com.au

| Sample ID | PFAS in Waters Extended |
|---|---|
| QC64 | ✓ |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

| Additional Info |
|---|
| Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt. |
| Requests for longer term sample storage must be received in writing. |
| Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default. |
| TAT for Micro is dependent on incubation. This varies from 3 to 6 days. |

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# CERTIFICATE OF ANALYSIS 265846

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 1 Water |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265846-1 |
| Your Reference | UNITS | QC36 |
| Date Sampled | | 12/03/2021 |
| Type of sample | | Water |
| Date prepared | - | 08/04/2021 |
| Date analysed | - | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | <0.01 |
| Perfluoropentanesulfonic acid | µg/L | <0.01 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | <0.01 |
| Perfluoroheptanesulfonic acid | µg/L | <0.01 |
| Perfluorooctanesulfonic acid PFOS | µg/L | <0.01 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | <0.02 |
| Perfluoropentanoic acid | µg/L | <0.02 |
| Perfluorohexanoic acid | µg/L | <0.01 |
| Perfluoroheptanoic acid | µg/L | <0.01 |
| Perfluorooctanoic acid PFOA | µg/L | <0.01 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 96 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 97 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 77 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 88 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 84 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 97 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265846-1 |
| Your Reference | UNITS | QC36 |
| Date Sampled | | 12/03/2021 |
| Type of sample | | Water |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 87 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 88 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 78 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 84 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 91 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 97 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 84 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 78 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 77 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 77 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 101 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 77 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 80 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 90 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 89 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 98 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 89 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 82 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 71 |
| Total Positive PFHxS & PFOS | µg/L | <0.01 |
| Total Positive PFOA & PFOS | µg/L | <0.01 |
| Total Positive PFAS | µg/L | <0.01 |

| Method ID | Methodology Summary |
|---|---|
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

EWOTNS
Quarantine

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 390

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 6784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | FRE_TAP1 | W | 12/3/21 | PM | PFAS BOTTLE | 2 | X | | | | | | | | | | |
| 2 | FRE_TAP1_K | | | | | | | | | | | | | | | X | |
| 3 | FRE_TAP 3 | | | | | | X | | | | | | | | | | |
| 4 | FRE_TAP 4 | | | | | | | | | | | | | | | X | |
| 5 | FRE_TAP 5 | | | | | | X | | | | | | | | | | |
| 6 | FRE_TAP 6 | | | | | | | | | | | | | | | X | |
| 7 | QC35 | | | | | | X | | | | | | | | | | |
| (1) — | QC36 | | | | | | X | | | | Please forward to Envirolab | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Subcon / Forward Lab / Split WO
Lab / Analysis: Envirolab / QC36
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

ENVIROLAB Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 265846
Date Received: 6/4/21
Time Received: 1700
Received By: A.B.
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Environmental Division
Sydney
Work Order Reference
ES2111256
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen
Signature:
Date: 12/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 14/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00am | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A. BUI | Date: 26/4 AB 6/4/21 |
| Of: | Time: | Date/Time: | Of: EWS SYD | Time: 1510 AB 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265846** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

### QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

### HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

### COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

## QC Evaluation

| | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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customerservice@envirolab.com.au
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# CERTIFICATE OF ANALYSIS 265847

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 1 Water |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265847-1 |
| Your Reference | UNITS | QC31 |
| Date Sampled | | 11/03/2021 |
| Type of sample | | Water |
| Date prepared | - | 08/04/2021 |
| Date analysed | - | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | <0.01 |
| Perfluoropentanesulfonic acid | µg/L | <0.01 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | <0.01 |
| Perfluoroheptanesulfonic acid | µg/L | <0.01 |
| Perfluorooctanesulfonic acid PFOS | µg/L | <0.01 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | <0.02 |
| Perfluoropentanoic acid | µg/L | <0.02 |
| Perfluorohexanoic acid | µg/L | <0.01 |
| Perfluoroheptanoic acid | µg/L | <0.01 |
| Perfluorooctanoic acid PFOA | µg/L | <0.01 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 104 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 99 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 77 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 90 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 78 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 94 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265847-1 |
| Your Reference | UNITS | QC31 |
| Date Sampled | | 11/03/2021 |
| Type of sample | | Water |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 85 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 73 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 81 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 78 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 87 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 73 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 96 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 76 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 74 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 76 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 79 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 97 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 89 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 76 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 73 |
| Total Positive PFHxS & PFOS | µg/L | <0.01 |
| Total Positive PFOA & PFOS | µg/L | <0.01 |
| Total Positive PFAS | µg/L | <0.01 |

| Method ID | Methodology Summary |
|---|---|
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Eurofins
Quarantine

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Container Information: Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | CHAP_TAP1 | W | 11/3 | PM | | 2 | X | |
| 2 | CHAP_TAP2 | W | 11/3 | PM | | 2 | X | |
| 3 | QC30 | W | 11/3 | PM | | 2 | X | |
| ① | QC31 | W | 11/3 | PM | | 2 | X | please forward to eurofins |
| Total | | | | | | | 0 | |

Subcon / For
Lab / Analysis: Eurofins / QC31
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

ENVIROLAB
Environmental Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 265847
Date Received: 6/4/21
Time Received: 1700
Received By: AB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Environmental Division
Sydney
Work Order Reference
ES2111276
Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams | Signature: | Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A. BUI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: ELS J40 | Time: ~~1510~~ AB 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by:

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265847** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

### QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

### HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

### COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

## QC Evaluation

| | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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customerservice@envirolab.com.au
www.envirolab.com.au

# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 265847 |
| **Date Sample Received** | 06/04/2021 |
| **Date Instructions Received** | 06/04/2021 |
| **Date Results Expected to be Reported** | 13/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | |
| **No. of Samples Provided** | 1 Water |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 16 |
| **Cooling Method** | |
| **Sampling Date Provided** | YES |

## Comments

Nil

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

| Sample ID | PFAS in Waters Extended |
|---|---|
| QC31 | ✓ |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

| Additional Info |
|---|
| Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt. |
| Requests for longer term sample storage must be received in writing. |
| Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default. |
| TAT for Micro is dependent on incubation. This varies from 3 to 6 days. |

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# CERTIFICATE OF ANALYSIS 265848

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 1 Water |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265848-1 |
| Your Reference | UNITS | QC34 |
| Date Sampled | | 12/03/2021 |
| Type of sample | | Water |
| Date prepared | - | 08/04/2021 |
| Date analysed | - | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | 0.17 |
| Perfluoropentanesulfonic acid | µg/L | 0.17 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 1.2 |
| Perfluoroheptanesulfonic acid | µg/L | 0.06 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 1.0 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | 0.02 |
| Perfluoropentanoic acid | µg/L | 0.04 |
| Perfluorohexanoic acid | µg/L | 0.13 |
| Perfluoroheptanoic acid | µg/L | 0.03 |
| Perfluorooctanoic acid PFOA | µg/L | 0.04 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 99 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 101 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 73 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 94 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 83 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 101 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265848-1 |
| Your Reference | UNITS | QC34 |
| Date Sampled | | 12/03/2021 |
| Type of sample | | Water |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 86 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 76 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 82 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 86 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 83 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 71 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 68 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 73 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 101 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 80 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 79 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 82 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 83 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 95 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 88 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 73 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 68 |
| Total Positive PFHxS & PFOS | µg/L | 2.2 |
| Total Positive PFOA & PFOS | µg/L | 1.0 |
| Total Positive PFAS | µg/L | 2.8 |

| Method ID | Methodology Summary |
|---|---|
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Eurofins
Quarantine

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 1 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1D014-BOAE | W | 12/3 | AM | PFAS | 2 | X | |
| 2 | QC33 | W | 12/3 | AM | PFAS | 2 | X | |
| 3 | QC34 | W | 12/3 | AM | PFAS | 2 | X | please forward to eurofins |
| Total | | | | | | | 0 | |

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins / QC34
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By: PO / Internal Sheet:

Environmental Division Sydney
Work Order Reference
ES2111243

Eurofins Services
72 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 258448
Date Received: 6/4/21
Time Received: 1700
Received By: A.B.
Temp: Cool/Ambient
Cooler: Intact/Broken/None
Security: Intact/Broken/None

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: C. Williams | Signature: | Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C. Williams | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 5:00 | Date/Time: | Of: ALS | Time: 12:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A. BUI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: ELS MD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265848** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

### QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

### HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

### COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

## QC Evaluation

| | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 265848 |
| **Date Sample Received** | 06/04/2021 |
| **Date Instructions Received** | 06/04/2021 |
| **Date Results Expected to be Reported** | 13/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | |
| **No. of Samples Provided** | 1 Water |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 16 |
| **Cooling Method** | |
| **Sampling Date Provided** | YES |

## Comments

Nil

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

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customerservice@envirolab.com.au
www.envirolab.com.au

| Sample ID | PFAS in Waters Extended |
|---|---|
| QC34 | ✓ |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

| Additional Info |
|---|
| Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt. |
| Requests for longer term sample storage must be received in writing. |
| Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default. |
| TAT for Micro is dependent on incubation. This varies from 3 to 6 days. |

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# CERTIFICATE OF ANALYSIS 265849

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 2 S/PT, 1 PT, 4 Soil, 2 Water, 1 S/W |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

**Please refer to the last page of this report for any comments relating to the results.**

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265849-1 | 265849-3 | 265849-6 | 265849-7 | 265849-8 |
| Your Reference | UNITS | QC55 | QC40 | QC47 | QC49 | QC53 |
| Type of sample | | S/PT | Soil | Soil | Soil | S/PT |
| Date Sampled | | 16/03/2021 | 13/03/2021 | 15/03/2021 | 15/03/2021 | 16/03/2021 |
| Date prepared | - | 08/04/2021 | 09/04/2021 | 09/04/2021 | 09/04/2021 | 08/04/2021 |
| Date analysed | - | 08/04/2021 | 09/04/2021 | 09/04/2021 | 09/04/2021 | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | <0.1 | 0.4 | <0.1 | <0.1 | <0.1 |
| Perfluoropentanesulfonic acid | µg/kg | <0.1 | 0.6 | <0.1 | 0.2 | <0.1 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.8 | 7.6 | 0.4 | 3.1 | <0.1 |
| Perfluoroheptanesulfonic acid | µg/kg | 0.2 | 1.2 | <0.1 | 0.1 | <0.1 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 25 | 73 | 16 | 1.6 | 14 |
| Perfluorodecanesulfonic acid | µg/kg | <0.2 | 0.7 | <0.2 | <0.2 | <0.2 |
| Perfluorobutanoic acid | µg/kg | 1 | <0.2 | <0.2 | 0.2 | 0.5 |
| Perfluoropentanoic acid | µg/kg | 1 | <0.2 | <0.2 | <0.2 | 0.4 |
| Perfluorohexanoic acid | µg/kg | 0.7 | 0.4 | 0.1 | 0.4 | 0.3 |
| Perfluoroheptanoic acid | µg/kg | 1.0 | 0.1 | <0.1 | <0.1 | 0.4 |
| Perfluorooctanoic acid PFOA | µg/kg | 2.2 | 0.4 | 0.1 | <0.1 | 0.6 |
| Perfluorononanoic acid | µg/kg | 1.5 | <0.1 | <0.1 | <0.1 | 0.5 |
| Perfluorodecanoic acid | µg/kg | 2 | <0.5 | <0.5 | <0.5 | <0.5 |
| Perfluoroundecanoic acid | µg/kg | 2 | <0.5 | <0.5 | <0.5 | <0.5 |
| Perfluorododecanoic acid | µg/kg | 3 | <0.5 | <0.5 | <0.5 | <0.5 |
| Perfluorotridecanoic acid | µg/kg | 0.7 | <0.5 | <0.5 | <0.5 | <0.5 |
| Perfluorotetradecanoic acid | µg/kg | <5 | <5 | <5 | <5 | <5 |
| 4:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 6:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 8:2 FTS | µg/kg | 2 | <0.2 | <0.2 | <0.2 | <0.2 |
| 10:2 FTS | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Perfluorooctane sulfonamide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <5 | <5 | <5 | <5 | <5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 99 | 91 | 96 | 94 | 104 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 95 | 111 | 110 | 105 | 89 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 88 | 75 | 90 | 86 | 92 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 105 | 89 | 100 | 98 | 102 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 103 | 83 | 101 | 97 | 99 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 95 | 86 | 102 | 97 | 94 |

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265849-1 | 265849-3 | 265849-6 | 265849-7 | 265849-8 |
| Your Reference | UNITS | QC55 | QC40 | QC47 | QC49 | QC53 |
| Type of sample | | S/PT | Soil | Soil | Soil | S/PT |
| Date Sampled | | 16/03/2021 | 13/03/2021 | 15/03/2021 | 15/03/2021 | 16/03/2021 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 87 | 77 | 89 | 86 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 99 | 77 | 91 | 86 | 99 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 89 | 68 | 82 | 80 | 90 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 101 | 76 | 87 | 84 | 106 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 94 | 77 | 94 | 88 | 99 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 108 | 86 | 104 | 98 | 104 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 108 | 82 | 101 | 96 | 108 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 124 | 78 | 93 | 88 | 131 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 97 | 63 | 78 | 64 | 99 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 96 | 84 | 96 | 94 | 92 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 74 | 89 | 96 | 85 | 70 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 96 | 117 | 109 | 97 | 92 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 73 | 71 | 91 | 86 | 77 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 86 | 56 | 78 | 70 | 89 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 91 | 53 | 70 | 63 | 94 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 88 | 70 | 91 | 93 | 93 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 91 | 64 | 87 | 81 | 97 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 80 | 83 | 75 | 67 | 79 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 84 | 85 | 85 | 78 | 88 |
| Total Positive PFHxS & PFOS | µg/kg | 26 | 81 | 17 | 4.7 | 14 |
| Total Positive PFOS & PFOA | µg/kg | 27 | 73 | 16 | 1.6 | 14 |
| Total Positive PFAS | µg/kg | 43 | 85 | 17 | 5.6 | 17 |

| PFAS in Soils Extended | | | |
|---|---|---|---|
| Our Reference | | 265849-9 | 265849-10 |
| Your Reference | UNITS | QC57 | QC60 |
| Type of sample | | Soil | S/W |
| Date Sampled | | 16/03/2021 | 17/03/2021 |
| Date prepared | - | 09/04/2021 | 09/04/2021 |
| Date analysed | - | 09/04/2021 | 09/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | <0.1 | 0.3 |
| Perfluoropentanesulfonic acid | µg/kg | <0.1 | 0.5 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.6 | 4.9 |
| Perfluoroheptanesulfonic acid | µg/kg | <0.1 | 0.8 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 4.5 | 53 |
| Perfluorodecanesulfonic acid | µg/kg | <0.2 | 0.6 |
| Perfluorobutanoic acid | µg/kg | 0.2 | <0.2 |
| Perfluoropentanoic acid | µg/kg | <0.2 | <0.2 |
| Perfluorohexanoic acid | µg/kg | 0.2 | 0.5 |
| Perfluoroheptanoic acid | µg/kg | 0.1 | 0.1 |
| Perfluorooctanoic acid PFOA | µg/kg | 0.3 | 0.4 |
| Perfluorononanoic acid | µg/kg | 0.2 | <0.1 |
| Perfluorodecanoic acid | µg/kg | <0.5 | <0.5 |
| Perfluoroundecanoic acid | µg/kg | <0.5 | <0.5 |
| Perfluorododecanoic acid | µg/kg | <0.5 | <0.5 |
| Perfluorotridecanoic acid | µg/kg | <0.5 | <0.5 |
| Perfluorotetradecanoic acid | µg/kg | <5 | <5 |
| 4:2 FTS | µg/kg | <0.1 | <0.1 |
| 6:2 FTS | µg/kg | <0.1 | <0.1 |
| 8:2 FTS | µg/kg | <0.2 | <0.2 |
| 10:2 FTS | µg/kg | <0.2 | <0.2 |
| Perfluorooctane sulfonamide | µg/kg | <1 | <1 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <1 | <1 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <1 | <1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <1 | <1 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <5 | <5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <0.2 | <0.2 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | <0.2 | <0.2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 98 | 93 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 110 | 109 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 90 | 73 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 96 | 85 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 97 | 79 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 104 | 86 |

| PFAS in Soils Extended | | | |
|---|---|---|---|
| Our Reference | | 265849-9 | 265849-10 |
| Your Reference | UNITS | QC57 | QC60 |
| Type of sample | | Soil | S/W |
| Date Sampled | | 16/03/2021 | 17/03/2021 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 91 | 75 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 89 | 76 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 86 | 76 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 87 | 73 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 92 | 76 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 104 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 98 | 82 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 93 | 73 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 85 | 59 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 108 | 89 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 135 | 96 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 152 | 98 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 91 | 74 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 72 | 56 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 72 | 54 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 97 | 70 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 88 | 65 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 93 | 74 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 103 | 82 |
| Total Positive PFHxS & PFOS | µg/kg | 5.1 | 58 |
| Total Positive PFOS & PFOA | µg/kg | 4.7 | 53 |
| Total Positive PFAS | µg/kg | 6.1 | 61 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265849-1 | 265849-3 | 265849-6 | 265849-7 | 265849-8 |
| Your Reference | UNITS | QC55 | QC40 | QC47 | QC49 | QC53 |
| Type of sample | | S/PT | Soil | Soil | Soil | S/PT |
| Date Sampled | | 16/03/2021 | 13/03/2021 | 15/03/2021 | 15/03/2021 | 16/03/2021 |
| Date prepared | - | 08/04/2021 | 08/04/2021 | 08/04/2021 | 08/04/2021 | 08/04/2021 |
| Date analysed | - | 09/04/2021 | 09/04/2021 | 09/04/2021 | 09/04/2021 | 09/04/2021 |
| Moisture | % | 25 | 26 | 12 | 22 | 19 |

| Moisture | | | |
|---|---|---|---|
| Our Reference | | 265849-9 | 265849-10 |
| Your Reference | UNITS | QC57 | QC60 |
| Type of sample | | Soil | S/W |
| Date Sampled | | 16/03/2021 | 17/03/2021 |
| Date prepared | - | 08/04/2021 | 08/04/2021 |
| Date analysed | - | 09/04/2021 | 09/04/2021 |
| Moisture | % | 22 | 26 |

| PFAS in Waters Extended | | | | |
|---|---|---|---|---|
| Our Reference | | 265849-4 | 265849-5 | 265849-10 |
| Your Reference | UNITS | QC42 | QC44 | QC60 |
| Type of sample | | Water | Water | S/W |
| Date Sampled | | 14/03/2021 | 14/03/2021 | 17/03/2021 |
| Date prepared | - | 08/04/2021 | 08/04/2021 | 08/04/2021 |
| Date analysed | - | 08/04/2021 | 08/04/2021 | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | 0.02 | <0.01 | 0.56 |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | <0.01 | 0.61 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.1 | <0.01 | 4.4 |
| Perfluoroheptanesulfonic acid | µg/L | <0.01 | <0.01 | 0.28 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.02 | <0.01 | 7.1 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid | µg/L | <0.02 | <0.02 | 0.1 |
| Perfluoropentanoic acid | µg/L | <0.02 | <0.02 | 0.20 |
| Perfluorohexanoic acid | µg/L | 0.01 | <0.01 | 0.67 |
| Perfluoroheptanoic acid | µg/L | <0.01 | <0.01 | 0.12 |
| Perfluorooctanoic acid PFOA | µg/L | <0.01 | <0.01 | 0.28 |
| Perfluorononanoic acid | µg/L | <0.01 | <0.01 | 0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 | <0.05 | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 | <0.1 | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 | <0.5 | <0.5 |
| 4:2 FTS | µg/L | <0.01 | <0.01 | <0.01 |
| 6:2 FTS | µg/L | <0.01 | <0.01 | <0.01 |
| 8:2 FTS | µg/L | <0.02 | <0.02 | <0.02 |
| 10:2 FTS | µg/L | <0.02 | <0.02 | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 | <0.1 | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 | <0.05 | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 | <0.1 | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 | <0.05 | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 | <0.5 | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 | <0.02 | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 | <0.02 | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 101 | 106 | 106 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 103 | 104 | 104 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 77 | 75 | 73 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 95 | 94 | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 84 | 80 | 81 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 103 | 109 | 99 |

| PFAS in Waters Extended | | | | |
|---|---|---|---|---|
| Our Reference | | 265849-4 | 265849-5 | 265849-10 |
| Your Reference | UNITS | QC42 | QC44 | QC60 |
| Type of sample | | Water | Water | S/W |
| Date Sampled | | 14/03/2021 | 14/03/2021 | 17/03/2021 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 88 | 87 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 92 | 89 | 88 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 76 | 76 | 74 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 84 | 80 | 80 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 93 | 89 | 84 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 98 | 94 | 93 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 89 | 87 | 83 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 76 | 76 | 71 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 72 | 65 | 60 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 76 | 71 | 74 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 110 | 98 | 101 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 83 | 75 | 79 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 81 | 80 | 77 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 90 | 85 | 81 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 92 | 86 | 79 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 99 | 100 | 93 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 93 | 89 | 88 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 76 | 72 | 76 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 75 | 68 | 70 |
| Total Positive PFHxS & PFOS | µg/L | 0.12 | <0.01 | 11 |
| Total Positive PFOA & PFOS | µg/L | 0.02 | <0.01 | 7.3 |
| Total Positive PFAS | µg/L | 0.16 | <0.01 | 14 |

| PFAS in Biota Extended | | | |
|---|---|---|---|
| Our Reference | | 265849-2 | 265849-8 |
| Your Reference | UNITS | QC38 | QC53 |
| Type of sample | | PT | S/PT |
| Date Sampled | | 13/03/2021 | 16/03/2021 |
| Date prepared | - | 12/04/2021 | 12/04/2021 |
| Date analysed | - | 13/04/2021 | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | <1 | <1 |
| Perfluoropentanesulfonic acid | µg/kg | <1 | <1 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 3 | <1 |
| Perfluoroheptanesulfonic acid | µg/kg | <1 | <1 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 13 | <1 |
| Perfluorodecanesulfonic acid | µg/kg | <1 | <1 |
| Perfluorobutanoic acid | µg/kg | <2 | <2 |
| Perfluoropentanoic acid | µg/kg | <2 | <2 |
| Perfluorohexanoic acid | µg/kg | <1 | <1 |
| Perfluoroheptanoic acid | µg/kg | <1 | <1 |
| Perfluorooctanoic acid PFOA | µg/kg | <1 | <1 |
| Perfluorononanoic acid | µg/kg | <1 | <1 |
| Perfluorodecanoic acid | µg/kg | <2 | <2 |
| Perfluoroundecanoic acid | µg/kg | <2 | <2 |
| Perfluorododecanoic acid | µg/kg | <2 | <2 |
| Perfluorotridecanoic acid | µg/kg | <2 | <2 |
| Perfluorotetradecanoic acid | µg/kg | <5 | <5 |
| 4:2 FTS | µg/kg | <1 | <1 |
| 6:2 FTS | µg/kg | <1 | <1 |
| 8:2 FTS | µg/kg | <1 | <1 |
| 10:2 FTS | µg/kg | <1 | <1 |
| Perfluorooctane sulfonamide | µg/kg | <5 | <5 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <5 | <5 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <5 | <5 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <10 | <10 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <50 | <50 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <2 | <2 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/kg | <2 | <2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 97 | 101 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 109 | 103 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 89 | 88 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 86 | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 85 | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 90 | 92 |

| PFAS in Biota Extended | | | |
|---|---|---|---|
| Our Reference | | 265849-2 | 265849-8 |
| Your Reference | UNITS | QC38 | QC53 |
| Type of sample | | PT | S/PT |
| Date Sampled | | 13/03/2021 | 16/03/2021 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 87 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 93 | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 96 | 105 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 84 | 91 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 92 | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 88 | 98 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 88 | 96 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 80 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 78 | 84 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 141 | 181 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 134 | 128 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 82 | 105 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 83 | 86 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 79 | 81 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 82 | 85 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 88 | 92 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 77 | 85 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 84 | 85 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 79 | 89 |
| Total Positive PFHxS & PFOS | µg/kg | 16 | <1 |
| Total Positive PFOS & PFOA | µg/kg | 13 | <1 |
| Total Positive PFAS | µg/kg | 16 | <1 |

| Method ID | Methodology Summary |
|---|---|
| **Inorg-008** | Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours. |
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |
| **Org-029** | Biota are homogenised and extracted with basified Methanol followed by SPE and/or Activated Charcoal clean-up, prior to analysis with LC-MS/MS. Samples analysed and reported on an as received basis and are therefore not corrected for moisture content. Preparation details are included in the Comments Section as required.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-6 |
| Date prepared | - | | | 08/04/2021 | 3 | 09/04/2021 | 09/04/2021 | | 08/04/2021 | 09/04/2021 |
| Date analysed | - | | | 08/04/2021 | 3 | 09/04/2021 | 09/04/2021 | | 08/04/2021 | 09/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 0.4 | 0.6 | 40 | 107 | 105 |
| Perfluoropentanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 0.6 | 0.7 | 15 | 101 | 92 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 7.6 | 8.1 | 6 | 98 | 88 |
| Perfluoroheptanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 1.2 | 1.2 | 0 | 87 | 94 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 73 | 79 | 8 | 94 | ## |
| Perfluorodecanesulfonic acid | µg/kg | 0.2 | Org-029 | <0.2 | 3 | 0.7 | 0.8 | 13 | 100 | 97 |
| Perfluorobutanoic acid | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 101 | 87 |
| Perfluoropentanoic acid | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 114 | 95 |
| Perfluorohexanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 0.4 | 0.4 | 0 | 86 | 84 |
| Perfluoroheptanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 0.1 | 0.1 | 0 | 107 | 102 |
| Perfluorooctanoic acid PFOA | µg/kg | 0.1 | Org-029 | <0.1 | 3 | 0.4 | 0.4 | 0 | 91 | 91 |
| Perfluorononanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 3 | <0.1 | <0.1 | 0 | 79 | 85 |
| Perfluorodecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 3 | <0.5 | <0.5 | 0 | 86 | 89 |
| Perfluoroundecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 3 | <0.5 | <0.5 | 0 | 88 | 85 |
| Perfluorododecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 3 | <0.5 | <0.5 | 0 | 98 | 92 |
| Perfluorotridecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 3 | <0.5 | <0.5 | 0 | 88 | 77 |
| Perfluorotetradecanoic acid | µg/kg | 5 | Org-029 | <5 | 3 | <5 | <5 | 0 | 109 | 90 |
| 4:2 FTS | µg/kg | 0.1 | Org-029 | <0.1 | 3 | <0.1 | <0.1 | 0 | 114 | 96 |
| 6:2 FTS | µg/kg | 0.1 | Org-029 | <0.1 | 3 | <0.1 | <0.1 | 0 | 118 | 93 |
| 8:2 FTS | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 102 | 95 |
| 10:2 FTS | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 128 | 98 |
| Perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | <1 | 3 | <1 | <1 | 0 | 120 | 92 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | <1 | 3 | <1 | <1 | 0 | 98 | 93 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | 1 | Org-029 | <1 | 3 | <1 | <1 | 0 | 106 | 106 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | 1 | Org-029 | <1 | 3 | <1 | <1 | 0 | 110 | 88 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | 5 | Org-029 | <5 | 3 | <5 | <5 | 0 | 111 | 86 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 94 | 98 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | 0.2 | Org-029 | <0.2 | 3 | <0.2 | <0.2 | 0 | 95 | 84 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 94 | 3 | 91 | 108 | 17 | 100 | 109 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 88 | 3 | 111 | 111 | 0 | 90 | 110 |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-6 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 82 | 3 | 75 | 72 | 4 | 91 | 88 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 114 | 3 | 89 | 87 | 2 | 112 | 98 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 121 | 3 | 83 | 78 | 6 | 114 | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 102 | 3 | 86 | 88 | 2 | 100 | 101 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 78 | 3 | 77 | 78 | 1 | 87 | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 108 | 3 | 77 | 79 | 3 | 102 | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 83 | 3 | 68 | 72 | 6 | 84 | 83 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 112 | 3 | 76 | 75 | 1 | 109 | 87 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 118 | 3 | 77 | 82 | 6 | 116 | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 114 | 3 | 86 | 91 | 6 | 114 | 103 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 119 | 3 | 82 | 85 | 4 | 109 | 101 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 116 | 3 | 78 | 75 | 4 | 117 | 89 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 92 | 3 | 63 | 68 | 8 | 93 | 68 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 77 | 3 | 84 | 83 | 1 | 82 | 95 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 69 | 3 | 89 | 91 | 2 | 65 | 102 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 83 | 3 | 117 | 101 | 15 | 86 | 110 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 77 | 3 | 71 | 76 | 7 | 84 | 89 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 88 | 3 | 56 | 57 | 2 | 92 | 75 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 102 | 3 | 53 | 54 | 2 | 98 | 67 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 92 | 3 | 70 | 71 | 1 | 95 | 89 |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-6 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 109 | 3 | 64 | 69 | 8 | 101 | 85 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 86 | 3 | 83 | 74 | 11 | 85 | 71 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 68 | 3 | 85 | 75 | 12 | 76 | 85 |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Biota Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-8 |
| Date prepared | - | | | 12/04/2021 | 2 | 12/04/2021 | 12/04/2021 | | 12/04/2021 | 12/04/2021 |
| Date analysed | - | | | 13/04/2021 | 2 | 13/04/2021 | 13/04/2021 | | 13/04/2021 | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 100 | 103 |
| Perfluoropentanesulfonic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 104 | 112 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 1 | Org-029 | <1 | 2 | 3 | 3 | 0 | 138 | 137 |
| Perfluoroheptanesulfonic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 91 | 95 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 1 | Org-029 | <1 | 2 | 13 | 11 | 17 | 85 | 86 |
| Perfluorodecanesulfonic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 86 | 86 |
| Perfluorobutanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 95 | 94 |
| Perfluoropentanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 100 | 102 |
| Perfluorohexanoic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 88 | 88 |
| Perfluoroheptanoic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 89 | 87 |
| Perfluorooctanoic acid PFOA | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 89 | 87 |
| Perfluorononanoic acid | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 88 | 81 |
| Perfluorodecanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 96 | 91 |
| Perfluoroundecanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 92 | 77 |
| Perfluorododecanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 96 | 91 |
| Perfluorotridecanoic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 91 | 93 |
| Perfluorotetradecanoic acid | µg/kg | 5 | Org-029 | <5 | 2 | <5 | <5 | 0 | 100 | 94 |
| 4:2 FTS | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 102 | 95 |
| 6:2 FTS | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 103 | 105 |
| 8:2 FTS | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 97 | 90 |
| 10:2 FTS | µg/kg | 1 | Org-029 | <1 | 2 | <1 | <1 | 0 | 81 | 69 |
| Perfluorooctane sulfonamide | µg/kg | 5 | Org-029 | <5 | 2 | <5 | <5 | 0 | 98 | 95 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | 5 | Org-029 | <5 | 2 | <5 | <5 | 0 | 103 | 102 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | 5 | Org-029 | <5 | 2 | <5 | <5 | 0 | 107 | 105 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | 10 | Org-029 | <10 | 2 | <10 | <10 | 0 | 100 | 95 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | 50 | Org-029 | <50 | 2 | <50 | <50 | 0 | 92 | 94 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 110 | 105 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/kg | 2 | Org-029 | <2 | 2 | <2 | <2 | 0 | 111 | 101 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 100 | 2 | 97 | 102 | 5 | 96 | 93 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 108 | 2 | 109 | 114 | 4 | 106 | 106 |

| QUALITY CONTROL: PFAS in Biota Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-8 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 90 | 2 | 89 | 87 | 2 | 90 | 89 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 92 | 2 | 86 | 86 | 0 | 85 | 87 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 82 | 2 | 85 | 88 | 3 | 87 | 90 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 91 | 2 | 90 | 90 | 0 | 87 | 91 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 84 | 2 | 87 | 86 | 1 | 82 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 93 | 2 | 93 | 95 | 2 | 87 | 93 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 96 | 2 | 96 | 100 | 4 | 97 | 104 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 84 | 2 | 84 | 83 | 1 | 80 | 89 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 86 | 2 | 92 | 85 | 8 | 81 | 92 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 86 | 2 | 88 | 95 | 8 | 86 | 92 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 83 | 2 | 88 | 84 | 5 | 76 | 99 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 77 | 2 | 80 | 77 | 4 | 70 | 80 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 71 | 2 | 78 | 74 | 5 | 73 | 83 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 90 | 2 | 141 | 142 | 1 | 88 | 137 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 84 | 2 | 134 | 127 | 5 | 80 | 105 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 84 | 2 | 82 | 86 | 5 | 82 | 105 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 79 | 2 | 83 | 83 | 0 | 79 | 85 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 76 | 2 | 79 | 81 | 2 | 76 | 83 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 80 | 2 | 82 | 78 | 5 | 77 | 83 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 79 | 2 | 88 | 86 | 2 | 81 | 92 |

| QUALITY CONTROL: PFAS in Biota Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265849-8 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 77 | 2 | 77 | 80 | 4 | 72 | 80 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 83 | 2 | 84 | 81 | 4 | 80 | 81 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 68 | 2 | 79 | 74 | 7 | 64 | 79 |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

PFAS in Soil Extended - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 265849-6 have caused interference. However an acceptable recovery was obtained for the LCS

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# Chain of Custody Documentation

265849

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0461 773 078 |

| | Sample Information | | | | Container Information | | Analysis Required | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 40 | QC34 | S/BIOTA | 16/3/21 | | | 2 | x | | |
| 1 – | QC35 | S/BIOTA | " | | | 2 | x | | Pls fwd to Eurofins |
| 41 | QC37 | biota | 13/3/21 | | bag | 1 | x | | |
| 2 – | QC38 | " | " | | bag | 1 | x | | Pls FWD to Eurofins |
| 42 | QC39 | S | " | | jar | 1 | x | | |
| 3 – | QC40 | S | " | | jar | 1 | x | | Pls FWD to Eurofins |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | |
| 4 – | QC42 | W | " | | | 2 | x | | Pls FWD to Eurofins |
| 44 | QC43 | W | | | | 2 | x | | |
| 5 – | QC44 | W | | | | 2 | x | | Pls FWD to Eurofins |
| 45 | QC45 | W | | | | 2 | x | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | |
| 6 – | QC47 | S | " | | | 1 | x | | Pls FWD to Eurofins |
| 47 | QC48 | S | " | | | 1 | x | | |
| 7 – | QC49 | S | " | | | 1 | x | | Pls FWD to Eurofins |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | |
| 8 – | QC53 | S/BIOTA | | | | 2 | x | | Pls FWD to Eurofins |
| 49 | QC56 | S | | | | 1 | x | | |
| 9 – | QC57 | S | | | | 1 | x | | Pls FWD to Eurofins |
| 50 | QC58 | W | | | bot | 2 | x | | |
| Total | | | | | | | 0 | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-BVI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: RW SYD | Time: 12:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's Iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

265849

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| | Sample Information | | | | Container Information | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments |
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | | | | | | | | | | |
| 10 – | QC60 | S/W | | | " | 2 | x | # Als Forward to Eurofins # | | | | | | | | | | |
| 52 | QC61 | W | | | bot | 1 | x | | | | | | | | | | | |
| 53 | QC62 | W | | | bot | 1 | x | | | | | | | | | | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | | | | | | | | | | x | |
| 55 | MC-BIOTA 12 | | | | | | | | | | | | | | | | x | |
| 56 | MC-BIOTA 14 | | | | | | | | | | | | | | | | x | |
| 57 | MC-BIOTA 15 | | | | | | | | | | | | | | | | x | |
| 58 | MC-BIOTA 16 | | | | | | | | | | | | | | | | x | |
| 59 | MC-BIOTA 18 | | | | | | | | | | | | | | | | x | |
| 60 | ~~Mc~~ A-BIOTA 123 | | 16/3/21 | | | | | | | | | | | | | | x | |
| 61 | A-BIOTA 124 | | | | | | | | | | | | | | | | x | |
| 62 | A-BIOTA 125 | | | | | | | | | | | | | | | | x | |
| 63 | A-BIOTA 126 | | | | | | | | | | | | | | | | x | |
| 64 | A-BIOTA 127 | | | | | | | | | | | | | | | | x | |
| 65 | A-BIOTA 128 | | | | | | | | | | | | | | | | x | |
| 66 | A-BIOTA 129 | | | | | | | | | | | | | | | | x | |
| 67 | A-BIOTA 130 | | | | | | | | | | | | | | | | x | |
| 68 | A-BIOTA 131 | | | | | | | | | | | | | | | | x | |
| 69 | A-BIOTA 132 | | | | | | | | | | | | | | | | x | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: [signature] | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pedersen | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-BVI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: BLS MD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

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customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265849** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

## QC DATA

All laboratory QC data was within the Envirolab Group's specifications except:

## QC Specification Exceptions

| QC Type | Reference | Analysis | Comments |
|---|---|---|---|
| Spike Recovery % | 265849-6 | Perfluorooctanesulfonic acidPFOS | Fails internal acceptance criteria |

*See Report 265849-[R00] for QA/QC details*

## HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

## Holding Time Exceedances

| Analysis | Sample No | Date Sampled | Date Extracted | Date Analysed | Accepted |
|---|---|---|---|---|---|
| **Moisture** | | | | | |
| | 265849-1 | 16/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-3 | 13/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-6 | 15/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-7 | 15/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-8 | 16/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-9 | 16/03/2021 | 08/04/2021 | 09/04/2021 | X |
| | 265849-10 | 17/03/2021 | 08/04/2021 | 09/04/2021 | X |
| **PFAS in Biota Extended** | | | | | |
| | 265849-2 | 13/03/2021 | 12/04/2021 | 13/04/2021 | X |

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

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## COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

| QC Evaluation | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 265849 |
| **Date Sample Received** | 06/04/2021 |
| **Date Instructions Received** | 06/04/2021 |
| **Date Results Expected to be Reported** | 13/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | |
| **No. of Samples Provided** | 2 S/PT, 1 PT, 4 Soil, 2 Water, 1 S/W |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 16 |
| **Cooling Method** | |
| **Sampling Date Provided** | YES |

## Comments

Nil

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

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www.envirolab.com.au

| Sample ID | PFAS in Soils Extended | PFAS in Waters Extended | PFAS in Biota Extended |
|---|---|---|---|
| QC55 | | | ✓ |
| QC38 | | | ✓ |
| QC40 | ✓ | | |
| QC42 | | ✓ | |
| QC44 | | ✓ | |
| QC47 | ✓ | | |
| QC49 | ✓ | | |
| QC53 | | | ✓ |
| QC57 | ✓ | | |
| QC60 | ✓ | | |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

## Additional Info

| |
|---|
| Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt. |
| Requests for longer term sample storage must be received in writing. |
| Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default. |
| TAT for Micro is dependent on incubation. This varies from 3 to 6 days. |

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# CERTIFICATE OF ANALYSIS 265850

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 13 Soil, 1 Water |
| **Date samples received** | 06/04/2021 |
| **Date completed instructions received** | 06/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

**Please refer to the last page of this report for any comments relating to the results.**

## Report Details

| | |
|---|---|
| **Date results requested by** | 13/04/2021 |
| **Date of Issue** | 13/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-1 | 265850-2 | 265850-4 | 265850-5 | 265850-6 |
| Your Reference | UNITS | QC03 | QC05 | QC09 | QC12 | QC14 |
| Date Sampled | | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 12/04/2021 | 12/04/2021 | 12/04/2021 | 12/04/2021 | 12/04/2021 |
| Date analysed | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | 0.3 | 0.4 | 0.2 | 0.2 | <0.1 |
| Perfluoropentanesulfonic acid | µg/kg | 0.2 | 0.4 | 0.2 | 0.4 | <0.1 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 3.7 | 4.6 | 7.3 | 10 | 0.9 |
| Perfluoroheptanesulfonic acid | µg/kg | 0.4 | 0.4 | 0.6 | 1.8 | <0.1 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 35 | 46 | 90 | 190 | 8.3 |
| Perfluorodecanesulfonic acid | µg/kg | 7.5 | 36 | 18 | 42 | <0.2 |
| Perfluorobutanoic acid | µg/kg | <0.2 | 0.4 | 0.7 | 3.5 | 0.4 |
| Perfluoropentanoic acid | µg/kg | 0.3 | 0.8 | 1 | 6.4 | 0.3 |
| Perfluorohexanoic acid | µg/kg | 0.3 | 0.5 | 2.1 | 1.7 | 0.3 |
| Perfluoroheptanoic acid | µg/kg | 0.3 | 0.6 | 0.5 | 2.5 | <0.1 |
| Perfluorooctanoic acid PFOA | µg/kg | 0.4 | 1.1 | 2.0 | 11 | 0.3 |
| Perfluorononanoic acid | µg/kg | 0.3 | 0.7 | 0.5 | 7.3 | <0.1 |
| Perfluorodecanoic acid | µg/kg | 1 | 3 | <0.5 | 2 | <0.5 |
| Perfluoroundecanoic acid | µg/kg | 2 | 4 | <0.5 | 1 | <0.5 |
| Perfluorododecanoic acid | µg/kg | 3 | 3 | <0.5 | 2 | <0.5 |
| Perfluorotridecanoic acid | µg/kg | <0.5 | 0.6 | <0.5 | <0.5 | <0.5 |
| Perfluorotetradecanoic acid | µg/kg | <5 | <5 | <5 | <5 | <5 |
| 4:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 6:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 8:2 FTS | µg/kg | 0.9 | 1 | <0.2 | 12 | <0.2 |
| 10:2 FTS | µg/kg | 0.3 | 0.6 | <0.2 | 0.4 | <0.2 |
| Perfluorooctane sulfonamide | µg/kg | <1 | 3 | 2 | 4 | <1 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <1 | <1 | <1 | 1 | <1 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <5 | <5 | <5 | <5 | <5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 98 | 94 | 101 | 102 | 98 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 108 | 116 | 108 | 101 | 100 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 92 | 92 | 97 | 98 | 90 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 93 | 97 | 96 | 94 | 103 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 88 | 88 | 99 | 97 | 96 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 85 | 96 | 94 | 94 | 99 |

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-1 | 265850-2 | 265850-4 | 265850-5 | 265850-6 |
| Your Reference | UNITS | QC03 | QC05 | QC09 | QC12 | QC14 |
| Date Sampled | | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 84 | 86 | 89 | 87 | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 92 | 90 | 92 | 96 | 103 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 93 | 100 | 103 | 95 | 97 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 87 | 80 | 86 | 89 | 98 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 88 | 91 | 86 | 74 | 104 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 96 | 90 | 96 | 91 | 106 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 89 | 98 | 95 | 94 | 105 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 72 | 80 | 83 | 81 | 111 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 62 | 73 | 61 | 68 | 94 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 110 | 99 | 107 | 114 | 98 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 144 | 99 | 95 | 95 | 125 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 183 | 109 | 108 | 106 | 153 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 79 | 81 | 86 | 82 | 94 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 59 | 75 | 73 | 71 | 91 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 62 | 74 | 75 | 72 | 90 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 71 | 87 | 88 | 86 | 91 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 67 | 77 | 78 | 78 | 93 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 100 | 84 | 84 | 78 | 101 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 93 | 83 | 85 | 79 | 104 |
| Total Positive PFHxS & PFOS | µg/kg | 39 | 51 | 97 | 200 | 9.2 |
| Total Positive PFOS & PFOA | µg/kg | 35 | 47 | 92 | 200 | 8.5 |
| Total Positive PFAS | µg/kg | 56 | 110 | 130 | 300 | 10 |

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-7 | 265850-8 | 265850-9 | 265850-10 | 265850-11 |
| Your Reference | UNITS | QC16 | QC18 | QC20 | QC22 | QC24 |
| Date Sampled | | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 12/04/2021 | 12/04/2021 | 12/04/2021 | 12/04/2021 | 12/04/2021 |
| Date analysed | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | <0.1 | 0.1 | <0.1 | 0.2 | 0.5 |
| Perfluoropentanesulfonic acid | µg/kg | <0.1 | 0.1 | <0.1 | 0.1 | 0.4 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.2 | 2.3 | 1.6 | 1.9 | 4.7 |
| Perfluoroheptanesulfonic acid | µg/kg | <0.1 | 0.4 | 1.2 | 0.3 | 0.5 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 3.4 | 140 | 540 | 23 | 200 |
| Perfluorodecanesulfonic acid | µg/kg | <0.2 | 10 | 2.7 | 0.2 | 5.3 |
| Perfluorobutanoic acid | µg/kg | <0.2 | 0.9 | 0.8 | 3.4 | 0.5 |
| Perfluoropentanoic acid | µg/kg | <0.2 | 1 | 0.9 | 2 | 0.7 |
| Perfluorohexanoic acid | µg/kg | <0.1 | 1.3 | 0.3 | 0.9 | 0.9 |
| Perfluoroheptanoic acid | µg/kg | 0.1 | 2.6 | 0.4 | 0.3 | 0.8 |
| Perfluorooctanoic acid PFOA | µg/kg | 0.2 | 4.2 | 2.1 | 0.4 | 2.2 |
| Perfluorononanoic acid | µg/kg | 0.2 | 5.7 | 11 | 0.3 | 1.4 |
| Perfluorodecanoic acid | µg/kg | <0.5 | 7.5 | 30 | <0.5 | 4 |
| Perfluoroundecanoic acid | µg/kg | <0.5 | 6.1 | 6.8 | <0.5 | 3 |
| Perfluorododecanoic acid | µg/kg | <0.5 | 6.2 | 7.9 | <0.5 | 4 |
| Perfluorotridecanoic acid | µg/kg | <0.5 | 1 | 1 | <0.5 | 0.7 |
| Perfluorotetradecanoic acid | µg/kg | <5 | <5 | <5 | <5 | <5 |
| 4:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 6:2 FTS | µg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 8:2 FTS | µg/kg | <0.2 | 2 | 32 | <0.2 | 19 |
| 10:2 FTS | µg/kg | <0.2 | 1 | 2 | <0.2 | 2 |
| Perfluorooctane sulfonamide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <1 | <1 | <1 | <1 | <1 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <5 | <5 | <5 | <5 | <5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 102 | 103 | 90 | 103 | 104 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 100 | 102 | 106 | 101 | 97 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 81 | 83 | 83 | 80 | 75 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 96 | 96 | 97 | 99 | 95 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 92 | 94 | 93 | 91 | 93 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 90 | 90 | 89 | 87 | 85 |

| PFAS in Soils Extended | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-7 | 265850-8 | 265850-9 | 265850-10 | 265850-11 |
| Your Reference | UNITS | QC16 | QC18 | QC20 | QC22 | QC24 |
| Date Sampled | | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 84 | 86 | 87 | 82 | 81 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 94 | 96 | 94 | 94 | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 88 | 89 | 88 | 88 | 86 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 88 | 93 | 95 | 91 | 94 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 93 | 84 | 55 | 91 | 79 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 100 | 106 | 101 | 97 | 107 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 90 | 102 | 105 | 90 | 99 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 94 | 110 | 113 | 102 | 105 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 84 | 74 | 87 | 88 | 73 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 85 | 91 | 81 | 79 | 85 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 97 | 139 | 102 | 89 | 120 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 141 | 146 | 107 | 121 | 152 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 89 | 82 | 90 | 90 | 85 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 82 | 78 | 91 | 88 | 83 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 88 | 81 | 90 | 90 | 82 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 88 | 84 | 92 | 97 | 92 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 89 | 90 | 100 | 93 | 88 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 89 | 104 | 89 | 81 | 114 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 91 | 136 | 104 | 88 | 138 |
| Total Positive PFHxS & PFOS | µg/kg | 3.6 | 140 | 540 | 25 | 210 |
| Total Positive PFOS & PFOA | µg/kg | 3.6 | 140 | 540 | 23 | 200 |
| Total Positive PFAS | µg/kg | 4.2 | 190 | 640 | 33 | 250 |

| PFAS in Soils Extended | | |
|---|---|---|
| Our Reference | | 265850-12 |
| Your Reference | UNITS | QC29 |
| Date Sampled | | 11/03/2021 |
| Type of sample | | Soil |
| Date prepared | - | 12/04/2021 |
| Date analysed | - | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | <0.1 |
| Perfluoropentanesulfonic acid | µg/kg | <0.1 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.2 |
| Perfluoroheptanesulfonic acid | µg/kg | <0.1 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 2.5 |
| Perfluorodecanesulfonic acid | µg/kg | <0.2 |
| Perfluorobutanoic acid | µg/kg | <0.2 |
| Perfluoropentanoic acid | µg/kg | <0.2 |
| Perfluorohexanoic acid | µg/kg | <0.1 |
| Perfluoroheptanoic acid | µg/kg | <0.1 |
| Perfluorooctanoic acid PFOA | µg/kg | <0.1 |
| Perfluorononanoic acid | µg/kg | <0.1 |
| Perfluorodecanoic acid | µg/kg | <0.5 |
| Perfluoroundecanoic acid | µg/kg | <0.5 |
| Perfluorododecanoic acid | µg/kg | <0.5 |
| Perfluorotridecanoic acid | µg/kg | <0.5 |
| Perfluorotetradecanoic acid | µg/kg | <5 |
| 4:2 FTS | µg/kg | <0.1 |
| 6:2 FTS | µg/kg | <0.1 |
| 8:2 FTS | µg/kg | <0.2 |
| 10:2 FTS | µg/kg | <0.2 |
| Perfluorooctane sulfonamide | µg/kg | <1 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | <1 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | <1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | <1 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | <5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | <0.2 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | <0.2 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 103 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 100 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 82 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 98 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 91 |

| PFAS in Soils Extended | | |
|---|---|---|
| Our Reference | | 265850-12 |
| Your Reference | UNITS | QC29 |
| Date Sampled | | 11/03/2021 |
| Type of sample | | Soil |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 84 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 101 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 93 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 97 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 107 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 109 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 104 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 117 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 84 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 95 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 152 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 172 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 86 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 77 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 80 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 89 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 92 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 137 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 154 |
| Total Positive PFHxS & PFOS | µg/kg | 2.6 |
| Total Positive PFOS & PFOA | µg/kg | 2.5 |
| Total Positive PFAS | µg/kg | 2.6 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-1 | 265850-2 | 265850-4 | 265850-5 | 265850-6 |
| Your Reference | UNITS | QC03 | QC05 | QC09 | QC12 | QC14 |
| Date Sampled | | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 | 09/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Date analysed | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Moisture | % | 23 | 20 | 18 | 17 | 20 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 265850-7 | 265850-8 | 265850-9 | 265850-10 | 265850-11 |
| Your Reference | UNITS | QC16 | QC18 | QC20 | QC22 | QC24 |
| Date Sampled | | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 | 10/03/2021 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Date analysed | - | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 | 13/04/2021 |
| Moisture | % | 15 | 26 | 15 | 15 | 14 |

| Moisture | | |
|---|---|---|
| Our Reference | | 265850-12 |
| Your Reference | UNITS | QC29 |
| Date Sampled | | 11/03/2021 |
| Type of sample | | Soil |
| Date prepared | - | 13/04/2021 |
| Date analysed | - | 13/04/2021 |
| Moisture | % | 4.4 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265850-3 |
| Your Reference | UNITS | QC07 |
| Date Sampled | | 09/03/2021 |
| Type of sample | | Water |
| Date prepared | - | 08/04/2021 |
| Date analysed | - | 08/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | 1.4 |
| Perfluoropentanesulfonic acid | µg/L | 1.4 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 8.5 |
| Perfluoroheptanesulfonic acid | µg/L | 0.75 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 16 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | 0.25 |
| Perfluoropentanoic acid | µg/L | 0.38 |
| Perfluorohexanoic acid | µg/L | 1.5 |
| Perfluoroheptanoic acid | µg/L | 0.30 |
| Perfluorooctanoic acid PFOA | µg/L | 0.73 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 110 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 101 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 73 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 95 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 77 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 107 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 265850-3 |
| Your Reference | UNITS | QC07 |
| Date Sampled | | 09/03/2021 |
| Type of sample | | Water |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 88 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 93 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 75 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 83 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 86 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 99 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 81 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 77 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 62 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 76 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 102 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 87 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 81 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 89 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 86 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 97 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 89 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 75 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 71 |
| Total Positive PFHxS & PFOS | µg/L | 24 |
| Total Positive PFOA & PFOS | µg/L | 17 |
| Total Positive PFAS | µg/L | 31 |

| Method ID | Methodology Summary |
|---|---|
| **Inorg-008** | Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours. |
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265850-2 |
| Date prepared | - | | | 12/04/2021 | 1 | 12/04/2021 | 12/04/2021 | | 12/04/2021 | 12/04/2021 |
| Date analysed | - | | | 13/04/2021 | 1 | 13/04/2021 | 13/04/2021 | | 13/04/2021 | 13/04/2021 |
| Perfluorobutanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.3 | 0.3 | 0 | 102 | 110 |
| Perfluoropentanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.2 | 0.2 | 0 | 103 | 113 |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 3.7 | 3.6 | 3 | 99 | 134 |
| Perfluoroheptanesulfonic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.4 | 0.4 | 0 | 98 | 102 |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 35 | 38 | 8 | 93 | ## |
| Perfluorodecanesulfonic acid | µg/kg | 0.2 | Org-029 | <0.2 | 1 | 7.5 | 7.9 | 5 | 88 | 73 |
| Perfluorobutanoic acid | µg/kg | 0.2 | Org-029 | <0.2 | 1 | <0.2 | <0.2 | 0 | 97 | 94 |
| Perfluoropentanoic acid | µg/kg | 0.2 | Org-029 | <0.2 | 1 | 0.3 | 0.3 | 0 | 97 | 103 |
| Perfluorohexanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.3 | 0.3 | 0 | 98 | 88 |
| Perfluoroheptanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.3 | 0.3 | 0 | 91 | 96 |
| Perfluorooctanoic acid PFOA | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.4 | 0.4 | 0 | 94 | 89 |
| Perfluorononanoic acid | µg/kg | 0.1 | Org-029 | <0.1 | 1 | 0.3 | 0.3 | 0 | 93 | 89 |
| Perfluorodecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 1 | 1 | 1 | 0 | 97 | 85 |
| Perfluoroundecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 1 | 2 | 2 | 0 | 98 | 96 |
| Perfluorododecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 1 | 3 | 3 | 0 | 101 | 101 |
| Perfluorotridecanoic acid | µg/kg | 0.5 | Org-029 | <0.5 | 1 | <0.5 | <0.5 | 0 | 90 | 85 |
| Perfluorotetradecanoic acid | µg/kg | 5 | Org-029 | <5 | 1 | <5 | <5 | 0 | 104 | 102 |
| 4:2 FTS | µg/kg | 0.1 | Org-029 | <0.1 | 1 | <0.1 | <0.1 | 0 | 103 | 96 |
| 6:2 FTS | µg/kg | 0.1 | Org-029 | <0.1 | 1 | <0.1 | <0.1 | 0 | 105 | 107 |
| 8:2 FTS | µg/kg | 0.2 | Org-029 | <0.2 | 1 | 0.9 | 0.9 | 0 | 100 | 107 |
| 10:2 FTS | µg/kg | 0.2 | Org-029 | <0.2 | 1 | 0.3 | 0.3 | 0 | 103 | 114 |
| Perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | <1 | 1 | <1 | <1 | 0 | 104 | 104 |
| N-Methyl perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | <1 | 1 | <1 | <1 | 0 | 106 | 103 |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | 1 | Org-029 | <1 | 1 | <1 | <1 | 0 | 105 | 113 |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | 1 | Org-029 | <1 | 1 | <1 | <1 | 0 | 88 | 88 |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | 5 | Org-029 | <5 | 1 | <5 | <5 | 0 | 93 | 93 |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | 0.2 | Org-029 | <0.2 | 1 | <0.2 | <0.2 | 0 | 93 | 118 |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | 0.2 | Org-029 | <0.2 | 1 | <0.2 | <0.2 | 0 | 77 | 104 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 99 | 1 | 98 | 97 | 1 | 95 | 102 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 102 | 1 | 108 | 106 | 2 | 100 | 104 |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265850-2 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 102 | 1 | 92 | 91 | 1 | 101 | 91 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 101 | 1 | 93 | 93 | 0 | 92 | 89 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 101 | 1 | 88 | 82 | 7 | 97 | 81 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 93 | 1 | 85 | 91 | 7 | 92 | 92 |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 93 | 1 | 84 | 85 | 1 | 93 | 85 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 97 | 1 | 92 | 93 | 1 | 93 | 92 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 107 | 1 | 93 | 97 | 4 | 108 | 96 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 93 | 1 | 87 | 90 | 3 | 90 | 87 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 94 | 1 | 88 | 88 | 0 | 98 | 87 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 103 | 1 | 96 | 94 | 2 | 99 | 93 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 104 | 1 | 89 | 100 | 12 | 102 | 88 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 91 | 1 | 72 | 73 | 1 | 85 | 66 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 63 | 1 | 62 | 53 | 16 | 57 | 63 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 107 | 1 | 110 | 119 | 8 | 98 | 100 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 101 | 1 | 144 | 149 | 3 | 92 | 93 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 97 | 1 | 183 | 183 | 0 | 91 | 106 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 93 | 1 | 79 | 75 | 5 | 87 | 78 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 79 | 1 | 59 | 52 | 13 | 77 | 68 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 76 | 1 | 62 | 56 | 10 | 75 | 67 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 95 | 1 | 71 | 70 | 1 | 94 | 79 |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-1 | 265850-2 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 83 | 1 | 67 | 68 | 1 | 81 | 72 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 94 | 1 | 100 | 99 | 1 | 92 | 80 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 96 | 1 | 93 | 91 | 2 | 92 | 81 |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 11 | 12/04/2021 | 12/04/2021 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 11 | 13/04/2021 | 13/04/2021 | | [NT] | [NT] |
| Perfluorobutanesulfonic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 0.5 | 0.5 | 0 | [NT] | [NT] |
| Perfluoropentanesulfonic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 0.4 | 0.4 | 0 | [NT] | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/kg | 0.1 | Org-029 | [NT] | 11 | 4.7 | 5.2 | 10 | [NT] | [NT] |
| Perfluoroheptanesulfonic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 0.5 | 0.6 | 18 | [NT] | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/kg | 0.1 | Org-029 | [NT] | 11 | 200 | 260 | 26 | [NT] | [NT] |
| Perfluorodecanesulfonic acid | µg/kg | 0.2 | Org-029 | [NT] | 11 | 5.3 | 6.8 | 25 | [NT] | [NT] |
| Perfluorobutanoic acid | µg/kg | 0.2 | Org-029 | [NT] | 11 | 0.5 | 0.5 | 0 | [NT] | [NT] |
| Perfluoropentanoic acid | µg/kg | 0.2 | Org-029 | [NT] | 11 | 0.7 | 0.8 | 13 | [NT] | [NT] |
| Perfluorohexanoic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 0.9 | 1 | 11 | [NT] | [NT] |
| Perfluoroheptanoic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 0.8 | 0.9 | 12 | [NT] | [NT] |
| Perfluorooctanoic acid PFOA | µg/kg | 0.1 | Org-029 | [NT] | 11 | 2.2 | 2.9 | 27 | [NT] | [NT] |
| Perfluorononanoic acid | µg/kg | 0.1 | Org-029 | [NT] | 11 | 1.4 | 1.7 | 19 | [NT] | [NT] |
| Perfluorodecanoic acid | µg/kg | 0.5 | Org-029 | [NT] | 11 | 4 | 5 | 22 | [NT] | [NT] |
| Perfluoroundecanoic acid | µg/kg | 0.5 | Org-029 | [NT] | 11 | 3 | 4 | 29 | [NT] | [NT] |
| Perfluorododecanoic acid | µg/kg | 0.5 | Org-029 | [NT] | 11 | 4 | 5 | 22 | [NT] | [NT] |
| Perfluorotridecanoic acid | µg/kg | 0.5 | Org-029 | [NT] | 11 | 0.7 | 0.8 | 13 | [NT] | [NT] |
| Perfluorotetradecanoic acid | µg/kg | 5 | Org-029 | [NT] | 11 | <5 | <5 | 0 | [NT] | [NT] |
| 4:2 FTS | µg/kg | 0.1 | Org-029 | [NT] | 11 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| 6:2 FTS | µg/kg | 0.1 | Org-029 | [NT] | 11 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| 8:2 FTS | µg/kg | 0.2 | Org-029 | [NT] | 11 | 19 | 27 | 35 | [NT] | [NT] |
| 10:2 FTS | µg/kg | 0.2 | Org-029 | [NT] | 11 | 2 | 2.3 | 14 | [NT] | [NT] |
| Perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | [NT] | 11 | <1 | 1 | 0 | [NT] | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/kg | 1 | Org-029 | [NT] | 11 | <1 | <1 | 0 | [NT] | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/kg | 1 | Org-029 | [NT] | 11 | <1 | <1 | 0 | [NT] | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/kg | 1 | Org-029 | [NT] | 11 | <1 | <1 | 0 | [NT] | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/kg | 5 | Org-029 | [NT] | 11 | <5 | <5 | 0 | [NT] | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/kg | 0.2 | Org-029 | [NT] | 11 | <0.2 | <0.2 | 0 | [NT] | [NT] |
| EtPerfluorooctanesulf amid oacetic acid | µg/kg | 0.2 | Org-029 | [NT] | 11 | <0.2 | <0.2 | 0 | [NT] | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | [NT] | 11 | 104 | 101 | 3 | [NT] | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | [NT] | 11 | 97 | 110 | 13 | [NT] | [NT] |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | [NT] | 11 | 75 | 75 | 0 | [NT] | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | [NT] | 11 | 95 | 92 | 3 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | [NT] | 11 | 93 | 91 | 2 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | [NT] | 11 | 85 | 82 | 4 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | [NT] | 11 | 81 | 76 | 6 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | [NT] | 11 | 92 | 88 | 4 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | [NT] | 11 | 86 | 83 | 4 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | [NT] | 11 | 94 | 85 | 10 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | [NT] | 11 | 79 | 66 | 18 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | [NT] | 11 | 107 | 101 | 6 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | [NT] | 11 | 99 | 99 | 0 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | [NT] | 11 | 105 | 110 | 5 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | [NT] | 11 | 73 | 73 | 0 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | [NT] | 11 | 85 | 82 | 4 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | [NT] | 11 | 120 | 117 | 3 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | [NT] | 11 | 152 | 137 | 10 | [NT] | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | [NT] | 11 | 85 | 81 | 5 | [NT] | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | [NT] | 11 | 83 | 80 | 4 | [NT] | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | [NT] | 11 | 82 | 80 | 2 | [NT] | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | [NT] | 11 | 92 | 83 | 10 | [NT] | [NT] |

| QUALITY CONTROL: PFAS in Soils Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | [NT] | 11 | 88 | 94 | 7 | [NT] | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | [NT] | 11 | 114 | 106 | 7 | [NT] | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | [NT] | 11 | 138 | 142 | 3 | [NT] | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| Date prepared | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Date analysed | - | | | 08/04/2021 | [NT] | [NT] | [NT] | [NT] | 08/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 92 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 69 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 68 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 70 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 82 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 89 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 85 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 72 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 74 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 73 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 84 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 104 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 114 | [NT] | [NT] | [NT] | [NT] | 110 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 75 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 67 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 69 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 76 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 75 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 120 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 70 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 77 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 72 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 85 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 116 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 64 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 71 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 79 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 73 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PFAS in Soil Extended - ## Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 265850-2 have caused interference. However an acceptable recovery was obtained for the LCS

Eurofins
Quarantine

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: ~~17776~~ | 17776 | Purchase Order: | |
| Project Name: | DSi | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 1 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Subcon / Forward Lab / Split WO
Lab / Analysis: Split into ES2111278
Organised By / Date: Eurofins / QC03, QC05, QC07, QC09, QC12,
Relinquished By / Date: QC14, QC16, QC18, QC20, QC22, QC24,
Connote / Courier: QC27, QC29
WO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | HOLD |
|---|---|---|---|---|---|---|---|---|
| 1 | A-SB01-0.1 | Soil | 9/3/21 | AM | 1 PFAS JAR | 1 | X | |
| 2 | A-SB01-0.5 | | | | | | X | |
| 3 | A-SB01-1.0 | | | | | | | X |
| 4 | A-SB01-1.5 | | | | | | | X |
| 5 | A-SB02-0.1 | | | | | | X | |
| 6 | A-SB02-0.5 | | | | | | X | |
| 7 | A-SB02-1.0 | | | | | | | X |
| 8 | A-SB02-1.5 | | | | | | | X |
| 9 | A-SB03-0.1 | | | | | | X | |
| 10 | A-SB03-0.4 | | | | | | X | |
| 11 | A-SB04-0.1 | | | | | | X | ~~X~~ |
| 12 | A-SB04-0.5 | | | | | | X | ~~X~~ |
| 13 | A-SB04-1.0 | | | | | | | X |
| 14 | A-SB04-1.2 | | | | | | | X |
| 15 | A-SB04-1.5 | | | | | | | X |
| 16 | A-SB05-0.1 | | | | | | X | |
| 17 | A-SB05-0.5 | | | | | | X | |
| 18 | A-SB05-1.0 | | | | | | | X |
| 19 | A-SB05-1.3 | | | | | | | X |
| 20 | A-SB05-1.5 | | | | | | | X |
| Total | | | | | | | 0 | |

Environmental Division
Sydney
Work Order Reference
ES2111279
Telephone : +61-2-8784 8555

Envirolab Ser
12 Ash
Chatswood NSW
Ph: (02) 99

ENVIROLAB

Job No: 265850
Date Received: 6/4/2
Time Received: 1700
Received By: AB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Carlyn Williams
Signature:
Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: Carlyn Williams | Date: 12/3 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A BVI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: ELS SYD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

17776_COC_Blank

senversa

# Chain of Custody Documentation

265850 APD

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 2 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | A-SB06-0.1 | Soil | 9/3/21 | AM | PFAS JAR | 1 | X | | | | | | | | | | |
| 22 | A-SB06-0.5 | | | AM | | | X | | | | | | | | | | |
| 23 | A-SB06-1.0 | | | AM | | | | | | | | | | | | X | |
| 24 | A-SB06-1.5 | | | AM | | | | | | | | | | | | X | |
| 25 | A-SB07-0.1 | | | PM | | | X | | | | | | | | | | |
| 26 | A-SB07-0.4 | | | | | | X | | | | | | | | | | |
| 27 | A-SB07-0.8 | | | | | | | | | | | | | | | X | |
| 28 | A-SB07-1.5 | | | | | | | | | | | | | | | X | |
| 29 | A-SB08-0.1 | | | | | | X | | | | | | | | | | |
| 30 | A-SB08-0.4 | | | | | | X | | | | | | | | | | |
| 31 | A-SB08-1.0 | | | | | | | | | | | | | | | X | |
| 32 | A-SB08-1.5 | | | | | | | | | | | | | | | X | |
| 33 | A-SB09-0.1 | | | | | | X | | | | | | | | | | |
| 34 | A-SB09-0.5 | | | | | | X | | | | | | | | | | |
| 35 | A-SB09-1.5 | | | | | | | | | | | | | | | X | |
| 36 | A-SB10-0.1 | | | | | | X | | | | | | | | | | |
| 37 | A-SB10-0.5 | | | | | | X | | | | | | | | | | |
| 38 | A-SB10-1.5 | | | | | | | | | | | | | | | X | |
| 39 | A-SB11-0.1 | | 10/3/21 | AM | | | X | | | | | | | | | | |
| 40 | A-SB11-0.5 | | 10/3/21 | AM | | | X | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples: | Sampler Name: | Signature: | Date: 11/3 |

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-GUI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: ELS SYD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

265850

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 3 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Sample Information | | | | | Container Information | | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | | | | | | | | | | | HOLD | |
| 41 | A-SB11-1.2 | SOIL | 10/3/21 | AM | PFAS JAR | 1 | | | | | | | | | | | X | |
| 42 | A-SB11-1.5 | | | | | | | | | | | | | | | | X | |
| 43 | A-SB12-0.1 | | | | | | X | | | | | | | | | | | |
| 44 | A-SB12-0.5 | | | | | | X | | | | | | | | | | | |
| 45 | A-SB12-1.0 | | | | | | | | | | | | | | | | X | |
| 46 | A-SB12-1.5 | | | | | | | | | | | | | | | | X | |
| 47 | A-SB13-0.1 | | | | | | X | | | | | | | | | | | |
| 48 | A-SB13-0.5 | | | | | | X | | | | | | | | | | | |
| 49 | A-SB13-1.0 | | | | | | | | | | | | | | | | X | |
| 50 | A-SB13-1.5 | | | | | | | | | | | | | | | | X | |
| 51 | A-SB14-0.1 | | | | | | X | | | | | | | | | | | |
| 52 | A-SB14-0.5 | | | | | | X | | | | | | | | | | | |
| 53 | A-SB14-1.0 | | | | | | | | | | | | | | | | X | |
| 54 | A-SB14-1.5 | | | | | | | | | | | | | | | | X | |
| 55 | A-SB15-0.1 | | | PM | | | X | | | | | | | | | | | |
| 56 | A-SB15-0.5 | | | | | | X | | | | | | | | | | | |
| 57 | A-SB15-1.0 | | | | | | | | | | | | | | | | X | |
| 58 | A-SB15-1.5 | | | | | | | | | | | | | | | | X | |
| 59 | A-SB15-0.1 | | | | | | X | | | | | | | | | | | |
| 60 | A-SB15-0.5 | | | | | | X | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: | Signature: | Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-SOL | Date: 8/4/21 |
| Of: | Time: | Date/Time: | Of: ALS JYD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

265850

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 4 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Sample Information: Matrix * | Date | Time | Container Information: Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | A-SB15-1.0 | Soil | 10/3/21 | PM | PFAS JAR | 1 | | | | | | | | | | X | |
| 62 | A-SB15-1.5 | | | | | | | | | | | | | | | X | |
| 63 | A-SB16-0.1 | | | | | | X | | | | | | | | | | |
| 64 | A-SB16-0.5 | | | | | | X | | | | | | | | | | |
| 65 | A-SB16-1.0 | | | | | | | | | | | | | | | X | |
| 66 | A-SB16-1.5 | | | | | | | | | | | | | | | X | |
| 67 | A-SB17-0.1 | | | | | | X | | | | | | | | | | |
| 68 | A-SB17-0.5 | | | | | | X | | | | | | | | | | |
| 69 | A-SB17-1.0 | | | | | | | | | | | | | | | X | |
| 70 | A-SB17-1.5 | | | | | | | | | | | | | | | X | |
| 71 | A-SB18-0.1 | | | | | | X | | | | | | | | | | |
| 72 | A-SB18-0.5 | | | | | | X | | | | | | | | | | |
| 73 | A-SB18-1.0 | | | | | | | | | | | | | | | X | |
| 74 | A-SB18-1.5 | | | | | | | | | | | | | | | X | |
| 75 | A-SB19-0.1 | | | | | | X | | | | | | | | | | |
| 76 | A-SB19-0.5 | | | | | | X | | | | | | | | | | |
| 77 | A-SB19-1.0 | | | | | | | | | | | | | | | X | |
| 78 | A-SB19-1.5 | | | | | | | | | | | | | | | X | |
| 79 | A-SB20-0.1 | | | | | | X | | | | | | | | | | |
| 80 | A-SB21-0.1 | | | | | | X | | | | | | | | | | |
| Total: | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-BUI | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: RW SYD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

265850

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 5 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| | Sample Information | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 81 | A-SB21_0.5 | Soil | 10/3/21 | PM | PFAS JAR | 1 | X | | | | | | | | | | |
| 82 | A-SB21_1.0 | Soil | 10/3/21 | | | | | | | | | | | | | X | |
| 83 | A-SB22_0.1 | | | | | | X | | | | | | | | | | |
| 84 | A-SB22_0.5 | | | | | | X | | | | | | | | | | |
| 85 | A-SB22_1.0 | | | | | | | | | | | | | | | X | |
| 86 | A-SB22_1.5 | | | | | | | | | | | | | | | X | |
| 87 | QC01 | Water | 9/3/21 | | PFAS BOTTLE | 2 | | | | | | | | | | | |
| 88 | QC02 | Soil | | | | | X | | | | | | | | | | |
| 1 – | QC03 | " | | | | | X | | | Please forward to Eurofins | | | | | | | |
| 89 | QC04 | " | | | | | X | | | | | | | | | | |
| 2 – | QC05 | " | | | | | X | | | Please forward to Eurofins | | | | | | | |
| 90 | QC06 | Water | | | BOTTLE | 2 | X | | | | | | | | | | |
| 3 – | QC07 | Water | | | " | 2 | X | | | Please forward to Eurofins | | | | | | | |
| 91 | QC08 | Soil | | | | | X | | | | | | | | | | |
| 4 – | QC09 | Soil | | | | | X | | | Please forward to Eurofins | | | | | | | |
| 92 | QC10 | Water | | | BOTTLE | 2 | X | | | | | | | | | | |
| 93 | QC11 | Soil ~~Water~~ | | | JAR | 1 | X | | | | | | | | | | |
| 5 – | QC12 | Soil | | | " | 1 | X | | | Please forward to Eurofins | | | | | | | |
| 94 | QC13 | | | | | | X | | | | | | | | | | |
| 6 – | QC14 | | | | | | X | | | Please forward to Eurofins | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 1/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: A-BUT | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: EW MD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 360

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| | Sample Information | | | | Container Information | | Analysis Required | |
|---|---|---|---|---|---|---|---|---|
| | Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| | 95 | COUNCIL-TAP1 | W | 9/3 | | BOTTLE | 2 | X | |
| | 96 | COUNCIL-TAP2 | W | 9/3 | | " | 2 | X | |
| | 97 | QC15 | Soil | 10/3 | | JAR | 1 | X | |
| 7 | — | QC16 | | | | | 1 | X | Please forward to Eurofins |
| | 98 | QC17 | | | | | | X | |
| 8 | — | QC18 | | | | | | X | Please forward to Eurofins |
| | 99 | QC19 | | | | | | X | |
| 9 | — | QC20 | | | | | | X | Please forward to Eurofins |
| | 100 | QC21 | | | | | | X | |
| 10 | — | QC22 | | | | | | X | Please forward to Eurofins |
| | 101 | QC23 | | | | | | X | |
| 11 | — | QC24 | | | | | | X | Please forward to Eurofins |
| | 102 | QC25 | W | | | BOTTLE | 2 | X | |
| NR | — | QC27 | S | 11/3 | | JAR | 1 | X | Please forward to Eurofins |
| | 103 | QC28 | S | | | | 1 | X | |
| 12 | — | QC29 | S | | | | | X | Please forward to Eurofins |
| | 104 | QC30 | W | | | BOTTLE | 2 | X | |
| 13 | extra | QC26 | | | | | | | |
| 14 | extra | QC28 | | | | | | | |
| | | | | | | | | | |
| | Total | | | | | | | 0 | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name:

Signature:

Date: 11/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 6/4/21 |
| Of: | Time: | Date/Time: | Of: CW SYD | Time: 1700 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **265850** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 13/04/2021 |

## QC DATA

All laboratory QC data was within the Envirolab Group's specifications except:

## QC Specification Exceptions

| QC Type | Reference | Analysis | Comments |
|---|---|---|---|
| Spike Recovery % | 265850-2 | Perfluorooctanesulfonic acidPFOS | Fails internal acceptance criteria |

*See Report 265850-[R00] for QA/QC details*

## HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

## Holding Time Exceedances

| Analysis | Sample No | Date Sampled | Date Extracted | Date Analysed | Accepted |
|---|---|---|---|---|---|
| **Moisture** | | | | | |
| | 265850-1 | 09/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-2 | 09/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-4 | 09/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-5 | 09/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-6 | 09/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-7 | 10/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-8 | 10/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-9 | 10/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-10 | 10/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-11 | 10/03/2021 | 13/04/2021 | 13/04/2021 | X |
| | 265850-12 | 11/03/2021 | 13/04/2021 | 13/04/2021 | X |
| **PFAS in Waters Extended** | | | | | |
| | 265850-3 | 09/03/2021 | 08/04/2021 | 08/04/2021 | X |

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

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## COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

| QC Evaluation | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

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www.envirolab.com.au

# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 265850 |
| **Date Sample Received** | 06/04/2021 |
| **Date Instructions Received** | 06/04/2021 |
| **Date Results Expected to be Reported** | 13/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | |
| **No. of Samples Provided** | 13 Soil, 1 Water |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 16 |
| **Cooling Method** | |
| **Sampling Date Provided** | YES |

## Comments

QC27 not received.

#13-14 Extra

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

| Sample ID | PFAS in Soils Extended | PFAS in Waters Extended | On Hold |
|---|---|---|---|
| QC03 | ✓ | | |
| QC05 | ✓ | | |
| QC07 | | ✓ | |
| QC09 | ✓ | | |
| QC12 | ✓ | | |
| QC14 | ✓ | | |
| QC16 | ✓ | | |
| QC18 | ✓ | | |
| QC20 | ✓ | | |
| QC22 | ✓ | | |
| QC24 | ✓ | | |
| QC29 | ✓ | | |
| QC26 | | | ✓ |
| QC28 | | | ✓ |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

## Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

QS22, 18, 20 QW20, 21, 11

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 83 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 6 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Subcon / Forward Lab / Split WO
Lab / Analysis: Split from ES2111268
Organised By / Date: Eurofins; QC55, QC38, QC40, QC42, QC44, QC47,
Relinquished By / Date: QC49, QC53, QC57, QC60
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (26 compounds) | HOLD |
|---|---|---|---|---|---|---|---|---|
| 1 | A-SS136 | S | 16/3 | AM | | 1 | | X |
| 2 | A-SS137 | | | | | | | X |
| 3 | A-SS138 | | | | | | | X |
| 4 | A-SS139 | | | | | | | X |
| 5 | A-SS140 | | 17/3 | | | | X | |
| 6 | A-SS141 | | 16/3 | AM | | | X | |
| 7 | A-SB23-0.1 | | 15/3 | AM | | | X | |
| 8 | A-SB23-0.5 | | | | | | X | |
| 9 | A-SB23-1.0 | | | | | | X | X |
| 10 | A-SB23-1.5 | | | | | | | X |
| 11 | A-SB24-0.1 | | | | | | X | |
| 12 | A-SB25-0.1 | | | | | | X | |
| 13 | A-SB25-0.5 | | | | | | X | |
| 14 | A-SB25-1.0 | | | | | | | X |
| 15 | A-SB25-1.5 | | | | | | | X |
| 16 | A-SB26-0.1 | | | | | | X | |
| 17 | A-SB26-0.3 | | | | | | X | |
| 18 | A-SB26-0.5 | | 15/3 | AM | | 1 | | X |
| 19 | A-SD10 | S | 16/3 | AM | | 1 | | |
| 20 | A-TAP3 | W | 16/3 | AM | | 2 | X | |
| Total | | | | | | | 0 | |

Environmental Division
Sydney
Work Order Reference
ES2111280
Telephone - 61-2-8784 8555

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 266760
Date Received: 15/4/21
Time Received: 1550
Received By: W
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 16/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: MJOUY | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: VINA VEGA | Date: 15/4/21 |
| Of: | Time: | Date/Time: | Of: ELS-SYD | Time: 1550 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

17776_COC_Blank

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Breada Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 7 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Container Information: Type / Code | Total Bottles | EP231X - PFAS Full Suite (26 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | A-TAP4 | W | 16/3 | AM | | 2 | X | | | | | | | | | | |
| 22 | A-TAP5 | W | 16/3 | AM | | 2 | X | | | | | | | | | | |
| 23 | PWS_EB_TOILETS_0.1 | S | 15/3 | PM | | 1 | | | | | | | | | | X | |
| 24 | PWS_EB_TOILETS_0.5 | S | 15/3 | PM | | 1 | | | | | | | | | | X | |
| 25 | PWS_EB_TOILETS | W | 15/3 | PM | | 2 | X | | | | | | | | | | |
| 26 | PWS_CAS_TOILETS_0.1 | S | 15/3 | AM | | 1 | | | | | | | | | | X | |
| 27 | PWS_CAS_TOILETS_0.5 | S | 15/3 | AM | | 1 | | | | | | | | | | X | |
| 28 | PWS_CAS_TOILETS | W | 15/3 | AM | | 2 | X | | | | | | | | | | |
| 29 | PWS_HEAD_TOILETS_0.1 | S | 14/3 | AM | | 1 | | | | | | | | | | X | |
| 30 | PWS_HEAD_TOILETS_0.5 | S | 14/3 | AM | | 1 | | | | | | | | | | X | |
| 31 | PWS_HEAD_TOILETS | W | 14/3 | AM | | 2 | X | | | | | | | | | | |
| 32 | PWS_HEAD_DAM | S/W | 16/3 | AM | | 3 | X | | | | | | | | | | |
| 33 | WW11_DAM | S/W | 13/3 | PM | | 3 | X | | | | | | | | | | |
| 34 | HC_SW01 | W | 14/3 | PM | | 2 | X | | | | | | | | | | |
| 35 | BBC_SP02 | S | 14/3 | AM | | 1 | X | | | | | | | | | | |
| 36 | BBC_SP03 | S | 17/3 | PM | | 1 | X | | | | | | | | | | |
| 37 | COCKPIT_SW01 | W | 17/3 | AM | | 2 | X | | | | | | | | | | |
| 38 | PWS_DUCK_DAM | W | 14/3 | AM | | 2 | X | | | | | | | | | | |
| 39 | PWS_DUCK_DAM2 | W | 14/3 | AM | | 2 | | | | | | | | | | X | |
| | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 17/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: | Time: | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: VINA VEGA | Date: 15/4/21 |
| Of: | Time: | Date/Time: | Of: ALS-SMO | Time: 1550 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

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Completed by: _____
Checked by: _____

* 266760

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 6515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 8 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (26 compounds) | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | QC34 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC35 | S/BIOTA | " | | | 2 | x | | * | Pls | frwd | to | Eurofins | * | | | | |
| 41 | QC37 | biota | 13/3/21 | | bag | 1 | x | | | | | | | | | | | |
| – | QC38 | " | " | | bag | 1 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 42 | QC39 | S | " | | jar | 1 | x | | | | | | | | | | | |
| – | QC40 | S | " | | jar | 1 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 43 | QC41 | W | 14/3/21 | | bot | 2 | x | | | | | | | | | | | |
| – | QC42 | W | " | | | 2 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 44 | QC43 | W | | | | 2 | x | | | | | | | | | | | |
| – | QC44 | W | | | | 2 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 45 | QC45 | W | | | | 2 | x | | | | | | | | | | | |
| 46 | QC46 | S | 15/3/21 | | jar | 1 | x | | | | | | | | | | | |
| – | QC47 | S | " | | | 1 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 47 | QC48 | S | " | | | 1 | x | | | | | | | | | | | |
| – | QC49 | S | " | | | 1 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 48 | QC52 | S/BIOTA | 16/3/21 | | | 2 | x | | | | | | | | | | | |
| – | QC53 | S/BIOTA | | | | 2 | x | | * | Pls | FWD | to | Eurofins | * | | | | |
| 49 | QC56 | S | | | | 1 | x | | | | | | | | | | | |
| – | QC57 | S | | | | 1 | x | | * | Pls | FWD | to | Eurofins | | | | | |
| 50 | QC58 | W | | | bot | 2 | x | | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pedersen | Signature: [signature] | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: HP | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: Y. VEGA [signature] | Date: 15/4/21 |
| Of: | Time: | Date/Time: | Of: ECS-SYD | Time: 1550 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

* 266760 [signature]

17776_COC_Blank

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 389

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | DSI | Quote No: | SY-685-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 9 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

Analysis Required

| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231X - PFAS Full Suite (28 compounds) | | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | QC59 | S/W | 17/3/21 | | jar/bot | 2 | x | | | | | | | | | | | |
| – | QC60 | S/W | | | " | 2 | x | * Pls Forward to Eurofins * | | | | | | | | | | |
| 52 | QC61 | W | | | bot | 1 | x | | | | | | | | | | | |
| 53 | QC62 | W | | | bot | 1 | x | | | | | | | | | | | |
| 54 | MC-BIOTA 7 | B | 13/3/21 | | bag | 1 | | | | | | | | | | | x | |
| 55 | MC-BIOTA 12 | | | | | | | | | | | | | | | | x | |
| 56 | MC-BIOTA 14 | | | | | | | | | | | | | | | | x | |
| 57 | MC-BIOTA 15 | | | | | | | | | | | | | | | | x | |
| 58 | MC-BIOTA 16 | | | | | | | | | | | | | | | | x | |
| 59 | MC-BIOTA 18 | | | | | | | | | | | | | | | | x | |
| 60 | A-BIOTA 123 | | 16/3/21 | | | | | | | | | | | | | | x | |
| 61 | A-BIOTA 124 | | | | | | | | | | | | | | | | x | |
| 62 | A-BIOTA 125 | | | | | | | | | | | | | | | | x | |
| 63 | A-BIOTA 126 | | | | | | | | | | | | | | | | x | |
| 64 | A-BIOTA 127 | | | | | | | | | | | | | | | | x | |
| 65 | A-BIOTA 128 | | | | | | | | | | | | | | | | x | |
| 66 | A-BIOTA 129 | | | | | | | | | | | | | | | | x | |
| 67 | A-BIOTA 130 | | | | | | | | | | | | | | | | x | |
| 68 | A-BIOTA 131 | | | | | | | | | | | | | | | | x | |
| 69 | A-BIOTA 132 | | | | | | | | | | | | | | | | x | |
| Total | | | | | | | 0 | | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: H Pederson | Signature: [signature] | Date: 17/3/21

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: H Pederson | Date: 18/3/21 | Carrier / Reference #: | Name/Signature: [signature] | Date: 26.3.21 |
| Of: Senversa | Time: 8:00 | Date/Time: | Of: ALS | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: V. VEGA | Date: 15/4/21 |
| Of: | Time: | Date/Time: | Of: ELS-SHD | Time: 1550 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

* 266760 [initials]

17776_COC_Blank

senversa

# Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address: 277-289 Woodpark Road, Smithfield
Contact: Brenda Hong
Phone: 02 8784 8515

| | | | |
|---|---|---|---|
| Job Number: | 17776 | Purchase Order: | |
| Project Name: | OSI | Quote No: | SY-665-19 V2 |
| Sampled By: | CW / HP | Turn Around Time: | standard |
| Project Manager: | Carlyn Williams | Page: | 10 of 10 |
| Email Report To: | carlyn.williams@senversa.com.au | Phone/Mobile: | 0481 773 078 |

| Sample Information | | | | | Container Information | | Analysis Required | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Sample ID | Matrix * | Date | Time | Type / Code | Total Bottles | EP231K - PFAS Full Suite (28 compounds) | | | | | | | | | HOLD | Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc. |
| 70 | A_BIOTA133 | Biota | 16/3/21 | | bag | 1 | | | | | | | | | | X | |
| 71 | A_BIOTA134 | | | | | | | | | | | | | | | X | |
| 72 | A_BIOTA135 | | | | | | | | | | | | | | | X | |
| 73 | A_BIOTA136 | | | | | | | | | | | | | | | X | |
| 74 | A_BIOTA137 | | | | | | | | | | | | | | | X | |
| 75 | A_BIOTA138 | | | | | | | | | | | | | | | X | |
| 76 | A_BIOTA139 | | | | | | | | | | | | | | | X | |
| 77 | BIOTA_UNKNOWN | | Unknown | | | | | | | | | | | | | X | |
| 78 | QC65 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | |
| (1) 79 | QC66 | S/W | 18/3 | AM | PFAS | 3 | X | | | | | | | | | | |
| Total | | | | | | | 0 | | | | | | | | | | |

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: CARLYN WILLIAMS Signature: Date: 18/3

| Relinquished By: | | Method of Shipment (if applicable): | Received by: | |
|---|---|---|---|---|
| Name/Signature: C.W. | Date: 19/3 | Carrier / Reference #: | Name/Signature: | Date: 26.3.21 |
| Of: Senversa | Time: 9:00 | Date/Time: | Of: | Time: 11:00 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: V. VEGA | Date: 15/4/21 |
| Of: | Time: | Date/Time: | Of: ECS-SYD | Time: 1550 |
| Name/Signature: | Date: | Carrier / Reference #: | Name/Signature: | Date: |
| Of: | Time: | Date/Time: | Of: | Time: |

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid ($HNO_3$) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic;
V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

2 66760

17776_COC_Blank

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# SAMPLE RECEIPT ADVICE

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |

## Sample Login Details

| | |
|---|---|
| **Your reference** | 17776, DSI |
| **Envirolab Reference** | 266760 |
| **Date Sample Received** | 15/04/2021 |
| **Date Instructions Received** | 15/04/2021 |
| **Date Results Expected to be Reported** | 22/04/2021 |

## Sample Condition

| | |
|---|---|
| **Samples received in appropriate condition for analysis** | Yes |
| **No. of Samples Provided** | 1 soil |
| **Turnaround Time Requested** | Standard |
| **Temperature on Receipt (°C)** | 11 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

## Comments

Nil

Please direct any queries to:

| Aileen Hie | Jacinta Hurst |
|---|---|
| **Phone: 02 9910 6200** | **Phone: 02 9910 6200** |
| **Fax: 02 9910 6201** | **Fax: 02 9910 6201** |
| **Email: ahie@envirolab.com.au** | **Email: jhurst@envirolab.com.au** |

*Analysis Underway, details on the following page:*

**Envirolab Services Pty Ltd**
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

| Sample ID | PFAS in Soils Extended |
|---|---|
| QC66 | ✓ |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

| Additional Info |
|---|
| Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt. |
| Requests for longer term sample storage must be received in writing. |
| Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default. |
| TAT for Micro is dependent on incubation. This varies from 3 to 6 days. |

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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# CERTIFICATE OF ANALYSIS 266760

## Client Details

| | |
|---|---|
| **Client** | Senversa Pty Ltd |
| **Attention** | Carlyn Williams |
| **Address** | 6/15 William St, Melbourne, VIC, 3000 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **17776, DSI** |
| **Number of Samples** | 1 soil |
| **Date samples received** | 15/04/2021 |
| **Date completed instructions received** | 15/04/2021 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

## Report Details

| | |
|---|---|
| **Date results requested by** | 22/04/2021 |
| **Date of Issue** | 19/04/2021 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Josh Williams, LC Supervisor

**Authorised By**

Nancy Zhang, Laboratory Manager

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 266760-1 |
| Your Reference | UNITS | QC66 |
| Date Sampled | | 18/03/2021 |
| Type of sample | | soil |
| Date prepared | - | 16/04/2021 |
| Date analysed | - | 16/04/2021 |
| Perfluorobutanesulfonic acid | µg/L | <0.01 |
| Perfluoropentanesulfonic acid | µg/L | <0.01 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | <0.01 |
| Perfluoroheptanesulfonic acid | µg/L | <0.01 |
| Perfluorooctanesulfonic acid PFOS | µg/L | <0.01 |
| Perfluorodecanesulfonic acid | µg/L | <0.02 |
| Perfluorobutanoic acid | µg/L | <0.02 |
| Perfluoropentanoic acid | µg/L | <0.02 |
| Perfluorohexanoic acid | µg/L | <0.01 |
| Perfluoroheptanoic acid | µg/L | <0.01 |
| Perfluorooctanoic acid PFOA | µg/L | <0.01 |
| Perfluorononanoic acid | µg/L | <0.01 |
| Perfluorodecanoic acid | µg/L | <0.02 |
| Perfluoroundecanoic acid | µg/L | <0.02 |
| Perfluorododecanoic acid | µg/L | <0.05 |
| Perfluorotridecanoic acid | µg/L | <0.1 |
| Perfluorotetradecanoic acid | µg/L | <0.5 |
| 4:2 FTS | µg/L | <0.01 |
| 6:2 FTS | µg/L | <0.01 |
| 8:2 FTS | µg/L | <0.02 |
| 10:2 FTS | µg/L | <0.02 |
| Perfluorooctane sulfonamide | µg/L | <0.1 |
| N-Methyl perfluorooctane sulfonamide | µg/L | <0.05 |
| N-Ethyl perfluorooctanesulfon amide | µg/L | <0.1 |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | <0.05 |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | <0.5 |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | <0.02 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 102 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 88 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 102 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 122 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 97 |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | 141 |

| PFAS in Waters Extended | | |
|---|---|---|
| Our Reference | | 266760-1 |
| Your Reference | UNITS | QC66 |
| Date Sampled | | 18/03/2021 |
| Type of sample | | soil |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | 102 |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | 91 |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | 97 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 104 |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | 107 |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | 94 |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | 99 |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | 124 |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | 148 |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | 120 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 101 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 133 |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | 109 |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | 111 |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | 89 |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | 102 |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | 136 |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | 95 |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | 133 |
| Total Positive PFHxS & PFOS | µg/L | <0.01 |
| Total Positive PFOA & PFOS | µg/L | <0.01 |
| Total Positive PFAS | µg/L | <0.01 |

| Method ID | Methodology Summary |
|---|---|
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date prepared | - | | | 16/04/2021 | [NT] | [NT] | [NT] | [NT] | 16/04/2021 | [NT] |
| Date analysed | - | | | 16/04/2021 | [NT] | [NT] | [NT] | [NT] | 16/04/2021 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| Perfluoropentanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 95 | [NT] |
| Perfluoroheptanesulfonic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 99 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 95 | [NT] |
| Perfluorodecanesulfonic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 108 | [NT] |
| Perfluorobutanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| Perfluoropentanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| Perfluorohexanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 106 | [NT] |
| Perfluoroheptanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| Perfluorononanoic acid | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 108 | [NT] |
| Perfluorodecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 114 | [NT] |
| Perfluoroundecanoic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 123 | [NT] |
| Perfluorododecanoic acid | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 102 | [NT] |
| Perfluorotridecanoic acid | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 109 | [NT] |
| Perfluorotetradecanoic acid | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| 4:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 105 | [NT] |
| 6:2 FTS | µg/L | 0.01 | Org-029 | <0.01 | [NT] | [NT] | [NT] | [NT] | 87 | [NT] |
| 8:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 86 | [NT] |
| 10:2 FTS | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 103 | [NT] |
| Perfluorooctane sulfonamide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| N-Methyl perfluorooctane sulfonamide | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 106 | [NT] |
| N-Ethyl perfluorooctanesulfon amide | µg/L | 0.1 | Org-029 | <0.1 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| N-Me perfluorooctanesulfonamid oethanol | µg/L | 0.05 | Org-029 | <0.05 | [NT] | [NT] | [NT] | [NT] | 94 | [NT] |
| N-Et perfluorooctanesulfonamid oethanol | µg/L | 0.5 | Org-029 | <0.5 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |
| MePerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 103 | [NT] |
| EtPerfluorooctanesulf- amid oacetic acid | µg/L | 0.02 | Org-029 | <0.02 | [NT] | [NT] | [NT] | [NT] | 81 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 101 | [NT] | [NT] | [NT] | [NT] | 102 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 90 | [NT] | [NT] | [NT] | [NT] | 91 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 96 | [NT] | [NT] | [NT] | [NT] | 94 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 128 | [NT] | [NT] | [NT] | [NT] | 124 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 103 | [NT] | [NT] | [NT] | [NT] | 105 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFBA* | % | | Org-029 | 143 | [NT] | [NT] | [NT] | [NT] | 140 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFPeA* | % | | Org-029 | 97 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFHxA* | % | | Org-029 | 93 | [NT] | [NT] | [NT] | [NT] | 93 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFHpA* | % | | Org-029 | 101 | [NT] | [NT] | [NT] | [NT] | 100 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 116 | [NT] | [NT] | [NT] | [NT] | 111 | [NT] |
| *Extracted ISTD* $^{13}C_5$ *PFNA* | % | | Org-029 | 116 | [NT] | [NT] | [NT] | [NT] | 112 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDA* | % | | Org-029 | 98 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFUnDA* | % | | Org-029 | 99 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFDoDA* | % | | Org-029 | 121 | [NT] | [NT] | [NT] | [NT] | 121 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *PFTeDA* | % | | Org-029 | 141 | [NT] | [NT] | [NT] | [NT] | 141 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *4:2FTS* | % | | Org-029 | 117 | [NT] | [NT] | [NT] | [NT] | 118 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | | Org-029 | 108 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 135 | [NT] | [NT] | [NT] | [NT] | 125 | [NT] |
| *Extracted ISTD* $^{13}C_8$ *FOSA* | % | | Org-029 | 119 | [NT] | [NT] | [NT] | [NT] | 112 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSA* | % | | Org-029 | 116 | [NT] | [NT] | [NT] | [NT] | 115 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSA* | % | | Org-029 | 95 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| *Extracted ISTD* $d_7$ *N MeFOSE* | % | | Org-029 | 110 | [NT] | [NT] | [NT] | [NT] | 127 | [NT] |

| QUALITY CONTROL: PFAS in Waters Extended | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| *Extracted ISTD* $d_9$ *N EtFOSE* | % | | Org-029 | 127 | [NT] | [NT] | [NT] | [NT] | 127 | [NT] |
| *Extracted ISTD* $d_3$ *N MeFOSAA* | % | | Org-029 | 96 | [NT] | [NT] | [NT] | [NT] | 100 | [NT] |
| *Extracted ISTD* $d_5$ *N EtFOSAA* | % | | Org-029 | 129 | [NT] | [NT] | [NT] | [NT] | 126 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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# DATA QUALITY ASSESSMENT SUMMARY

## Report Details

| | |
|---|---|
| **Envirolab Report Reference** | **266760** |
| **Client ID** | Senversa Pty Ltd |
| **Project Reference** | 17776, DSI |
| **Date Issued** | 19/04/2021 |

### QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

### HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

## Holding Time Exceedances

| Analysis | Sample No | Date Sampled | Date Extracted | Date Analysed | Accepted |
|---|---|---|---|---|---|
| **PFAS in Waters Extended** | | | | | |
| | 266760-1 | 18/03/2021 | 16/04/2021 | 16/04/2021 | X |

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

### COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

## QC Evaluation

| | |
|---|---|
| **Duplicate(s) was performed as per NEPM frequency** | ✓ |
| **Laboratory Control Sample(s) were analysed with the samples received** | ✓ |
| **A Method Blank was performed with the samples received** | ✓ |
| **Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)** | ✓ |

*Refer to Certificate of Analysis for all Quality Control data.*

# Appendix J: Quality Assurance and Quality Control

**Appendix K - Rinsates and Blanks**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Field ID** | QC10 | QC25 | QC32 | QC45 | QC58 | QC62 | QC61 |
|---|---|---|---|---|---|---|---|---|---|
| | | **Date** | 9/03/2021 | 10/03/2021 | 11/03/2021 | 14/03/2021 | 16/03/2021 | 17/03/2021 | 17/03/2021 |
| | | **Sample Type** | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Potable water sample (water used for decon / rinse) |
| | | **Lab Report No.** | ES2111279 | ES2111279 | ES2111279 | ES2111280 | ES2111280 | ES2111280 | ES2111280 |
| | Unit | EQL | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| **PFAS** | | | | | | | | | |
| Sum of PFAS | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

**Appendix K - Water RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | AIRPORT_BORE | AIRPORT_BORE | | AIRPORT_BORE | AIRPORT_BORE | | CHAP_TAP1 | CHAP_TAP1 | | CHAP_TAP1 | CHAP_TAP1 | | FRE_TAP1 | FRE_TAP1 | | FRE_TAP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | AIRPORT_BORE | QC06 | | AIRPORT_BORE | QC07 | | CHAP_TAP1 | QC30 | | CHAP_TAP1 | QC31 | | FRE_TAP1 | QC35 | | FRE_TAP1 |
| | | **Date** | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 11/03/2021 | 11/03/2021 | | 11/03/2021 | 11/03/2021 | | 12/03/2021 | 12/03/2021 | | 12/03/2021 |
| | | **Sample Type** | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal |
| | | **Lab Report No.** | ES2111278 | ES2111279 | RPD | ES2111278 | 265850 | RPD | ES2111276 | ES2111276 | RPD | ES2111276 | 265847 | RPD | ES2111256 | ES2111256 | RPD | ES2111256 |
| | Unit | EQL | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.02 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.02 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | 1.32 | 1.44 | 9 | 1.32 | 1.5 | 13 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.02 | 0.30 | 0.33 | 10 | 0.30 | 0.38 | 24 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | 0.29 | 0.20 | 37 | 0.29 | 0.30 | 3 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | 0.2 | 0.2 | 0 | 0.2 | 0.25 | 22 | <0.1 | <0.1 | 0 | <0.1 | <0.02 | 0 | <0.1 | <0.1 | 0 | <0.1 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | 0.68 | 0.70 | 3 | 0.68 | 0.73 | 7 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | 17.2 | 22.5 | 27 | 17.2 | 16 | 7 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | 1.35 | 1.55 | 14 | 1.35 | 1.4 | 4 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | 7.68 | 12.2 | **45** | 7.68 | 8.5 | 10 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | 0.69 | 0.92 | 29 | 0.69 | 0.75 | 8 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | 1.13 | 1.14 | 1 | 1.13 | 1.4 | 21 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | 24.9 | 34.7 | **33** | 24.9 | 24 | 4 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| **PFAS** | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | - | - | - | - | 17 | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | 30.8 | 41.2 | 29 | 30.8 | 31 | 1 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Water RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | FRE_TAP1 | | ID014_BORE | ID014_BORE | | ID014_BORE | ID014_BORE | | HC_SW01 | HC_SW01 | | HC_SW01 | HC_SW01 | | PWS_DUCK_DAM | PWS_DUCK_DAM | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | QC36 | | ID014_BORE | QC33 | | ID014_BORE | QC34 | | HC_SW01 | QC43 | | HC_SW01 | QC44 | | PWS_DUCK_DAM | QC41 | |
| | | **Date** | 12/03/2021 | | 12/03/2021 | 12/03/2021 | | 12/03/2021 | 12/03/2021 | | 14/03/2021 | 14/03/2021 | | 14/03/2021 | 14/03/2021 | | 14/03/2021 | 14/03/2021 | |
| | | **Sample Type** | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | |
| | | **Lab Report No.** | 265846 | RPD | ES2111243 | ES2111243 | RPD | ES2111243 | 265848 | RPD | ES2111280 | ES2111280 | RPD | ES2111280 | 265849 | RPD | ES2111280 | ES2111280 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.02 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.02 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | <0.01 | 0 | 0.12 | 0.11 | 9 | 0.12 | 0.13 | 8 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.02 | <0.02 | 0 | 0.02 | 0.02 | 0 | 0.02 | 0.04 | 67 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | <0.01 | 0 | 0.02 | 0.02 | 0 | 0.02 | 0.03 | 40 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | <0.02 | 0 | <0.1 | <0.1 | 0 | <0.1 | 0.02 | 0 | <0.1 | <0.1 | 0 | <0.1 | <0.02 | 0 | <0.1 | <0.1 | 0 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | <0.01 | 0 | 0.04 | 0.04 | 0 | 0.04 | 0.04 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | <0.01 | 0 | 0.89 | 0.84 | 6 | 0.89 | 1.0 | 12 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | 0.02 | 0.02 | 0 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | <0.01 | 0 | 0.14 | 0.13 | 7 | 0.14 | 0.17 | 19 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | <0.01 | 0 | 1.04 | 0.98 | 6 | 1.04 | 1.2 | 14 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | 0.07 | 0.08 | 13 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | <0.01 | 0 | 0.05 | 0.04 | 22 | 0.05 | 0.06 | 18 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | <0.01 | 0 | 0.15 | 0.15 | 0 | 0.15 | 0.17 | 13 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | <0.01 | 0 | 1.93 | 1.82 | 6 | 1.93 | 2.2 | 13 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | 0.09 | 0.10 | 11 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 |
| **PFAS** | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | <0.01 | - | - | - | - | - | 1.0 | - | - | - | - | - | <0.01 | - | - | - | - |
| Sum of PFAS | µg/L | 0.01 | <0.01 | 0 | 2.47 | 2.33 | 6 | 2.47 | 2.8 | 13 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | 0.09 | 0.10 | 11 |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Water RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | PWS_DUCK_DAM | PWS_DUCK_DAM | | ID012_SW03 | ID012_SW03 | | ID012_SW03 | ID012_SW03 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | PWS_DUCK_DAM | QC42 | | ID012_SW03 | QC63 | | ID012_SW03 | QC64 | |
| | | **Date** | 14/03/2021 | 14/03/2021 | | 18/03/2021 | 18/03/2021 | | 18/03/2021 | 18/03/2021 | |
| | | **Sample Type** | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | |
| | | **Lab Report No.** | ES2111280 | 265849 | RPD | ES2111259 | ES2111259 | RPD | ES2111259 | 265845 | RPD |
| | Unit | EQL | | | | | | | | | |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.01 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | µg/L | 0.01 | <0.05 | <0.01 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.01 | 0 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.02 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.02 | <0.05 | <0.02 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.02 | 0 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.01 | <0.02 | 0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.02 | <0.02 | <0.05 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.05 | 0 |
| Perfluorononanoic acid (PFNA) | µg/L | 0.01 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.05 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.01 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.02 | <0.1 | <0.02 | 0 | <0.1 | <0.1 | 0 | <0.1 | <0.02 | 0 |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.02 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | µg/L | 0.01 | 0.02 | 0.02 | 0 | 0.06 | 0.05 | 18 | 0.06 | 0.05 | 18 |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.01 | <0.02 | 0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.01 | 0.07 | 0.1 | 35 | 0.02 | 0.02 | 0 | 0.02 | 0.02 | 0 |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.01 | <0.02 | <0.01 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.01 | <0.02 | 0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.01 | 0 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | 0.09 | 0.12 | 29 | 0.08 | 0.07 | 13 | 0.08 | 0.07 | 13 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.05 | <0.05 | <0.5 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.5 | 0 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | µg/L | 0.02 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.02 | 0 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.05 | <0.05 | <0.1 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.1 | 0 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | µg/L | 0.05 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 | <0.05 | <0.05 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | <0.02 | <0.1 | 0 | <0.02 | <0.02 | 0 | <0.02 | <0.1 | 0 |
| **PFAS** | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | µg/L | 0.01 | - | 0.02 | - | - | - | - | - | 0.05 | - |
| Sum of PFAS | µg/L | 0.01 | 0.09 | 0.16 | **56** | 0.08 | 0.07 | 13 | 0.08 | 0.07 | 13 |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Soil RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_SB08 | A_SB08 | | A_SB08 | A_SB08 | | A_SB10 | A_SB10 | | A_SB10 | A_SB10 | | A_SS92 | A_SS92 | | A_SS92 | A_SS92 | | A_SS97 | A_SS97 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_SB08_0.1 | QC04 | | A_SB08_0.1 | QC05 | | A_SB10_0.1 | QC08 | | A_SB10_0.1 | QC09 | | A_SS92 | QC02 | | A_SS92 | QC03 | | A_SS97 | QC17 | |
| | | **Date** | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 9/03/2021 | | 9/03/2021 | 10/03/2021 | |
| | | **Sample Type** | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | |
| | | **Lab Report No.** | ES2111279 | ES2111279 | RPD | ES2111279 | 265850 | RPD | ES2111279 | ES2111279 | RPD | ES2111279 | 265850 | RPD | ES2111278 | ES2111279 | RPD | ES2111278 | 265850 | RPD | ES2111278 | ES2111279 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | | | | | |
| **Physical Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | 12.0 | 26.1 | **74** | 12.0 | 20 | **50** | 23.9 | 23.0 | 4 | 23.9 | 18 | 28 | 29.2 | 29.9 | 2 | 29.2 | 23 | 24 | 36.9 | 36.6 | 1 |
| pH (Final) | pH Units | 0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | 0.0014 | 0.0022 | 44 | 0.0014 | 0.001 | 33 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | 0.0018 | 0.0014 | 25 | 0.0018 | 0.0009 | 67 | 0.0026 | 0.0030 | 14 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.0005 | 0.0008 | 46 | <0.0005 | 0.0006 | 18 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | 0.0003 | 0 | 0.0012 | 0.0013 | 8 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.0006 | 0.0007 | 15 | 0.0006 | 0.0005 | 18 | 0.0032 | 0.0027 | 17 | 0.0032 | 0.0021 | **42** | 0.0005 | 0.0004 | 22 | 0.0005 | 0.0003 | 50 | 0.0022 | 0.0020 | 10 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | 0.0034 | 0.0040 | 16 | 0.0034 | 0.003 | 12 | 0.0002 | <0.0002 | 0 | 0.0002 | <0.0005 | 0 | 0.0045 | 0.0025 | **57** | 0.0045 | 0.003 | **40** | 0.0086 | 0.0065 | 28 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | 0.0008 | 0.0012 | 40 | 0.0008 | 0.0007 | 13 | 0.0007 | 0.0009 | 25 | 0.0007 | 0.0005 | 33 | 0.0004 | <0.0002 | 67 | 0.0004 | 0.0003 | 29 | 0.0094 | 0.0122 | 26 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | 0.0007 | 0.0007 | 0 | 0.0007 | 0.0008 | 13 | 0.0012 | 0.0009 | 29 | 0.0012 | 0.001 | 18 | 0.0004 | 0.0003 | 29 | 0.0004 | 0.0003 | 29 | 0.0016 | 0.0013 | 21 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | <0.0005 | 0.0007 | 33 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | 0.0017 | 0.0021 | 21 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | 0.0006 | 0.0006 | 0 | 0.0006 | 0.0006 | 0 | 0.0007 | 0.0005 | 33 | 0.0007 | 0.0005 | 33 | 0.0004 | <0.0002 | 67 | 0.0004 | 0.0003 | 29 | 0.0035 | 0.0028 | 22 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | <0.001 | <0.001 | 0 | <0.001 | 0.0004 | 0 | <0.001 | <0.001 | 0 | <0.001 | 0.0007 | 0 | <0.001 | <0.001 | 0 | <0.001 | <0.0002 | 0 | 0.001 | <0.001 | 0 |
| | µg/L | 0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | 0.0031 | 0.0035 | 12 | 0.0031 | 0.003 | 3 | <0.0002 | 0.0002 | 0 | <0.0002 | <0.0005 | 0 | 0.0025 | 0.0016 | 44 | 0.0025 | 0.001 | **86** | 0.0121 | 0.0140 | 15 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | 0.0005 | 0.0007 | 33 | 0.0005 | 0.0006 | 18 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | 0.0007 | 0.0004 | 55 | 0.0007 | <0.0005 | 33 | 0.0017 | 0.0014 | 19 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | 0.0045 | 0.0059 | 27 | 0.0045 | 0.004 | 12 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | 0.0053 | 0.0033 | **47** | 0.0053 | 0.002 | **90** | 0.0102 | 0.0095 | 7 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.0010 | 0.0015 | 40 | 0.0010 | 0.0011 | 10 | 0.0026 | 0.0030 | 14 | 0.0026 | 0.0020 | 26 | 0.0006 | 0.0006 | 0 | 0.0006 | 0.0004 | 40 | 0.0064 | 0.0077 | 18 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.0470 | 0.0804 | **52** | 0.0470 | 0.046 | 2 | 0.132 | 0.168 | 24 | 0.132 | 0.09 | **38** | 0.0750 | 0.0678 | 10 | 0.0750 | 0.035 | **73** | 0.183 | 0.219 | 18 |
| | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | 0.0004 | 0.0007 | 55 | 0.0004 | 0.0004 | 0 | 0.0002 | <0.0002 | 0 | 0.0002 | 0.0002 | 0 | 0.0004 | 0.0003 | 29 | 0.0004 | 0.0002 | 67 | 0.0002 | 0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.0035 | 0.0062 | **56** | 0.0035 | 0.0046 | 27 | 0.0073 | 0.0071 | 3 | 0.0073 | 0.0073 | 0 | 0.0050 | 0.0042 | 17 | 0.0050 | 0.0037 | 30 | 0.0037 | 0.0037 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | 0.0004 | 0.0006 | 40 | 0.0004 | 0.0004 | 0 | 0.0008 | 0.0008 | 0 | 0.0008 | 0.0006 | 29 | 0.0006 | 0.0004 | 40 | 0.0006 | 0.0004 | 40 | 0.0006 | 0.0005 | 18 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | 0.0332 | 0.0290 | 14 | 0.0332 | 0.036 | 8 | 0.0209 | 0.0174 | 18 | 0.0209 | 0.018 | 15 | 0.0142 | 0.0102 | **33** | 0.0142 | 0.0075 | **62** | 0.0162 | 0.0174 | 7 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | 0.0003 | 0.0005 | 50 | 0.0003 | 0.0004 | 29 | <0.0002 | <0.0002 | 0 | <0.0002 | 0.0002 | 0 | 0.0003 | 0.0004 | 29 | 0.0003 | 0.0003 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.0505 | 0.0866 | **53** | 0.0505 | 0.051 | 1 | 0.139 | 0.175 | 23 | 0.139 | 0.097 | **36** | 0.0800 | 0.0720 | 11 | 0.0800 | 0.039 | **69** | 0.187 | 0.223 | 18 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | 0.0044 | 159 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | <0.0005 | 0.0009 | 57 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | 0.0030 | 0.0034 | 12 | 0.0030 | 0.003 | 0 | 0.0028 | 0.0022 | 24 | 0.0028 | 0.002 | 33 | 0.0018 | 0.0012 | 40 | 0.0018 | <0.001 | 57 | 0.0008 | 0.0008 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | - | - | - | 0.047 | - | - | - | - | - | 0.092 | - | - | - | - | - | 0.035 | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.104 | 0.144 | **32** | 0.104 | 0.11 | 6 | 0.173 | 0.204 | 16 | 0.173 | 0.13 | 28 | 0.114 | 0.0994 | 14 | 0.114 | 0.056 | **68** | 0.267 | 0.305 | 13 |
| Sum of PFAS | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Soil RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_SS97 | A_SS97 | | A_SS97 | A_SS97 | | A_SB11 | A_SB11 | | A_SB11 | A_SB11 | | A_SB13 | A_SB13 | | A_SB13 | A_SB13 | | A_SB22 | A_SB22 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_SS97 | QC18 | | A_SS97 | QC17 | | A_SB11_0.1 | QC11 | | A_SB11_0.1 | QC12 | | A_SB13_0.1 | QC15 | | A_SB13_0.1 | QC16 | | A_SB22_0.1 | QC21 | |
| | | **Date** | 9/03/2021 | 10/03/2021 | | 9/03/2021 | 10/03/2021 | | 10/03/2021 | 9/03/2021 | | 10/03/2021 | 9/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | |
| | | **Sample Type** | Normal | Interlab_D | | Normal | Field_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | |
| | | **Lab Report No.** | ES2111278 | 265850 | RPD | ES2115699 | ES2115699 | RPD | ES2111279 | ES2111279 | RPD | ES2111279 | 265850 | RPD | ES2111279 | ES2111279 | RPD | ES2111279 | 265850 | RPD | ES2111279 | ES2111279 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | | | | | |
| **Physical Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | 36.9 | 26 | **35** | - | - | - | 25.7 | 23.7 | 8 | 25.7 | 17 | **41** | 19.6 | 19.0 | 3 | 19.6 | 15 | 27 | 19.3 | 25.0 | 26 |
| pH (Final) | pH Units | 0.1 | - | - | - | 7.0 | 7.1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | 0.0026 | 0.002 | 26 | - | - | - | 0.0295 | 0.0185 | **46** | 0.0295 | 0.012 | **84** | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | | - | - | | - | - | - | - | - | - | - | - | | - | - |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | 0.0012 | 0.001 | 18 | - | - | - | 0.0008 | 0.0008 | 0 | 0.0008 | 0.0004 | 67 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.0022 | 0.0013 | **51** | - | - | - | 0.0034 | 0.0027 | 23 | 0.0034 | 0.0017 | **67** | 0.0002 | 0.0005 | 86 | 0.0002 | <0.0001 | 67 | 0.0016 | 0.0014 | 13 |
| | µg/L | 0.02 | - | - | - | 0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | 0.0086 | 0.0062 | **32** | - | - | - | 0.0037 | 0.0018 | **69** | 0.0037 | 0.002 | **60** | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | 0.0094 | 0.0057 | **49** | - | - | - | 0.0207 | 0.0127 | **48** | 0.0207 | 0.0073 | **96** | 0.0002 | <0.0002 | 0 | 0.0002 | 0.0002 | 0 | 0.0005 | 0.0005 | 0 |
| | µg/L | 0.02 | - | - | - | 0.03 | 0.04 | 29 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | 0.0016 | 0.001 | 46 | - | - | - | 0.0077 | 0.0069 | 11 | 0.0077 | 0.0064 | 18 | <0.0002 | 0.0003 | 40 | <0.0002 | <0.0002 | 0 | 0.0026 | 0.0019 | 31 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | 0.0017 | <0.005 | 0 | - | - | - | 0.0007 | 0.0005 | 33 | 0.0007 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | 0.0035 | 0.0026 | 30 | - | - | - | 0.0035 | 0.0029 | 19 | 0.0035 | 0.0025 | **33** | 0.0002 | 0.0004 | 67 | 0.0002 | 0.0001 | 67 | 0.0012 | 0.0004 | 100 |
| | µg/L | 0.02 | - | - | - | 0.06 | 0.04 | 40 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | 0.001 | 0.0009 | 11 | - | - | - | 0.006 | 0.004 | 40 | 0.006 | 0.0035 | **53** | <0.001 | <0.001 | 0 | <0.001 | <0.0002 | 0 | 0.002 | 0.003 | 40 |
| | µg/L | 0.1 | - | - | - | <0.1 | <0.1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | 0.0121 | 0.0075 | **47** | - | - | - | 0.0075 | 0.0041 | **59** | 0.0075 | 0.002 | **116** | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | 0.0002 | 0.0004 | 67 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | 0.0017 | 0.001 | 52 | - | - | - | 0.0007 | 0.0004 | 55 | 0.0007 | <0.0005 | 33 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | 0.0102 | 0.0061 | **50** | - | - | - | 0.0038 | 0.0018 | **71** | 0.0038 | 0.001 | **117** | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.0064 | 0.0042 | **42** | - | - | - | 0.0245 | 0.0189 | 26 | 0.0245 | 0.011 | **76** | 0.0005 | 0.0004 | 22 | 0.0005 | 0.0002 | 86 | 0.0021 | 0.0006 | **111** |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | - | - | - | 0.06 | 0.06 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.183 | 0.14 | 27 | - | - | - | 0.339 | 0.347 | 2 | 0.339 | 0.19 | **56** | 0.0037 | 0.0022 | **51** | 0.0037 | 0.0034 | 8 | 0.0154 | 0.0183 | 17 |
| | µg/L | 0.01 | - | - | - | 0.83 | 0.62 | 29 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | 0.0002 | 0.0001 | 67 | - | - | - | 0.0006 | 0.0006 | 0 | 0.0006 | 0.0004 | 40 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.0037 | 0.0023 | **47** | - | - | - | 0.0126 | 0.0115 | 9 | 0.0126 | 0.01 | 23 | 0.0003 | 0.0004 | 29 | 0.0003 | 0.0002 | 40 | 0.0052 | 0.0018 | **97** |
| | µg/L | 0.02 | - | - | - | 0.07 | 0.06 | 15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | 0.0006 | 0.0004 | 40 | - | - | - | 0.0027 | 0.0025 | 8 | 0.0027 | 0.0018 | 40 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0005 | <0.0002 | 86 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | 0.0162 | 0.01 | **47** | - | - | - | 0.0374 | 0.0184 | **68** | 0.0374 | 0.042 | 12 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | 0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | <0.0002 | 0.0001 | 0 | - | - | - | 0.0004 | 0.0003 | 29 | 0.0004 | 0.0002 | 67 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | 0.0003 | 40 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.187 | 0.14 | 29 | - | - | - | 0.352 | 0.358 | 2 | 0.352 | 0.2 | **55** | 0.0040 | 0.0026 | 42 | 0.0040 | 0.0036 | 11 | 0.0206 | 0.0201 | 2 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | - | - | - | 0.90 | 0.68 | 28 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | <0.0005 | <0.005 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | - | - | - | 0.0023 | 0.0015 | 42 | 0.0023 | 0.001 | 79 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | 0.0008 | <0.001 | 0 | - | - | - | 0.0080 | 0.0052 | **42** | 0.0080 | 0.004 | **67** | <0.0002 | <0.0002 | 0 | <0.0002 | <0.001 | 0 | <0.0002 | <0.0002 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | 0.14 | - | - | - | - | - | - | - | - | 0.2 | - | - | - | - | - | 0.0036 | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.267 | 0.19 | **34** | - | - | - | 0.516 | 0.463 | 11 | 0.516 | 0.3 | **53** | 0.0051 | 0.0042 | 19 | 0.0051 | 0.0042 | 19 | 0.0315 | 0.0288 | 9 |
| Sum of PFAS | µg/L | 0.01 | - | - | - | 1.07 | 0.82 | 26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Soil RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_SB22 | A_SB22 | | A_SS103 | A_SS103 | | A_SS103 | A_SS103 | | A_SS103 | A_SS103 | | A_SS108 | A_SS108 | | A_SS108 | A_SS108 | | A_SS108 | A_SS108 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_SB22_0.1 | QC22 | | A_SS103 | QC19 | | A_SS103 | QC20 | | A_SS103 | QC19 | | A_SS108 | QC23 | | A_SS108 | QC24 | | A_SS108 | QC23 | |
| | | **Date** | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | | 10/03/2021 | 10/03/2021 | |
| | | **Sample Type** | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | |
| | | **Lab Report No.** | ES2111279 | 265850 | RPD | ES2111278 | ES2111278 | RPD | ES2111278 | 265850 | RPD | ES2115699 | ES2115699 | RPD | ES2111278 | ES2111279 | RPD | ES2111278 | 265850 | RPD | ES2115699 | ES2115699 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | | | | | |
| **Physical Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | 19.3 | 15 | 25 | 17.3 | 17.3 | 0 | 17.3 | 15 | 14 | - | - | - | 18.6 | 15.2 | 20 | 18.6 | 14 | 28 | - | - | - |
| pH (Final) | pH Units | 0.1 | - | - | - | - | - | - | - | - | - | 7.3 | 7.3 | 0 | - | - | - | - | - | - | 8.4 | 8.3 | 1 |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0002 | 0 | 0.0444 | 0.0432 | 3 | 0.0444 | 0.032 | **32** | - | - | - | 0.0414 | 0.0318 | 26 | 0.0414 | 0.019 | **74** | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | 1.27 | 0.59 | **73** | - | - | - | - | - | - | 0.30 | 0.16 | 61 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0002 | 0 | 0.0017 | 0.0015 | 12 | 0.0017 | 0.002 | 16 | - | - | - | 0.0018 | 0.0017 | 6 | 0.0018 | 0.002 | 11 | - | - | - |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.0016 | 0.0009 | 56 | 0.0005 | 0.0004 | 22 | 0.0005 | 0.0003 | 50 | - | - | - | 0.0018 | 0.0012 | 40 | 0.0018 | 0.0009 | 67 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.03 | <0.02 | 40 | - | - | - | - | - | - | 0.08 | 0.06 | 29 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | <0.0002 | <0.0005 | 0 | 0.0097 | 0.0089 | 9 | 0.0097 | 0.0079 | 20 | - | - | - | 0.0064 | 0.0026 | **84** | 0.0064 | 0.004 | **46** | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | 0.0005 | 0.0003 | 50 | 0.0166 | 0.0140 | 17 | 0.0166 | 0.011 | **41** | - | - | - | 0.0022 | 0.0022 | 0 | 0.0022 | 0.0014 | 44 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.49 | 0.46 | 6 | - | - | - | - | - | - | 0.03 | 0.06 | 67 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | 0.0026 | 0.002 | 26 | 0.0010 | 0.0009 | 11 | 0.0010 | 0.0009 | 11 | - | - | - | 0.0010 | 0.0006 | 50 | 0.0010 | 0.0007 | 35 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.04 | 0.04 | 0 | - | - | - | - | - | - | 0.03 | 0.04 | 29 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | <0.0005 | <0.005 | 0 | 0.0017 | 0.0014 | 19 | 0.0017 | <0.005 | 0 | - | - | - | 0.0008 | 0.0007 | 13 | 0.0008 | <0.005 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | 0.0012 | 0.0003 | 120 | 0.0005 | 0.0004 | 22 | 0.0005 | 0.0004 | 22 | - | - | - | 0.0012 | 0.0007 | 53 | 0.0012 | 0.0008 | 40 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.03 | 0.02 | 40 | - | - | - | - | - | - | 0.05 | 0.05 | 0 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | 0.002 | 0.0034 | **52** | <0.001 | <0.001 | 0 | <0.001 | 0.0008 | 0 | - | - | - | <0.001 | <0.001 | 0 | <0.001 | 0.0005 | 0 | - | - | - |
| | µg/L | 0.1 | - | - | - | - | - | - | - | - | - | <0.1 | <0.1 | 0 | - | - | - | - | - | - | <0.1 | <0.1 | 0 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | 0.0002 | <0.0005 | 0 | 0.0504 | 0.0474 | 6 | 0.0504 | 0.03 | **51** | - | - | - | 0.0080 | 0.0057 | **34** | 0.0080 | 0.004 | **67** | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.58 | 0.66 | 13 | - | - | - | - | - | - | 0.03 | 0.04 | 29 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | <0.0002 | <0.0005 | 0 | 0.0017 | 0.0015 | 12 | 0.0017 | 0.001 | 52 | - | - | - | 0.0010 | 0.0005 | 67 | 0.0010 | 0.0007 | 35 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | <0.0002 | <0.0005 | 0 | 0.0114 | 0.0107 | 6 | 0.0114 | 0.0068 | **51** | - | - | - | 0.0068 | 0.0033 | **69** | 0.0068 | 0.003 | **78** | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.05 | <0.02 | 86 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.0021 | 0.0004 | **136** | 0.0030 | 0.0022 | 31 | 0.0030 | 0.0021 | **35** | - | - | - | 0.0038 | 0.0029 | 27 | 0.0038 | 0.0022 | **53** | - | - | - |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | 0.17 | 0.09 | **62** | - | - | - | - | - | - | 0.11 | 0.12 | 9 |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.0154 | 0.023 | **40** | 0.946 | 0.726 | 26 | 0.946 | 0.54 | **55** | - | - | - | 0.354 | 0.259 | **31** | 0.354 | 0.2 | **56** | - | - | - |
| | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | 19.5 | 9.86 | **66** | - | - | - | - | - | - | 5.53 | 6.12 | 10 |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | 0.0002 | 0.0001 | 67 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | 0.0005 | 0.0004 | 22 | 0.0005 | 0.0004 | 22 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.0052 | 0.0019 | **93** | 0.0019 | 0.0016 | 17 | 0.0019 | 0.0016 | 17 | - | - | - | 0.0082 | 0.0063 | 26 | 0.0082 | 0.0047 | **54** | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.10 | 0.05 | 67 | - | - | - | - | - | - | 0.24 | 0.23 | 4 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | 0.0005 | 0.0003 | 50 | 0.0016 | 0.0014 | 13 | 0.0016 | 0.0012 | 29 | - | - | - | 0.0010 | 0.0006 | 50 | 0.0010 | 0.0005 | 67 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.08 | 0.09 | 12 | - | - | - | - | - | - | 0.03 | 0.05 | 50 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | <0.0002 | 0.0002 | 0 | 0.0041 | 0.0038 | 8 | 0.0041 | 0.0027 | **41** | - | - | - | 0.0108 | 0.0072 | **40** | 0.0108 | 0.0053 | **68** | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | 0.07 | <0.02 | 111 | - | - | - | - | - | - | 0.06 | 0.06 | 0 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | <0.0002 | 0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | 0.0007 | 0.0006 | 15 | 0.0007 | 0.0005 | 33 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | 0.02 | 0 |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.0206 | 0.025 | 19 | 0.948 | 0.728 | 26 | 0.948 | 0.54 | **55** | - | - | - | 0.362 | 0.265 | **31** | 0.362 | 0.21 | **53** | - | - | - |
| Sum of PFHxS and PFOS | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | 19.6 | 9.91 | **66** | - | - | - | - | - | - | 5.77 | 6.35 | 10 |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - |
| | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | <0.02 | <0.02 | 0 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - |
| | µg/L | 0.05 | - | - | - | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | <0.05 | <0.05 | 0 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | <0.0002 | <0.001 | 0 | 0.0010 | 0.0009 | 11 | 0.0010 | <0.001 | 0 | - | - | - | 0.0025 | 0.0011 | **78** | 0.0025 | <0.001 | **86** | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | - | - | - | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | 0.02 | <0.02 | 0 |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | 0.023 | - | - | - | - | - | 0.54 | - | - | - | - | - | - | - | - | 0.2 | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.0315 | 0.033 | 5 | 1.10 | 0.866 | 24 | 1.10 | 0.64 | **53** | - | - | - | 0.454 | 0.329 | **32** | 0.454 | 0.25 | **58** | - | - | - |
| Sum of PFAS | µg/L | 0.01 | - | - | - | - | - | - | - | - | - | 22.4 | 11.9 | **61** | - | - | - | - | - | - | 6.51 | 7.01 | 7 |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Soil RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_SS83 | A_SS83 | | A_SS83 | A_SS83 | | A_SS83 | A_SS83 | | DEPOT_SS04 | DEPOT_SS04 | | DEPOT_SS12 | DEPOT_SS12 | | MC_SD16 | MC_SD16 | | MC_SD16 | MC_SD16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_SS83 | QC13 | | A_SS83 | QC14 | | A_SS83 | QC13 | | DEPOT_SS04 | QC27 | | DEPOT_SS12 | QC29 | | MC_SD16 | QC39 | | MC_SD16 | QC40 | |
| | | **Date** | 10/03/2021 | 9/03/2021 | | 10/03/2021 | 9/03/2021 | | 10/03/2021 | 9/03/2021 | | 11/03/2021 | 11/03/2021 | | 11/03/2021 | 11/03/2021 | | 13/03/2021 | 27/03/2021 | | 13/03/2021 | 27/03/2021 | |
| | | **Sample Type** | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | |
| | | **Lab Report No.** | ES2111278 | ES2111279 | RPD | ES2111278 | 265850 | RPD | ES2115699 | ES2115699 | RPD | ES2111278 | ES2111279 | RPD | ES2111278 | 265850 | RPD | ES2111268 | ES2111280 | RPD | ES2111268 | 265849 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | | | | | |
| **Physical Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | 24.3 | 25.2 | 4 | 24.3 | 20 | 19 | - | - | - | 14.1 | 15.0 | 6 | 8.2 | 4.4 | **60** | 50.8 | 52.8 | 4 | 50.8 | 26 | **65** |
| pH (Final) | pH Units | 0.1 | - | - | - | - | - | - | 7.6 | 6.0 | 24 | - | - | - | - | - | - | - | - | - | - | - | - |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.0003 | 0.0004 | 29 | 0.0003 | 0.0003 | 0 | - | - | - | 0.0003 | 0.0002 | 40 | <0.0002 | <0.0001 | 0 | 0.0008 | 0.0006 | 29 | 0.0008 | 0.0004 | 67 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | 0.0004 | 0.0003 | 29 | 0.0004 | 0.0003 | 29 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | 0.0004 | 0.0003 | 29 | 0.0004 | <0.0002 | 67 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | 0.0001 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | <0.001 | <0.001 | 0 | <0.001 | 0.0004 | 0 | - | - | - | <0.001 | <0.001 | 0 | <0.001 | <0.0002 | 0 | <0.001 | <0.001 | 0 | <0.001 | <0.0002 | 0 |
| | µg/L | 0.1 | - | - | - | - | - | - | <0.1 | <0.1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | 0.0002 | 0.0003 | 40 | 0.0002 | 0.0003 | 40 | - | - | - | 0.0002 | 0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0007 | 0.0006 | 15 | 0.0007 | 0.0004 | 55 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | - | - | - | - | - | - | <0.01 | <0.01 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.0084 | 0.0129 | **42** | 0.0084 | 0.0083 | 1 | - | - | - | 0.0113 | 0.0137 | 19 | 0.0026 | 0.0025 | 4 | 0.119 | 0.0991 | 18 | 0.119 | 0.073 | **48** |
| | µg/L | 0.01 | - | - | - | - | - | - | 0.06 | 0.05 | 18 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0013 | 0.0009 | 36 | 0.0013 | 0.0006 | 74 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.0010 | 0.0012 | 18 | 0.0010 | 0.0009 | 11 | - | - | - | 0.0009 | 0.0009 | 0 | 0.0003 | 0.0002 | 40 | 0.0167 | 0.0142 | 16 | 0.0167 | 0.0076 | **75** |
| | µg/L | 0.02 | - | - | - | - | - | - | 0.02 | 0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0021 | 0.0016 | 27 | 0.0021 | 0.0012 | **55** |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - | 0.0003 | 0.0002 | 40 | <0.0002 | <0.0002 | 0 | 0.0011 | 0.0008 | 32 | 0.0011 | 0.0007 | 44 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | 0.0010 | 0.0007 | 35 | 0.0010 | 0.0004 | 86 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.0094 | 0.0141 | **40** | 0.0094 | 0.0092 | 2 | - | - | - | 0.0122 | 0.0146 | 18 | 0.0029 | 0.0026 | 11 | 0.136 | 0.113 | 18 | 0.136 | 0.081 | **51** |
| Sum of PFHxS and PFOS | µg/L | 0.01 | - | - | - | - | - | - | 0.08 | 0.07 | 13 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | - | - | - | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 |
| | µg/L | 0.05 | - | - | - | - | - | - | <0.05 | <0.05 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.001 | 0 | - | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.001 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | - | - | - | - | - | - | <0.02 | <0.02 | 0 | - | - | - | - | - | - | - | - | - | - | - | - |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | - | - | - | 0.0085 | - | - | - | - | - | - | - | - | 0.0025 | - | - | - | - | - | 0.073 | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.0103 | 0.0151 | **38** | 0.0103 | 0.01 | 3 | - | - | - | 0.0130 | 0.0152 | 16 | 0.0029 | 0.0026 | 11 | 0.143 | 0.119 | 18 | 0.143 | 0.085 | **51** |
| Sum of PFAS | µg/L | 0.01 | - | - | - | - | - | - | 0.08 | 0.07 | 13 | - | - | - | - | - | - | - | - | - | - | - | - |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Soil RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | **Location Code** | A_SB25 | A_SB25 | | A_SB25 | A_SB25 | | A_SB25 | A_SB25 | | A_STP_SS03 | A_STP_SS03 | | A_STP_SS03 | A_STP_SS03 | | BBC_SD05 | BBC_SD05 | | BBC_SD05 | BBC_SD05 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Field ID** | A_SB25_0.5 | QC48 | | A_SB25_0.5 | QC48 | | A_SB25_0.5 | QC49 | | A_STP_SS03 | QC56 | | A_STP_SS03 | QC57 | | BBC_SD05 | QC65 | | BBC_SD05 | QC66 | |
| | | **Date** | 15/03/2021 | 15/03/2021 | | 15/03/2021 | 15/03/2021 | | 15/03/2021 | 15/03/2021 | | 16/03/2021 | 16/03/2021 | | 16/03/2021 | 16/03/2021 | | 18/03/2021 | 18/03/2021 | | 18/03/2021 | 18/03/2021 | |
| | | **Sample Type** | Normal | Field_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | | Normal | Field_D | | Normal | Interlab_D | |
| | | **Lab Report No.** | ES2111280 | ES2111280 | RPD | ES2111280 | ES2115099 | RPD | ES2111280 | 265849 | RPD | ES2111268 | ES2111280 | RPD | ES2111268 | 265849 | RPD | ES2111268 | ES2111278 | RPD | ES2111268 | ES2111278 | RPD |
| | Unit | EQL | | | | | | | | | | | | | | | | | | | | | |
| **Physical Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | 22.4 | 23.0 | 3 | 22.4 | - | - | 22.4 | 22 | 2 | 22.7 | 23.7 | 4 | 22.7 | 22 | 3 | 34.6 | 41.1 | 17 | 34.6 | 34.1 | 1 |
| pH (Final) | pH Units | 0.1 | - | - | - | - | 5.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **(n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0002 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Carboxylic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | 0.0004 | 0.0004 | 0 | 0.0004 | - | - | 0.0004 | 0.0004 | 0 | 0.0003 | 0.0003 | 0 | 0.0003 | 0.0002 | 40 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0001 | 0 | 0.0004 | 0.0003 | 29 | 0.0004 | 0.0002 | 67 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | 0.0004 | 67 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | 0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | <0.001 | <0.001 | 0 | <0.001 | - | - | <0.001 | 0.0002 | 0 | <0.001 | <0.001 | 0 | <0.001 | 0.0002 | 0 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| | µg/L | 0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0005 | 0 | 0.0002 | <0.0002 | 0 | 0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0005 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctanoic acid (PFOA) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0001 | 0 | 0.0003 | 0.0003 | 0 | 0.0003 | 0.0003 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.01 | - | - | - | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkane Sulfonic Acids** | | | | | | | | | | | | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | 0.0019 | 0.0015 | 24 | 0.0019 | - | - | 0.0019 | 0.0016 | 17 | 0.0047 | 0.0049 | 4 | 0.0047 | 0.0045 | 4 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.01 | - | - | - | - | 0.06 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | <0.0002 | 0.0002 | 0 | <0.0002 | - | - | <0.0002 | 0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | 0.0032 | 0.0037 | 14 | 0.0032 | - | - | 0.0032 | 0.0031 | 3 | 0.0009 | 0.0009 | 0 | 0.0009 | 0.0006 | 40 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | 0.12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | 0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sum of PFHxS and PFOS | mg/kg | 0.0001 | 0.0051 | 0.0052 | 2 | 0.0051 | - | - | 0.0051 | 0.0047 | 8 | 0.0056 | 0.0058 | 4 | 0.0056 | 0.0051 | 9 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| Sum of PFHxS and PFOS | µg/L | 0.01 | - | - | - | - | 0.18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Perfluoroalkyl Sulfonamides** | | | | | | | | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.005 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.0005 | <0.0005 | <0.0005 | 0 | <0.0005 | - | - | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.001 | 0 | <0.0005 | <0.0005 | 0 | <0.0005 | <0.0005 | 0 |
| | µg/L | 0.05 | - | - | - | - | <0.05 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - | <0.0002 | <0.001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.001 | 0 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.02 | - | - | - | - | <0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **PFAS** | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | - | - | - | - | - | - | - | 0.0016 | - | - | - | - | - | 0.0047 | - | - | - | - | - | - | - |
| Sum of PFAS | mg/kg | 0.0001 | 0.0055 | 0.0058 | 5 | 0.0055 | - | - | 0.0055 | 0.0056 | 2 | 0.0068 | 0.0071 | 4 | 0.0068 | 0.0061 | 11 | <0.0002 | <0.0002 | 0 | <0.0002 | <0.0002 | 0 |
| Sum of PFAS | µg/L | 0.01 | - | - | - | - | 0.18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

**Appendix K - Biota RPDs**
**Detailed Site Investigation**
**Norfolk Island Airport**
**Department for Infrastructure, Transport, Regional Development and Communications**
**C17776**

| | | | **Lab Report Number** | ES2111280 | 265849 | | ES2111280 | 265849 | | ES2111280 | 265849 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Field ID** | A_BIOTA125 | QC53 | | A_BIOTA125 | QC53 | | A_BIOTA133 | QC55 | |
| | | | **Location Code** | A_BIOTA125 | A_SS125 | | A_BIOTA125 | A_SS125 | | A_BIOTA133 | A_SS133 | |
| | | | **Date** | 16/03/2021 | 16/03/2021 | | 16/03/2021 | 16/03/2021 | | 16/03/2021 | 16/03/2021 | |
| | | | **Sample Type** | Normal | Interlab_D | RPD | Normal | Interlab_D | RPD | Normal | Interlab_D | RPD |
| | Unit | EQL | **RPD** | | | | | | | | | |
| NA | | | | | | | | | | | | |
| Sample Description | -- | | | 1 | - | - | 1 | - | - | 1 | - | - |
| Physical Parameters | | | | | | | | | | | | |
| Moisture Content | % | 0.1 | | - | 19 | - | - | - | - | - | 25 | - |
| Weight of Sample Prepared | g | 0.1 | | 23.8 | - | - | 23.8 | - | - | 25.9 | - | - |
| (n:2) Fluorotelomer Sulfonic Acids | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | mg/kg | 0.0001 | | <0.002 | <0.0001 | 0 | <0.002 | - | - | <0.002 | <0.0001 | 0 |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS) | mg/kg | 0.0001 | | <0.002 | <0.0001 | 0 | <0.002 | - | - | <0.002 | <0.0001 | 0 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | mg/kg | 0.0002 | | <0.002 | <0.0002 | 0 | <0.002 | - | - | <0.002 | 0.002 | 0 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | mg/kg | 0.0002 | | <0.002 | <0.0002 | 0 | <0.002 | - | - | <0.002 | <0.0002 | 0 |
| Perfluoroalkane Carboxylic Acids | | | | | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | mg/kg | 0.0001 | | <0.001 | 0.0003 | 0 | <0.001 | <0.001 | 0 | <0.001 | 0.0007 | 0 |
| Perfluorododecanoic acid (PFDoDA) | mg/kg | 0.0005 | | <0.002 | <0.0005 | 0 | <0.002 | - | - | <0.002 | 0.003 | 40 |
| Perfluorononanoic acid (PFNA) | mg/kg | 0.0001 | | <0.001 | 0.0005 | 0 | <0.001 | <0.001 | 0 | <0.001 | 0.0015 | 40 |
| Perfluoropentanoic acid (PFPeA) | mg/kg | 0.0002 | | <0.002 | 0.0004 | 0 | <0.002 | <0.002 | 0 | <0.002 | 0.001 | 0 |
| Perfluorotetradecanoic acid (PFTeDA) | mg/kg | 0.002 | | <0.002 | <0.005 | 0 | <0.002 | - | - | <0.002 | <0.005 | 0 |
| Perfluoroheptanoic acid (PFHpA) | mg/kg | 0.0001 | | <0.001 | 0.0004 | 0 | <0.001 | <0.001 | 0 | <0.001 | 0.0010 | 0 |
| Perfluorobutanoic acid (PFBA) | mg/kg | 0.0002 | | <0.005 | 0.0005 | 0 | <0.005 | <0.002 | 0 | <0.005 | 0.001 | 0 |
| Perfluorodecanoic acid (PFDA) | mg/kg | 0.0005 | | <0.001 | <0.0005 | 0 | <0.001 | - | - | <0.001 | 0.002 | 67 |
| Perfluorotridecanoic acid (PFTrDA) | mg/kg | 0.0005 | | <0.002 | <0.0005 | 0 | <0.002 | - | - | <0.002 | 0.0007 | 0 |
| Perfluoroundecanoic acid (PFUnDA) | mg/kg | 0.0005 | | <0.001 | <0.0005 | 0 | <0.001 | - | - | <0.001 | 0.002 | 67 |
| Perfluorooctanoic acid (PFOA) | µg/kg | | | <1 | 0.6 | 0 | <1 | <1 | 0 | <1 | 2.2 | 75 |
| Perfluoroalkane Sulfonic Acids | | | | | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | mg/kg | 0.0001 | | <0.001 | <0.001 | 0 | <0.001 | 0.014 | **173** | <0.001 | 0.025 | **185** |
| Perfluoropentane sulfonic acid (PFPeS) | mg/kg | 0.0001 | | <0.001 | <0.0001 | 0 | <0.001 | - | - | <0.001 | <0.0001 | 0 |
| Perfluorohexane sulfonic acid (PFHxS) | mg/kg | 0.0001 | | <0.001 | <0.0001 | 0 | <0.001 | - | - | <0.001 | 0.0008 | 0 |
| Perfluoroheptane sulfonic acid (PFHpS) | mg/kg | 0.0001 | | <0.001 | <0.0001 | 0 | <0.001 | - | - | <0.001 | 0.0002 | 0 |
| Perfluorodecanesulfonic acid (PFDS) | mg/kg | 0.0002 | | <0.002 | <0.0002 | 0 | <0.002 | - | - | <0.002 | <0.0002 | 0 |
| Perfluorobutane sulfonic acid (PFBS) | mg/kg | 0.0001 | | <0.001 | <0.0001 | 0 | <0.001 | - | - | <0.001 | <0.0001 | 0 |
| Sum of PFHxS and PFOS | µg/kg | | | - | <1 | - | - | - | - | - | 26 | - |
| Sum of PFHxS and PFOS | mg/kg | | | <0.002 | - | - | <0.002 | - | - | <0.002 | - | - |
| Perfluoroalkyl Sulfonamides | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | mg/kg | 0.002 | | <0.002 | <0.005 | 0 | <0.002 | - | - | <0.002 | <0.005 | 0 |
| N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA) | mg/kg | 0.0002 | | <0.001 | <0.0002 | 0 | <0.001 | - | - | <0.001 | <0.0002 | 0 |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA) | mg/kg | 0.0002 | | <0.001 | <0.0002 | 0 | <0.001 | - | - | <0.001 | <0.0002 | 0 |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | mg/kg | 0.001 | | <0.002 | <0.001 | 0 | <0.002 | - | - | <0.002 | <0.001 | 0 |
| N-Methyl perfluorooctane sulfonamide (MeFOSA) | mg/kg | 0.001 | | <0.005 | <0.001 | 0 | <0.005 | - | - | <0.005 | <0.001 | 0 |
| N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE) | mg/kg | 0.001 | | <0.002 | <0.001 | 0 | <0.002 | - | - | <0.002 | <0.001 | 0 |
| Perfluorooctane sulfonamide (FOSA) | mg/kg | 0.001 | | <0.005 | <0.001 | 0 | <0.005 | - | - | <0.005 | <0.001 | 0 |
| PFAS | | | | | | | | | | | | |
| Perfluorooctane sulfonic acid (PFOS) - Branched | mg/kg | 0.001 | | <0.001 | - | - | <0.001 | - | - | <0.001 | - | - |
| Perfluorooctane sulfonic acid (PFOS) - Linear | mg/kg | 0.001 | | <0.001 | - | - | <0.001 | - | - | <0.001 | - | - |
| Sum of US EPA PFAS (PFOS + PFOA)* | mg/kg | 0.0001 | | - | <0.001 | - | - | - | - | - | 0.027 | - |
| Sum of PFAS | mg/kg | 0.0001 | | <0.001 | <0.001 | 0 | <0.001 | - | - | <0.001 | 0.043 | **191** |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 ( > 20 x EQL) )**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

# Appendix J: Quality Assurance / Quality Control

The data quality assurance and control (QA/QC) procedures adopted by Senversa provide a consistent approach to evaluation of whether the data quality objectives (DQO's) required by the project have been achieved. The process focuses on assessment of the useability of the data in terms of accuracy and reliability in forming conclusions on the condition of the element of the environment being investigated. The approach is generally based on guidance from the following sources:

- Australian Standard (AS) 4482.1-2005: *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds.*
- National Environment Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1 2013 (NEPM), Schedule B2: Guideline on Site Characterisation*.
- NEPC – *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1 2013 (NEPM), Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils*.
- United States Environmental Protection Agency (USEPA) – *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA QA/G-4).
- USEPA – *Guidance on Environmental Data Verification and Data Validation* (EPA QA/G-8).

## Quality Assurance Procedure

The following data quality objectives, measures and acceptance criteria were adopted to verify compliance with the planned QA procedures:

| Quality Assurance Process | Data Quality Element | Objectives and Measure | Acceptance Criteria |
|---|---|---|---|
| **Standard Procedures** | Comparability, Reproducibility, Representativeness | Standard field sampling procedures and forms used | No deviation from standard procedure and forms used |
| **Equipment Calibration** | Accuracy | All equipment calibrated in accordance with manufacturers specifications | All equipment calibrated in accordance with manufacturers specifications |
| **Testing Method Accreditation** | Accuracy and Comparability | NATA accredited methods used for all analyses determined | Primary and secondary laboratories to use NATA accredited methods for all analytes determined |
| **Quality Control Sampling Frequency** | Precision and Repeatability | Field QC sampling frequency in accordance with AS4482.1-2005 | Field Duplicates – ≥ 1 in 20 primary samples<br>Secondary Duplicates – ≥ 1 in 20 primary samples<br>Rinsate Blanks – ≥ 1 per day, per matrix per equipment<br>Trip Blanks – ≥ 1 per esky containing samples for volatile analyses |

| Quality Assurance Process | Data Quality Element | Objectives and Measure | Acceptance Criteria |
|---|---|---|---|
| | Accuracy, Precision and Comparability | Laboratory QC analysis frequency in accordance with NEPC (2013), Schedule B3 | Laboratory Duplicates – at least 1 in 10 analyses or one per process batch<br>Method Blanks – at least 1 per process batch<br>Surrogate Recoveries – all samples spiked where appropriate (e.g. chromatographic analysis of organics)<br>Laboratory Control Samples – at least 1 per process batch<br>Matrix Spikes – at least 1 per matrix type per process batch |
| **Sample Preservation, Handling and Holding Times** | Accuracy | Samples appropriately preserved upon collection , stored and transported, and analysed within holding times | Sample containers, holding times and preservation in accordance laboratory specific method requirements. |
| **Data Management** | Accuracy | No errors in data transcription | Entry of field data verified by peer. |
| **Data Useability** | Completeness | Limits of reporting less than adopted beneficial use investigation levels. Sample volumes and analytical methods selected to enable required limits of reporting to be achieved | Limits of reporting less than investigation levels. |

## Quality Control Sampling and Analysis

The following data quality objectives, measures and acceptance criteria were adopted to evaluate the validity of the analytical data produced.

| Quality Control Process | Data Quality Element | Objectives and Measure | Acceptance Criteria |
|---|---|---|---|
| **Field Duplicate Sampling and Analysis** | Precision and Field Repeatability | Field duplicate samples used assess the variability in analyte concentration between samples collected from the sample location and the reproducibility of the laboratory analysis. Where required, resubmission of previously analysed samples for chemicals within their holding times may be undertaken to further assess level of precision. | Analysed for same chemicals as primary sample<br>RPD[1] <30% of mean concentration where both concentrations >20 x limit of reporting<br>RPD <50% of mean concentration where higher concentration 10 – 20 x limit of reporting<br>RPD - No limit where both concentrations < 10 x limit of reporting |
| **Secondary Duplicate Sampling and Analysis** | Accuracy | Results are accurate and free from laboratory error. Secondary duplicate samples sent to a secondary laboratory to assess the accuracy of the analyte concentrations reported by the primary laboratory | Analysed for same chemicals as primary sample<br>RPD <30% of mean concentration where both concentrations >20 x limit of reporting<br>RPD <50% of mean concentration where higher concentration 10 – 20 x limit of reporting<br>RPD - No limit where both concentrations < 10 x limit of reporting |

[1] Relative Percent Difference (%): Calculated as: (Result No.1 – Result No. 2/Mean Result)*100

| Quality Control Process | Data Quality Element | Objectives and Measure | Acceptance Criteria |
|---|---|---|---|
| **Field Rinsate Blank Preparation and Analysis** | Accuracy and Representativeness | Cross contamination of samples does not occur between sampling locations due to carry-over from sampling equipment.<br>Rinsate blank samples prepared for each sampling procedure. Where possible the rinsate blanks are prepared immediately after sampling locations known to contain concentrations of the chemicals of concern above the limit of quantification and / or before sampling locations where the chemicals being targeted in the laboratory analysis are to be compared to investigation levels near the limit of quantification of the chemical. | Analyte concentrations below limits of reporting |
| **Trip Blank Sampling and Analysis** | Accuracy and Representativeness | Cross contamination between samples does not occur in transit or as an artefact of the sample handling procedure.<br>Trip blank samples prepared by the laboratory which accompany the empty sampling containers from the laboratory to the sampling site, and return with the samples to the laboratory to assess whether cross contamination occurs between samples or as an artefact of the sampling procedure. | Analyte concentrations below limits of reporting |
| **Laboratory QC Analysis** | Laboratory Precision and Accuracy | Laboratory duplicates | As specified by the laboratory. |
| | | Laboratory control spike | Dynamic recovery limits as specified by the laboratory. |
| | | Certified reference material | As specified by the laboratory (generally dynamic recovery limits). |
| | | Surrogate recovery | Dynamic recovery limits as specified by the laboratory. |
| | | Matrix spike recovery | Recovery 70% – 130% or dynamic recovery limits specified by laboratory. However note that recovery of phenols is generally significantly lower and a recovery in the range 20% to 130% is considered acceptable by most laboratories. |
| | | Matrix spike recovery duplicate | RPD < 30%, or as specified by the laboratory. |

## Data Verification and Validation

The data validation process involved the checking of analytical procedure compliance with acceptance criteria and an assessment of the accuracy and precision of analytical data from the range of quality control indicators generated from both the sampling and analytical programmes.

The checks undertaken are summarised in the attached data validation checklist tables (one table per sample batch/delivery group). Field replicate and field blank analytical results relevant to the project are summarised in attached tables.

Instances where the data quality acceptance criteria were not achieved are discussed below:

**Quality Control Duplicate Frequency and Results**

The table below demonstrates that the frequency of duplicate samples exceeds the 1 in 10 proposed.

| Sample Type | Number of Samples Analysed | Number of duplicate pairs collected | | Number of blank samples collected |
|---|---|---|---|---|
| | On and Offsite | Number | Rate (1:10) | Number of rinsate blanks |
| **Soil** | 235 | 17 | 1 pair of duplicate samples per 16 primary samples | 6 |
| **Sediment** | 40 | | | |
| **Water** | 72 | 8 | 1 pair of duplicate samples per 9 primary samples | NA |
| **Biota (Grass and Produce)** | 25 | 1 | 1 duplicate per 25 samples | NA |

The duplicate sample frequency was not met for 1:10 for soil and biota as specified in the NEMP 2.0. The relative percentage differences were within acceptable range for the majority of samples, indicating accuracy and reliability in results for the biota, soil and water matrices sampled. Senversa note that a duplicate frequency of 1:20 was achieved for soil and groundwater, which is in accordance with the NEPM (2013). Based on the above, this minor non-conformance is not considered to affect data interpretation or impact on the outcomes of this investigation.

RPDs for soil and for water were within the defined acceptable limits except for the following:

**Soil**

- A_SB08_0.1 and QC04 RPDS – PFHxS: 52%; PFOS: 56%; PFHxS and PFOS: 53%. Sum of PFAS therefore had a high RPD of 32%. The primary sample and triplicate had acceptable RPDs.
- A_SB10_0.1 and QC09 – PFHxA: 42%; PFOS: 38%, PFHxS and PFOS: 36%.
- A_SS92 and QC02 – PFDoDA: 57%; PFUnDA: 47%; PFDS: 33%.
- A_SS92 and QC03 - PFDoDA: 40%; PFDA: 86%; PFUnDA: 90%; PFOS: 73%; PFDS: 62%; PFHxS and PFOS: 69%; sum of PFAS: 68%.
- A_SS97 and QC18 – PFHxA: 51%; PFDoDA: 32%; PFNA: 49%; PFDA: 47%; PFUnDA: 50%; PFOA: 42%, PFHxS: 47%, PFDS: 47%; sum of PFAS: 34%.
- A_SB11 and QC11 – 8:2 FTS: 46%, PFDoDA: 69%; PFNA: 48%, PFUnDA: 71%; PFDS: 68%; FOSA: 42%.
- A_SB11 and QC12 – 8:2 FTS: 84%, PFHxA: 67%; PFDoDA: 60%; PFNA: 96%, PFHpA: 33%; PFBA: 53%; PFDA: 116%; PFUnDA: 117%; PFOA: 76%, PFOS: 56%; PFHxS and PFOS: 55%; FOSA: 67%; sum of PFAS: 53%.
- A_SB13_0.1 and QC15 – PFOS: 51%
- A_SB22_0.1 and QC21 – PFOA: 111%; PFHxS: 97%
- A_SB22_0.1 and QC22 – PFOA: 136%; PFOS: 40%; PFHxS: 93%
- A_SS103 and QC20 – 8:2 FTS: 32%; PFNA: 41%; PFDA: 51%, PFUnDA: 51%; PFOA: 35%; PFDS: 41%; Sum of PFHxS and PFOS: 55%; Sum of PFAS: 53%.
- A_SS108 and QC23 – PFDoDA: 84%; PFDA: 34%, PFUnDA: 69%; PFOS: 31%; PFDS: 40%; Sum of PFHxS and PFOS: 31%; FOSA: 78%; Sum of PFAS: 32%.

- A_SS108 and QC24 – 8:2 FTS: 74%; PFDoDA: 46%; PFDA: 67%, PFUnDA: 78%; PFOA: 53%; PFOS: 56%; PFHxS: 54% PFDS: 68%; Sum of PFHxS and PFOS: 53%; FOSA: 86%; Sum of PFAS: 58%.
- A_SS83 and QC13 – PFOS 42%; Sum of PFHxS and PFOS: 40%; Sum of PFAS: 38%.
- MC_SD16 and QC40 – PFOS: 48%; PFHxS: 75%; PFHpS: 55%; Sum of PFHxS and PFOS: 51%; Sum of PFAS: 51%.

Additionally, some primary and quality control samples reported RPD differences for moisture content.

**Water**

- AIRPORT_BORE and QC06 – PFHxS: 45% and Sum of PFHxS and PFOS: 33%

**Biota**

- A_BIOTA125 and QC53 –PFOS: 173%
- A_BIOTA_133 and QC55 – PFOS: 185%

High RPDs were reported for different PFAS in several samples. The variability of duplicate pairs in soil is considered to be due to the heterogeneous nature of the topsoil, which may have resulted in the variability observed in the laboratory results. While care was taken to minimise the heterogeneity when splitting the sample into duplicates, complete homogeneity cannot be achieved due to the inherent variability of soils. Minimal RPD exceedences were reported for water and biota. Given the results for water and biota were largely within acceptable RPDs, this is not considered to affect the outcome of the investigation. Where RPD differences were reported, the highest concentration of the primary and duplicate pairs has been used for data interpretation.

**Trip Blanks**

Trip blanks were not collected as part of this investigation to the low volatile nature of PFAS and the low likelihood of cross contamination.

**Holding Time Exceedances**

Holding time outliers for moisture content were reported across a majority of laboratory reports. As moisture content is not an analyte or COPC, these exceedences are not considered to impact on the outcomes of the investigation.

**Temperature Exceedances**

Due to the remote location of the site and the custom protocols getting the samples into mainland Australia, all laboratory reports indicate temperature exceedance (>6 ºC). The laboratory noted that attempts to cool the samples were present. This is not considered to have affected the laboratory results as the primary contaminants of concern, PFAS, are non-volatile and no volatile contaminants were analysed in the primary samples during this round of sampling.

**Laboratory Control Frequency**

Laboratory duplicates and matrix spike frequency were not met in a majority of the laboratory reports. This is not anticipated to impact the conclusions drawn as the duplicate and triplicate results were relatively closely correlated with few exceedances of adopted criteria as discussed above.

**Matrix Spikes**

Matrix spike recovery was not determined for selected analytes in several laboratory batches. Matrix spikes were performed on other matrices and reported minimal non-conformances. This is not considered to affect the overall validity of the laboratory results obtained as there were minimal water samples, and is not anticipated to impact the conclusions drawn.

## Data Suitability

While some of the quality control results were reported to be outside adopted acceptance objectives, the majority of the quality control results indicated that the precision and accuracy of the data was within acceptable limits. The results were therefore considered to be representative of chemical concentrations in the environmental media sampled at the time of sampling, and to be suitable to be used for their intended purpose in providing an understanding of the contamination status of the environmental media assessed.

# Appendix K: Soil Borelogs and Surface Soil Descriptions

# BOREHOLE NUMBER A_SB01



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498267 8319693 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine grained, poorly graded, sub-rounded sand, non-plastic silt, trace medium to coarse grained, poorly graded, sub-rounded to sub-angular gravel, brown, loose, dry. (Topsoil). | | | A_SB01_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB01_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | |
| | | | | 1.0 | | | | | | A_SB01_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB01_1.40 - 1.50 |
| | | | | | | | A_SB01 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB02



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498257 8319699 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, non plastic, fine grained, poorly graded, sub-rounded sand, brown, soft, dry to moist. | | | A_SB02_0.00 - 0.10 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace coarse grained, poorly graded, sub-rounded gravel, brown, soft to firm, moist, dry of plastic limit. | | | |
| | | | | 0.5 | | | | | | A_SB02_0.50 - 0.60 |
| | | | | 1.0 | | | | | | A_SB02_1.00 - 1.10 |
| | | | | | | | Red-brown to orange. | | | |
| | | | | 1.5 | | | | | | A_SB02_1.40 - 1.50 |
| | | | | | | | A_SB02 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB03



**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498279 8319681 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB03_0.00 - 0.10 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB03_0.40 - 0.50 |
| | | | | 0.5 | | | A_SB03 terminated at 0.50 m bgl<br>Water in hole, suspected perched water. | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB04



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498270 8319678 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry to moist. (Topsoil). | | | A_SB04_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB04_0.40 - 0.50 |
| | | | | 1.0 | | | Moist, wet of plastic limit. | | | A_SB04_1.00 - 1.10 |
| | | | | | | | Light red, very stiff, moist, dry of plastic limit. | | | A_SB04_1.20 - 1.30 |
| | | | | | | | Brown, firm. | | | A_SB04_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB04 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB05



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498260 8319687 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB05_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, firm, moist, wet of plastic limit. | | | A_SB05_0.40 - 0.50 |
| | | | | 1.0 | | | | | | A_SB05_1.00 - 1.10 |
| | | | | | | | Light red-brown, stiff, moist, dry of plastic limit. | | | A_SB05_1.30 - 1.40 |
| | | | | | | | Red-brown, firm, moist, wet of plastic limit. | | | A_SB05_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB05 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB06



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498253 8319692 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB06_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, brown mottled red-brown, stiff, moist, wet of plastic limit. | | | A_SB06_0.40 - 0.50 |
| | | | | 1.0 | | | Red-brown. | | | A_SB06_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB06_1.40 - 1.50 |
| | | | | 2.0 | | | A_SB06 terminated at 1.50 m bgl<br>Target depth achieved | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB07



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498258 8319692 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB07_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB07_0.40 - 0.50 |
| | | | | | | | Light red-brown, stiff. | | | A_SB07_0.80 - 0.90 |
| | | | | 1.0 | | | | | | |
| | | | | | | | Red-brown, firm. | | | A_SB07_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB07 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB08



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498266 8319687 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB08_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, wet of plastic limit. | | | A_SB08_0.40 - 0.50 |
| | | | | 1.0 | | | Light red-brown. | | | A_SB08_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB08_1.40 - 1.50 |
| | | | | 2.0 | | | A_SB08 terminated at 1.50 m bgl<br>Target depth achieved | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB09



**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498249 8319694 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB09_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB09_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | A_SB09_1.40 - 1.50 |
| | | | | | | | A_SB09 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB10



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 9/3/21 **COMPLETED** 9/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498241 8319694 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB10_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB10_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | A_SB10_1.40 - 1.50 |
| | | | | | | | A_SB10 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB11



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498240 8319604 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty SAND, fine to medium grained, poorly graded, sub-rounded sand, non-plastic silt, brown, loose, dry. (Topsoil). | | | A_SB11_0.00 - 0.10 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | |
| | | | | 0.5 | | | | | | A_SB11_0.50 - 0.60 |
| | | | | 1.0 | | | | | | |
| | | | | | | | | | | A_SB11_1.10 - 1.20 |
| | | | | | | | | | | A_SB11_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB11 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB12



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498228 8318977 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, non-plastic silt, brown, loose, moist, dry of plastic limit. (Reworked natural). | | | A_SB12_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB12_0.50 - 0.60 |
| | | | | 1.0 | | | | | | A_SB12_1.00 - 1.10 |
| | | | | | | | Light red brown mottled red brown. | | | A_SB12_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB12 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB13



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498225 8318970 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, brown, loose, moist, dry of plastic limit. (Reworked natural). | | | A_SB13_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB13_0.50 - 0.60 |
| | | | | | | | Light red brown mottled red brown. | | | |
| | | | | 1.0 | | | Very stiff. | | | A_SB13_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB13_1.40 - 1.50 |
| | | | | | | | A_SB13 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB14



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498231 8318971 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, brown, loose, moist dry of plastic limit. (Reworked natural). | | | A_SB14_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | A_SB14_0.50 - 0.60 |
| | | | | 1.0 | | | Light red brown mottled red brown. | | | A_SB14_1.00 - 1.10 |
| | | | | | | | Red-brown. | | | A_SB14_1.40 - 1.50 |
| | | | | 1.5 | | | A_SB14 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB15



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498237 8318962 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, brown, loose, moist, dry of plastic limit. (Reworked natural). | | | A_SB15_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB15_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, dry of plastic limit. | | | |
| | | | | 1.0 | | | | | | A_SB15_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB15_1.40 - 1.50 |
| | | | | | | | A_SB15 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB16



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498231 8318958 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, brown, loose, moist, dry of plastic limit. (Reworked natural). | | | A_SB16_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB16_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, wet of plastic limit. | | | |
| | | | | 1.0 | | | | | | A_SB16_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB16_1.40 - 1.50 |
| | | | | | | | A_SB16 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB17



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2498223 8318960 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, brown, loose, moist, dry of plastic limit. (Reworked natural). | | | A_SB17_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB17_0.50 - 0.60 |
| | | | | 1.0 | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, stiff, moist, wet of plastic limit. | | | A_SB17_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB17_1.40 - 1.50 |
| | | | | | | | A_SB17 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB18



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497578 8319396 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Gravelly SAND, fine grained, poorly graded, rounded sand and fine to coarse grained, well graded sub-rounded gravel, grey, dense, dry. (Road base). | | | A_SB18_0.00 - 0.10 |
| | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, trace fine to medium grained, poorly graded, angular gravel, brown, loose, dry to moist. (Reworked natural). | | | |
| | | | | 0.5 | | | | | | A_SB18_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, light red-brown, firm, moist, near plastic limit. | | | |
| | | | | 1.0 | | | | | | A_SB18_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB18_1.40 - 1.50 |
| | | | | | | | A_SB18 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB19



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497564 8319388 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine grained, poorly graded, rounded sand, trace fine grained, poorly graded, sub-rounded gravel, brown, loose, dry to moist. | | | |
| | | | | | | FILL | FILL: Sandy SILT, low plasticity, fine to medium grained, poorly graded, rounded sand, trace fine to medium grained, poorly graded, angular gravel, brown, loose, dry to moist. (Reworked natural). | | | A_SB19_0.10 - 0.20 |
| | | | | 0.5 | | | | | | A_SB19_0.50 - 0.60 |
| | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, light red-brown, firm, moist, near plastic limit. | | | |
| | | | | 1.0 | | | | | | A_SB19_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB19_1.40 - 1.50 |
| | | | | | | | A_SB19 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB20



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497610 8319384 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: SAND, medium to coarse grained, poorly graded, sub-rounded sand, brown, loose, wet. | Black staining (burnt), degrading hydrocarbon odour. | | A_SB20_0.00 - 0.10 |
| | | | | 0.5 | | | A_SB20 terminated at 0.20 m bgl<br>Refusal on inferred rock or bitumen/ asphalt. | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB21



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497617 8319382 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: SAND, fine grained, poorly graded, sub-rounded sand, trace silt, brown, loose, dry. (Topsoil). | | | A_SB21_0.00 - 0.10 |
| | | | | 0.5 | | | Minor fine to medium grained, poorly graded, sub angular gravel, anthropogenic material including burnt rock fragments. | Black staining (burnt). | | A_SB21_0.50 - 0.60 |
| | | | | 1.0 | | | | | | A_SB21_0.90 - 1.00 |
| | | | | | | | A_SB21 terminated at 1.05 m bgl<br>Refusal on inferred rock. | | | |
| | | | | 1.5 | | | | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB22



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 10/3/21 **COMPLETED** 10/3/21 **LOGGED BY** HP **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497637 8319368 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: SILT, non plastic, fine grained, poorly graded, rounded sand, brown, loose, moist. | | | A_SB22_0.00 - 0.10 |
| | | | | 0.5 | | | | | | A_SB22_0.50 - 0.60 |
| | | | | | | FILL | FILL: SAND, medium to coarse grained, poorly graded, rounded sand, brown, dense, moist. | | | |
| | | | | 1.0 | | | | | | A_SB22_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB22_1.40 - 1.50 |
| | | | | | | | A_SB22 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB23



**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 15/3/21 **COMPLETED** 15/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497946 8319446 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | CL | Silty CLAY: Low plasticity, trace fine grained, poorly graded, rounded sand, red-brown, firm, moist, dry of plastic limit. | | | A_SB23_0.00 - 0.10 |
| | | | | 0.5 | | | Firm to stiff. | | | A_SB23_0.50 - 0.60 |
| | | | | 1.0 | | | | | | A_SB23_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB23_1.40 - 1.50 |
| | | | | | | | A_SB23 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB24



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 15/3/21 **COMPLETED** 15/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497893 8319456 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Sandy SILT, non plastic, fine to medium grained, poorly graded, rounded sand, brown, loose, dry to moist. | | | A_SB24_0.00 - 0.10 |
| | | | | | | FILL | FILL: GRAVEL, fine to coarse grained, well graded, sub angular gravel, grey, dense, dry. (Compacted gravel). | | | |
| | | | | | | | A_SB24 terminated at 0.20 m bgl<br>Refusal on compacted gravel layer. | | | |
| | | | | 0.5 | | | | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB25



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 15/3/21 **COMPLETED** 15/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497869 8319428 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty CLAY, low plasticity, minor fine grained, poorly graded, sub-rounded sand, brown, firm, moist, dry of plastic limit. (Reworked natural). | | | A_SB25_0.00 - 0.10 |
| | | | | 0.5 | | CL | Silty CLAY: Low plasticity, brown mottled light brown, firm, moist, dry of plastic limit. | | | A_SB25_0.50 - 0.60 |
| | | | | | | | Light brown. | | | |
| | | | | 1.0 | | | | | | A_SB25_1.00 - 1.10 |
| | | | | 1.5 | | | | | | A_SB25_1.40 - 1.50 |
| | | | | | | | A_SB25 terminated at 1.50 m bgl<br>Target depth achieved | | | |
| | | | | 2.0 | | | | | | |



These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

# BOREHOLE NUMBER A_SB26



senversa

**PROJECT NAME** Detailed Site Investigation

**PROJECT NUMBER** C17776 **PROJECT LOCATION** Norfolk Island

**DATE STARTED** 15/3/21 **COMPLETED** 15/3/21 **LOGGED BY** CW **CHECKED BY** SMS

**CONTRACTOR** Independent Contractor **LOCATION (Easting, Northing, Zone)** 2497889 8319472 NZGD 2000

**EQUIPMENT** Hand Auger **DIMENSIONS** 63 mm diameter **INCLINATION** Vertical

**GROUNDWATER NOTES** Not encountered **CASING LEVEL** - **SURFACE LEVEL** -

**GENERAL NOTES**

| DRILLING | | | | | | FIELD MATERIAL DESCRIPTION | | | SAMPLING | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method | Core Recovery (%) | Water | Well Details | Depth (m) | Graphic Log | Classification Symbol | Material Description | Additional Observations | PID (ppm) | Sample ID & Interval (QA/QC) |
| HA | | | | | | FILL | FILL: Silty CLAY, low plasticity, minor fine grained, poorly graded, sub-rounded sand, brown, firm, moist, dry of plastic limit. (Reworked natural). | | | A_SB26_0.00 - 0.10 |
| | | | | | | CL | Silty CLAY: Low plasticity, brown mottled light brown, firm, moist, dry of plastic limit. | | | A_SB26_0.30 - 0.40 |
| | | | | 0.5 | | ML | Clayey SILT: Low plasticity, yellow brown, stiff, moist, dry of plastic limit. | | | A_SB26_0.50 - 0.60 |
| | | | | | | | A_SB26 terminated at 0.70 m bgl<br>Refusal on natural rock (basalt). | | | |
| | | | | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | |
| | | | | 2.0 | | | | | | |

1. SENVERSA STANDARD C17776_BORELOGS.GPJ SENVERSA_GINT.GDT 3/6/21

These logs have been prepared for environmental purposes and should not be used for geotechnical design and interpretive purposes

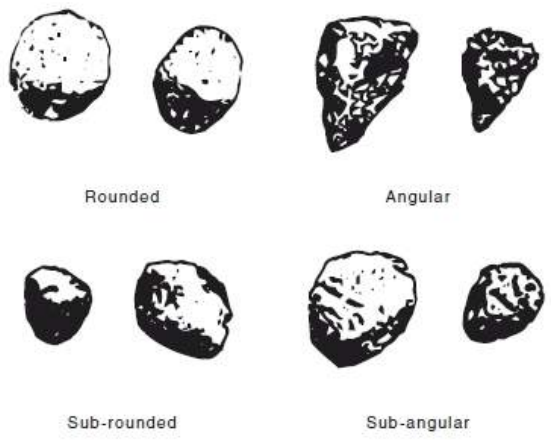
# Environmental Soil Description Notes & Abbreviations

**In accordance with AS1726 (2017) *Geotechnical Site Investigations***

| Description | | Particle Size (mm) | Graphic | Group Symbol | Typical Composition |
|---|---|---|---|---|---|
| | TOPSOIL | | | TOPSOIL | Topsoil |
| | FILL | | | FILL | Fill |
| Coarse-grained Soils (>65% >0.075mm) | | >63 | | B | Boulders and Cobbles |
| | GRAVEL | **Coarse** 63 to 19 **Medium** 19 to 6.7 **Fine** 6.7 to 2.36 | | GP | Poorly graded gravel and gravel-sand mixture, little or no fines |
| | | | | GW | Well graded gravel and gravel-sand mixture, little or no fines |
| | | | | GM | Gravel-silt mixture and gravel-sand-silt mixture |
| | | | | GC | Gravel-clay mixture and gravel-sand-clay mixture |
| | SAND | **Coarse** 2.36 to 0.6 **Medium** 0.6 to 0.21 **Fine** 0.21 to 0.075 | | SP | Poorly graded sand and gravel-sand mixture, little to no fines |
| | | | | SW | Well graded sand and gravel-sand mixture, little or no fines |
| | | | | SM | Sand-silt mixture |
| | | | | SC | Sand-clay mixture |
| Fine-grained Soils (>35% <0.075mm) | SILT | 0.075 to 0.002 | | ML | Inorganic silt with low plasticity, Liquid Limit ≤50% |
| | | | | MH | Inorganic silt with high plasticity, Liquid Limit >50% |
| | CLAY | <0.002 | | CL | Inorganic clay low plasticity Liquid Limit ≤35% |
| | | | | CI | Inorganic clay with medium plasticity, Liquid Limit >35% and ≤50% |
| | | | | CH | Inorganic clay of high plasticity, Liquid Limit >50% |
| | Organic Soil | | | OL | Organic silt or clay of low plasticity, 2 to 25% organic content by dry mass |
| | | | | OH | Organic silt or clay of medium to high plasticity, 2 to 25% organic content by dry mass |
| | | | | Pt | Peat, Highly organic, >25% organic content by dry mass |
| **Composite Soils** | | Composite soils, Clayey SILT, Gravelly SILT, Sandy SILT, Sandy GRAVEL, Gravelly SAND, and Silty CLAY may be represented by a combined graphic symbol. | | | |

| Method | |
|---|---|
| **HA** | Hand Auger |
| **SFA** | Solid Flight Auger |
| **HFA** | Hollow Flight Auger |
| **NDD** | Non-Destructive Digging |
| **DP** | Direct Push |
| **WB** | Wash Bore |
| **E(H)** | Excavation (Hydraulic) |
| **E(M)** | Excavation (Manual) |
| **Field Test** | |
| **ASS** | Acid sulfate soil<br>pH, pH(FOX) |
| **PID** | Photo-ionisation Detector (ppm) |
| **PP** | Pocket Penetrometer (kPa) |
| **XRF** | X-ray Fluorescence |
| **Groundwater** | |
| **GW** | Groundwater |
| **SWL** | Standing Water Level |
| **bgl** | Below ground level |
| **Moisture** | |
| **D** | Dry |
| **M** | Moist |
| **W** | Wet |
| **w<PL** | Moist, dry of Plastic Limit |
| **w=PL** | Moist, near Plastic Limit |
| **w>PL** | Moist, wet of Plastic Limit |
| **w=LL** | Wet, near Liquid Limit |
| **w>LL** | Wet, wet of Liquid Limit |
| **Sample Types** | |
| **J** | Jar sample |
| **B** | Bulk Sample |
| **Bag** | Small bag sample |
| **SV** | Soil vapour implant |
| **ASB** | Asbestos |

**Definition of Particle Shapes**



**Surface Soil Sample Lithology and Descriptions**
Detailed Site Investigation
Department of Infrastructure, Transport, Regional Development and Communications
Norfolk Island
17776



| Location Code | Location Type | Sample Date | Soil description | Comments |
|---|---|---|---|---|
| A_SS100 | Surface soil delineation | 9/03/2021 | Shallow basalt at 0.05 m, sampled gravelly clay above. | Moved to off compacted gravel where sample can be obtained |
| A_SS101 | Surface soil - Grid | 10/03/2021 | Gravelly silt, brown, fine grained, angular basaltic gravels, moist | Moved to off compacted gravel where sample can be obtained |
| A_SS101 | Surface soil - Grid | 10/03/2021 | Gravelly silt, brown, fine grained, angular  basaltic gravels, moist | Moved to target wet area |
| A_SS102 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff, dry under first 0.02m | Targeting drain through centre of site, same as A_SB19 |
| A_SS102 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff, dry under first 0.02m | Moved to target wet area. Handstand 0.1m below surface, sampled above. |
| A_SS103 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | |
| A_SS103 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | In drainage line adjacent to burnt out transformer |
| A_SS104 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | |
| A_SS104 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | Moved to off compacted gravel where sample can be obtained |
| A_SS105 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | |
| A_SS105 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, dry (baked hard), stiff | |
| A_SS106 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay, very dry (baked hard), stiff | |
| A_SS106 | Surface soil - Grid | 10/03/2021 | Under road base. Brown mottled red brown silty clay,very dry (baked hard), stiff | |
| A_SS107 | Surface soil - Grid | 10/03/2021 | Sand, grey, medium grained, rounded sand, wet, loose, minor silt | |
| A_SS107 | Surface soil - Grid | 10/03/2021 | Sand, grey, medium grained, rounded sand, wet, loose, minor silt | |
| A_SS108 | Surface soil - targeted | 10/03/2021 | Brown silt with minor gravel | |
| A_SS108 | Surface soil - targeted | 10/03/2021 | Brown silt with minor gravel | |
| A_SS109 | Surface soil - Grid | 10/03/2021 | Gravelly clay, fine to medium grained, sub angular basaltic gravels, grey mottled red brown, moist, stiff | |
| A_SS109 | Surface soil - Grid | 10/03/2021 | Gravelly clay, fine to medium grained, sub angular basaltic gravels, grey mottled red brown, moist, stiff | |
| A_SS110 | Surface soil | 10/03/2021 | Gravelly clay, fine to medium grained, sub angular basaltic gravels, grey mottled red brown, dry, stiff | |
| A_SS110 | Surface soil | 10/03/2021 | Gravelly clay, fine to medium grained, sub angular basaltic gravels, grey mottled red brown, moist, stiff | |
| A_SS111 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | |
| A_SS111 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | |
| A_SS112 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | Adjacent old generator (burnt) |
| A_SS112 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | Drainage line, up gradient of burnt generator. I'm drill ground (former fire training ground) |
| A_SS113 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | End of bitumen pad. Possible oil staining and or burnt area |
| A_SS113 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, dry, compacted. | Adjacent bitumen pad |
| A_SS114 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, very dry, very hard, compacted. | Corner of site, down gradient |
| A_SS114 | Surface soil - Grid | 10/03/2021 | Silty gravel, fine to coarse grained, sub angular basaltic gravel, grey mottled brown, very dry, very hard | |
| A_SS115 | Surface soil - Grid | 10/03/2021 | Very dry clay, low plasticity, very stiff, gravel like, brown | Refusal at 0.2 |
| A_SS115 | Surface soil - Grid | 10/03/2021 | Very dry clay, very stiff, gravel like, brown | |
| A_SS116 | Surface soil - targeted | 14/03/2021 | Sandy silt, brown. Fill/reworked nat. Trace fine grained rounded sand. non-plastic. No odour or staining | Down track to airport bore beneath waste centre |
| A_SS117 | Surface soil - targeted | 14/03/2021 | Fill, sandy silt, brown, trace fine grained sand and fine grained angular gravels. Hard. non-plastic | |
| A_SS118 | Surface soil - targeted | 14/03/2021 | Fill: brown silt with trace sand. fine grained sand. non-plastic dry, hard. | Moved to target drainage line off of area |
| A_SS119 | Surface soil - targeted | 14/03/2021 | Red brown clayey silt with trace fine grained sand. Hard. Compacted. Dry | Moved to target damp area |
| A_SS120 | Surface soil - targeted | 14/03/2021 | Red brown silt. non-plastic dry. Reworked natural | |
| A_SS121 | Surface soil | 14/03/2021 | Red brown clayey silt with trace fine to medium grained rounded sand. Non-plastic. Dry hard. | Surface soil in drainage line |
| A_SS122 | Surface soil - targeted | 14/03/2021 | Pale red brown clayey silt. Natural or reworked natural. non-plastic. Dry, dry of PL | |
| A_SS123 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | |
| A_SS124 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Moved to target wet area. Handstand 0.1m below surface, sampled above. |
| A_SS125 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | In drainage line adjacent to burnt out transformer |
| A_SS126 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Moved to target wet area |
| A_SS127 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Targeting drain through centre of site, same as A_SB19 |
| A_SS128 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Moved to off compacted gravel where sample can be obtained |
| A_SS129 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Moved to off compacted gravel where sample can be obtained |
| A_SS130 | Surface soil | 15/03/2021 | Brown silty sand. Loose. Dry. fine grained | Moved to off compacted gravel where sample can be obtained |
| A_SS131 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | |
| A_SS132 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | |
| A_SS133 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Surface soil 0.1m. Northern boundary of waste centre, between SPs/Chemstore and shipping containers |
| A_SS134 | Surface soil | 15/03/2021 | Brown sandy silt. fine grained. Dry. | Surface soil sample in compacted waste pile area |
| A_SS135 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | North of compacted waste area near site boundary.  Vegeation cover over soil sample |
| A_SS136 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Surface soil. Between two soil and bark hip/compost buildings |
| A_SS137 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Adjacent drainage line (refusal in drainage line - added extra SS at low point of drainage line to east (SS121) |
| A_SS138 | Surface soil | 15/03/2021 | Brown, clayey silt. Moist. | Surface soil 0.1 |
| A_SS139 | Surface soil | 15/03/2021 | Brown silty sand. F-mg. Loose dry. | Surface soil 0.1 |
| A_SS140 | Target surface soil | 16/03/2021 | Brown clayey silt, trace coarse grained, rounded basaltic gravels | New fire station tank, behind new tank. |
| A_SS141 | Surface soil | 16/03/2021 | Brown clayey silt. Dry. | Surface soil sample targeting new proposed tank |
| A_SS64 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS65 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. Reworked natural. Anthropogenic material including rubber (tubing) | |

| Location Code | Location Type | Sample Date | Soil description | Comments |
|---|---|---|---|---|
| A_SS66 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS67 | Surface soil delineation | 8/03/2021 | FILL Silty CLAY, brown, firm, dry. Anthropogenic material including brick frags, road base gravels, potential ACM | In grassed area land side (where people wait for arrivals) |
| A_SS68 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. very dry, baked hard | North east of taxiway |
| A_SS69 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | Low lying area off of runway to north east |
| A_SS70 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | North east of runway |
| A_SS71 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | In low lying area north east of works depot driveway and south west of taxiway |
| A_SS72 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS73 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS74 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS75 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS76 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS77 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS78 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS79 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS80 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS81 | Surface soil delineation | 9/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS82 | Surface soil delineation | 9/03/2021 | FILL Silty CLAY, brown, firm, dry. | |
| A_SS83 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks |
| A_SS84 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks. 5m offset from SS83. |
| A_SS85 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks |
| A_SS86 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks. 5m offset from SS85. |
| A_SS87 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks |
| A_SS88 | Target surface soil | 9/03/2021 | Silty clay with minor gravels | Targeted surface soil for new airport tanks. 5m offset from SS87. |
| A_SS89 | Surface soil delineation | 8/03/2021 | Brown silty clay, minor rootlets | |
| A_SS90 | Surface soil delineation | 8/03/2021 | Brown silty clay, dry, minor rootlets | |
| A_SS91 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, dry, firm. | |
| A_SS92 | Surface soil delineation | 8/03/2021 | Dark brown silty clay, moist, firm. | In lowest lying area in line with drainage line to mission creek. |
| A_SS93 | Surface soil delineation | 8/03/2021 | Dark brown silty clay with minor fine to coarse grained, rounded to sub angular gravels, dry, firm | Adjacent to new tanks on site boundary |
| A_SS94 | Surface soil delineation | 8/03/2021 | Dark brown ilty clay with minor gravels | |
| A_SS95 | Surface soil delineation | 8/03/2021 | Brown clayey silt, loose, very dry | In bare soil patch, near A_BORE1 |
| A_SS96 | Surface soil delineation | 8/03/2021 | Dark brown silty clay with minor gravels | Stockpiled material to north of location. Likely from levelling for new tanks? |
| A_SS97 | Surface soil delineation | 9/03/2021 | Brown silty clay, moist, low to medium plasticity, roots | Low lying area from truck wash down in maintenance depot |
| A_SS98 | Surface soil delineation | 9/03/2021 | Brown silty clay, moist, low to medium plasticity, roots | |
| A_SS99 | Surface soil delineation | 9/03/2021 | Brown silty clay, moist, low to medium plasticity, roots | |
| A_STP_SS01 | Soil Bore - Targeted | 15/03/2021 | Brown silty clay with coarse grained angular gravel | Western end of sewerage treatment plant. Near drill ground entrance. |
| A_STP_SS02 | Soil Bore - Targeted | 15/03/2021 | Brown silty clay, dry, low plasticity | Targeting soil near last point of treatment plant |
| A_STP_SS03 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | North west side of settlement pond. (Pond 3). |
| A_STP_SS04 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | NE corner of pond 3 settlement pond. |
| A_STP_SS05 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | SW of pond 3 |
| A_STP_SS06 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | SE pond 3 |
| A_STP_SS07 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | South (down gradient towards airport) of aeration |
| A_STP_SS08 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | In front of drainage lines before aeration |
| A_STP_SS09 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity with minor gravels | Towards airport from start of line |
| A_STP_SS10 | Soil Bore - Targeted | 16/03/2021 | Brown silty clay, dry, low plasticity | Start of line, away from airport side. |
| DEPOT_SS01 | Surface sample | 10/03/2021 | Brown sandy silt , non-plastic with fine grained, rounded, poorly graded sand | Adjacent washdown shed (north). |
| DEPOT_SS02 | Target surface soil | 10/03/2021 | Brown silty clay, dry, rootlets | Targeting former fire truck garage |
| DEPOT_SS03 | Surface sample | 10/03/2021 | Brown sandy silt , non-plastic with fine grained, rounded, poorly graded sand | Grass area opposite driveway/shed fire wash down. |
| DEPOT_SS04 | Target surface soil | 10/03/2021 | Brown silty clay, dry, rootlets | West of water tanks |
| DEPOT_SS05 | Target surface soil | 10/03/2021 | Brown sandy silt, non-plastic with fine grained, rounded, poorly graded sand | Target water tanks at depot - between tanks and building adjacent fill point/cover. |
| DEPOT_SS06 | Target surface soil | 10/03/2021 | Brown silty clay with trace gravels, dry, rootlets | East of tanks, in low lying area (spoon drain?) along site boundary |
| DEPOT_SS07 | Target surface soil | 10/03/2021 | Brown sand. Medium to coarse grained subrounded poorly graded sand, loose | Adjacent storm water drain, adjacent diesel tank and bowser. |
| DEPOT_SS08 | Target surface soil | 10/03/2021 | Brown sandy silt, non-plastic with fine grained, rounded, poorly graded sand | SE corner (10m) from diesel tanks and bowser. 4 m from eastern boundary fence. |
| DEPOT_SS09 | Target surface soil | 10/03/2021 | Brown silty clay, dry, rootlets | Lay down area for tractors/ transformers |
| DEPOT_SS10 | Target surface soil | 10/03/2021 | Brown sandy silt, non-plastic with fine grained, rounded, poorly graded sand | Downgradient of diesel tank and bowser ~20m. 2m from corner of south eastern small shed. |
| DEPOT_SS11 | Target surface soil | 10/03/2021 | Brown silty clay with trace gravels, dry, rootlets | In front of storage buildings with wood on grassed area |
| DEPOT_SS12 | Target surface soil | 10/03/2021 | Brown sandy silt, non-plastic with fine grained, rounded, poorly graded sand | SE corner of site. |
| DEPOT_SS13 | Target surface soil | 10/03/2021 | Brown silty clay with minor gravels, dry, rootlets, anthropogenic material including trace glass fragments | Back of depot, grassed area |
| DEPOT_SS14 | Target surface soil | 10/03/2021 | Brown silty clay with minor gravels, moist | Drainage line down west of depot, sampled in moist sediments below |
| DEPOT_SS15 | Target surface soil | 10/03/2021 | Brown silty sand. Fine to corase grained, well graded, subrounded with trace fine to medium grained angular gravel. Loose | Outside library |

| Location Code | Location Type | Sample Date | Soil description | Comments |
|---|---|---|---|---|
| DEPOT_SS16 | Target surface soil | 10/03/2021 | Brown silty clay, dry, rootlets | North of small building, across driveway from  former fire truck garage |
| ID013_SS01 | Surface soil | 11/03/2021 | Brown sandy silt. Fine to medium grained, poorly graded, rounded sand, Loose. (topsoil) | Under paw paw tree watered with creek water. |
| ID013_SS03 | Surface soil | 11/03/2021 | Silty sand, fine to coarse grained, poorly graded, subrounded topsoil. | Soil beneath capsicum plant |
| ID013_SS04 | Surface soil | 11/03/2021 | Sandy silt, fine to coarse grained, poorly graded subrounded topsoil | Soil beneath basil plants |
| ID013_SS05 | Surface soil | 11/03/2021 | Silty sand, fine to coarse grained, poorly graded, subrounded topsoil. | Soil beneath kentia palm trees |
| ID013_SS06 | Surface soil | 11/03/2021 | Sandy silt, fine to coarse grained, poorly graded subrounded topsoil | Chives and parsley |
| PWS_CAS_TOILETS | Shallow soil bore | 14/03/2021 | Sandy SILT, minor fine to coarse grained, sub angular basaltic gravels. Minor clay from 0.3. | Adjacent to toilet block, targeting underground septic tanks |
| PWS_EB_TOILETS | Shallow soil bore | 15/03/2021 | Fikne to medium grained yellow sand (beach sand). Dry to moist. Poorly graded, rounded sand. | Targeting holding tanks for toilets. Samples from 0.1 and 0.5m |
| PWS_HEAD_TOILETS | Shallow soil bore | 14/03/2021 | Brown silty clay, dry, soft to firm. No odour. | Target septic tank. Ocean side of tank (downgradient). Samples from 0.1 and 0.5m |
| TC_SS01 | Target surface soil | 15/03/2021 | Silty clay with trace sand, low plasticity, dry, brown | Grass cover. Common oval |
| TC_SS02 | Target surface soil | 15/03/2021 | Reworked natural, brown clayey silt. Low plasticity. | Grass cover. Common oval, 10 m north of reeds/TC. Low point where ponding may occur |
| TC_SS03 | Target surface soil | 15/03/2021 | Silty clay with trace sand, low plasticity, moist, brown | Grass cover. Common oval, south west |

# Appendix L: Water Parameters

**Appendix L: Stabilised Field Chemical Parameters - Water**
Detailed Site Investigation
Department of Infrastructure, Transport, Regional Development and Communications
Norfolk Island
17776

| Water Sample Information | | Water Quality Results | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample ID | Date Sampled | DO (mg/L) ±10% (1) | EC (µS/cm) ±3% (1) | TDS 0.65 conversion | pH ±0.05 (1) | Redox (mV) ±10mV (1) | Temp (°C) ±10% | Field Observations |
| A_TANK1 | 9/03/2021 | 4.95 | 67.9 | 44.14 | 6.5 | 219 | 22.8 | Non turbid, colourless, no odour, no sheen. |
| A_TANK2 | 9/03/2021 | 6.44 | 105.7 | 68.71 | 6.53 | 183.5 | 24.3 | Non turbid, colourless, no odour, no sheen. |
| A_TANK3 | 9/03/2021 | 5.31 | 52.1 | 33.87 | 5.64 | 208.5 | 24.2 | Non turbid, colourless, no odour, no sheen. |
| A_TAP1 | 8/03/2021 | 5.58 | 76.4 | 49.66 | 7.05 | 179.8 | 24.4 | Non turbid, colourless, no odour, no sheen. |
| A_TAP2 | 8/03/2021 | 4.96 | 52.9 | 34.39 | 6.2 | 216.2 | 23.4 | Non turbid, colourless, no odour, no sheen. |
| A_TAP3 | 15/03/2021 | 5.27 | 189.6 | 123.24 | 10.07 | 82.6 | 23.4 | Non turbid, colourless, no odour, no sheen. Possible pH probe error. |
| A_TAP4 | 15/03/2021 | 3.55 | 63.7 | 41.41 | 9.49 | 112.3 | 23.6 | Non turbid, colourless, no odour, no sheen. Possible pH probe error. |
| A_TAP5 | 15/03/2021 | 8.13 | 136.1 | 88.47 | 8.53 | 145.8 | 23.6 | Non turbid, colourless, no odour, no sheen. |
| BBC_SW05 | 18/03/2021 | 9.42 | 813 | 528.45 | 7.38 | 125.7 | 27 | Non turbid, colourless, no odour, no sheen. |
| CHAP_TAP1 | 11/03/2021 | 5.23 | 51.9 | 33.74 | 5.84 | 195.7 | 24.5 | Non turbid, colourless, no odour, no sheen. |
| CHAP_TAP2 | 11/03/2021 | 5.22 | 41.8 | 27.17 | 6.46 | 164 | 25.1 | Non turbid, colourless, no odour, no sheen. |
| COCKPIT_SW01 | 16/03/2021 | 3.26 | 850 | 552.50 | 6.3 | 167 | 21.5 | Non turbid, colourless, no odour, no sheen. |
| COUNCIL_TAP1 | 8/03/2021 | 4.75 | 92.8 | 60.32 | 7.93 | 203 | 22.6 | Non turbid, colourless, no odour, no sheen. |
| COUNCIL_TAP2 | 8/03/2021 | 4.54 | 54.3 | 35.30 | 7.07 | 204 | 22.4 | Non turbid, colourless, no odour, no sheen. |
| DEPOT_SW01 | 10/03/2021 | 5.93 | 303.8 | 197.47 | 7.09 | 188.1 | 22.7 | Non turbid, colourless, no odour, no sheen. |
| DEPOT_TANK 3 | 10/03/2021 | 5.92 | 780 | 507.00 | 6.65 | 216 | 25.7 | Non turbid, colourless, no odour, no sheen. |
| DEPOT_TAP1 | 10/03/2021 | 4.35 | 70.7 | 45.96 | 7.75 | 179.7 | 24.2 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP1 | 12/03/2021 | 4.6 | 87.3 | 56.75 | 6.45 | 158.7 | 26.6 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP1_K | 12/03/2021 | 4.29 | 70.8 | 46.02 | 5.8 | 188.4 | 26.5 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP3 | 12/03/2021 | 4.73 | 77.2 | 50.18 | 6.06 | 172.2 | 26.2 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP4 | 12/03/2021 | 5.48 | 75.6 | 49.14 | 5.77 | 186.7 | 25.2 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP5 | 12/03/2021 | 4.65 | 76.3 | 49.60 | 5.53 | 202.1 | 25.5 | Non turbid, colourless, no odour, no sheen. |
| FRE_TAP6 | 12/03/2021 | 5.45 | 75.6 | 49.14 | 5.46 | 206.3 | 25.1 | Non turbid, colourless, no odour, no sheen. |
| HC_SW01 | 14/03/2021 | 0.16 | 1232 | 800.80 | 6.55 | -35.4 | 25.7 | Non turbid, colourless, no odour, no sheen. |
| ID004_TANK | 11/03/2021 | 0.65 | 212.8 | 138.32 | 6.43 | 159.8 | 24.8 | Non turbid, colourless, no odour, no sheen. |
| ID009_TAP01 | 11/03/2021 | 5.66 | 69.3 | 45.05 | 5.8 | 270.6 | 26.9 | Non turbid, colourless, no odour, no sheen. |
| ID009_TAP1 | 11/03/2021 | 2.16 | 212.2 | 137.93 | 6.35 | 165 | 26 | Non turbid, colourless, no odour, no sheen. |
| ID009_WELL | 11/03/2021 | 1.64 | 691 | 449.15 | 6.37 | 41.5 | 22.2 | Non turbid, clear with black organic matter, no odour, no sheen, bubbles/soapy material on water surface. |
| ID012_SW03 | 17/03/2021 | 1.29 | 692 | 449.80 | 6.51 | -61.2 | 20.7 | Non turbid, colourless, no odour, no sheen. |
| ID012_SW04 | 17/03/2021 | 3.53 | 627 | 407.55 | 5.98 | -1.2 | 20.4 | Non turbid, colourless, no odour, no sheen. |
| ID013_SW01 | 11/03/2021 | 3.9 | 1183 | 768.95 | 6.06 | 225.1 | 28.6 | Non turbid, colourless, no odour, no sheen. |
| ID014_BORE | 11/03/2021 | 3.8 | 816 | 530.40 | 5.55 | 221 | 23 | Non turbid, colourless, no odour, no sheen. |
| ID015_BORE | 16/03/2021 | 6.09 | 515 | 334.75 | 4.69 | 258.7 | 24.1 | Non turbid, colourless, no odour, no sheen. |
| ID016_BORE | 11/03/2021 | 5.9 | 523 | 339.95 | 5.46 | 236.8 | 22.9 | Non turbid, colourless, no odour, no sheen. |
| ID016_TAP2 | 11/03/2021 | 5.35 | 68.9 | 44.79 | 6.6 | 206.6 | 24.9 | Non turbid, colourless, no odour, no sheen. |
| ID016_TAP2 | 11/03/2021 | 4.43 | 88.4 | 57.46 | 8.07 | 135.8 | 24.4 | Non turbid, colourless, no odour, no sheen. |
| ID017_TAP1 | 16/03/2021 | 5.84 | 46 | 29.90 | 7.57 | 178.7 | 30.7 | Non turbid, colourless, no odour, no sheen. |
| ID018_TAP1 | 11/03/2021 | 4.96 | 347.2 | 225.68 | 6.02 | 222.2 | 22.9 | Non turbid, colourless, no odour, no sheen. |
| ID019_TAP1 | 16/03/2021 | 4.63 | 42.4 | 27.56 | 5.23 | 238.1 | 23.9 | Non turbid, colourless, no odour, no sheen. |
| ID019_TAP2 | 16/03/2021 | 3.99 | 63.9 | 41.54 | 5.2 | 232 | 25.5 | Non turbid, colourless, no odour, no sheen. |
| ID020_TAP1 | 16/03/2021 | 5.45 | 56.3 | 36.60 | 5.23 | 241.9 | 25.5 | Non turbid, colourless, no odour, no sheen. |
| ID021_TAP1 | 16/03/2021 | 6.08 | 70.3 | 45.70 | 6.83 | 184.9 | 23 | Non turbid, colourless, no odour, no sheen. |
| ID022_TAP1 | 17/03/2021 | 3.17 | 565 | 367.25 | 6.63 | 177.3 | 25 | Non turbid, colourless, no odour, no sheen. |
| ID023_TAP1 | 17/03/2021 | 5.5 | 68.1 | 44.27 | 6.53 | 190.6 | 25.6 | Non turbid, colourless, no odour, no sheen. |
| ID023_TAP2 | 17/03/2021 | 4.95 | 485.7 | 315.71 | 6.16 | 199.4 | 24.6 | Non turbid, colourless, no odour, no sheen. |
| ID024_TAP1 | 17/03/2021 | 3.16 | 342.4 | 222.56 | 6.44 | 186.6 | 25.5 | Non turbid, colourless, no odour, no sheen. |
| MC_SW04 | 13/03/2021 | 6.79 | 5835 | 3792.75 | 2.01 | 525 | 25.3 | Non turbid, colourless, no odour, no sheen. Possible pH / redox probe error |
| MC_SW11 | 12/03/2021 | 1.47 | 733 | 476.45 | 6.06 | 219 | 19.5 | Non turbid, colourless, no odour, no sheen. |
| MC_SW13 | 12/03/2021 | 4.33 | 963 | 625.95 | 6.56 | 184 | 23.8 | Non turbid, colourless, no odour, no sheen. |
| MC_SW21 | 13/03/2021 | 5.61 | 479.1 | 311.42 | 6.06 | 12.9 | 21.3 | Non turbid, colourless, no odour, no sheen. |
| MC_SW24 | 13/03/2021 | 0.31 | 617 | 401.05 | 6.26 | -82.3 | 20.7 | Non turbid, colourless, no odour, no sheen. |
| MC_SW25 | 13/03/2021 | 4.3 | 464.3 | 301.80 | 6.15 | 50.5 | 21.1 | Non turbid, colourless, no odour, no sheen. |
| MC_SW26 | 16/03/2021 | 3.08 | 751 | 488.15 | 6.17 | 71 | 20.8 | Non turbid, colourless, no odour, no sheen. |
| MC_SW27 | 16/03/2021 | 1.91 | 578 | 375.70 | 6.16 | 23.2 | 20.1 | Non turbid, colourless, no odour, no sheen. |
| MC_SW28 | 16/03/2021 | 1.89 | 558 | 362.70 | 6.04 | 56.3 | 19.9 | Non turbid, colourless, no odour, no sheen. |
| PWS_AIRPORT_BO | 9/03/2021 | 6.53 | 553 | 359.45 | 6.37 | 178.9 | 25.4 | Non turbid, colourless, no odour, no sheen. |
| PWS_CAS_TOILETS | 14/03/2021 | 4.51 | 588 | 382.20 | 7.5 | 122 | 25.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_DUCK_DAM | 13/03/2021 | 5.76 | 673 | 437.45 | 6.53 | 12.5 | 27.5 | Non turbid, colourless, no odour, no sheen. |
| PWS_DUCK_DAMA | 13/03/2021 | 3.32 | 657 | 427.05 | 6.57 | 52.8 | 23 | Slightly turbid, brown, stagnent odour, no sheen. |
| PWS_EB_TOILETS | 15/03/2021 | 4.6 | 626 | 406.90 | 5.61 | 254.5 | 24.2 | Non turbid, colourless, no odour, no sheen. Foam on ground beneath tap. |
| PWS_HEAD_DAM | 16/03/2021 | 4.61 | 927 | 602.55 | 4.08 | 317.7 | 27.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_HEAD_TOILET | 14/03/2021 | 6.21 | 574 | 373.10 | 6.98 | 125.5 | 25.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK1 | 13/03/2021 | 4.19 | 79.4 | 51.61 | 6.6 | 151.9 | 27 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK2 | 13/03/2021 | 4.21 | 61.6 | 40.04 | 6.76 | 112.7 | 27.3 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK3 | 13/03/2021 | 5.04 | 47.2 | 30.68 | 6.36 | 166.1 | 25.8 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK4 | 14/03/2021 | 5.58 | 46.3 | 30.10 | 7.69 | 144.8 | 25 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK5 | 14/03/2021 | 5.64 | 40.7 | 26.46 | 7.09 | 164.4 | 24.4 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK6 | 14/03/2021 | 5.23 | 84.5 | 54.93 | 8.99 | 82.6 | 24.9 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK7 | 14/03/2021 | 5.38 | 40.5 | 26.33 | 8.42 | 114.9 | 23.7 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TANK8 | 14/03/2021 | 3.94 | 33 | 21.45 | 6.85 | 170.3 | 24.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP1 | 9/03/2021 | 5.22 | 64.8 | 42.12 | 6.2 | 248.1 | 23.9 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP3 | 9/03/2021 | 5.26 | 69.7 | 45.31 | 6.33 | 239.8 | 24.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP4 | 9/03/2021 | 5.33 | 62.5 | 40.63 | 5.9 | 262.1 | 22.7 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP4A | 14/03/2021 | 4.4 | 64.3 | 41.80 | 6.51 | 195.3 | 25.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP5 | 14/03/2021 | 4.7 | 86.2 | 56.03 | 7.28 | 119.2 | 25.6 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP6 | 14/03/2021 | 4.53 | 66.3 | 43.10 | 5.91 | 187.8 | 27.4 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP7 | 14/03/2021 | 4.9 | 446.7 | 290.36 | 4.64 | 231.3 | 24.4 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP8 | 14/03/2021 | 4.64 | 500 | 325.00 | 5.98 | 182.8 | 26.9 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP9 | 14/03/2021 | 2.56 | 50.6 | 32.89 | 6.16 | 187.6 | 30.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP10 | 14/03/2021 | 3.41 | 49.6 | 32.24 | 5.51 | 211 | 29.6 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP11 | 14/03/2021 | 5.8 | 63.2 | 41.08 | 6.67 | 187.6 | 25 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP12 | 14/03/2021 | 3.85 | 65.6 | 42.64 | 6.12 | 205.1 | 24.8 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP13 | 14/03/2021 | 5.76 | 64.2 | 41.73 | 5.64 | 221.4 | 25.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP14 | 14/03/2021 | 6.13 | 181.8 | 118.17 | 7.65 | 135.5 | 26.5 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP15 | 14/03/2021 | 3.41 | 56.8 | 36.92 | 7.52 | 158.4 | 26.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP16 | 14/03/2021 | 5.76 | 69 | 44.85 | 6.74 | 174.9 | 24.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP17 | 14/03/2021 | 4.55 | 58 | 37.70 | 6.06 | 202.8 | 24.6 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP18 | 14/03/2021 | 3.7 | 71.7 | 46.61 | 6.05 | 208.9 | 25.6 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP19 | 14/03/2021 | 4.19 | 75.8 | 49.27 | 6.21 | 204.7 | 23 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP20 | 14/03/2021 | 4.25 | 63.6 | 41.34 | 6 | 218 | 23.1 | Non turbid, colourless, no odour, no sheen. |
| PWS_HOSP_TAP21 | 15/03/2021 | 4.04 | 66 | 42.90 | 5.73 | 229.5 | 25.2 | Non turbid, colourless, no odour, no sheen. |
| PWS_WWII_Dam | 13/03/2021 | 1.13 | 513.2 | 333.58 | 5.64 | 33.3 | 21.7 | Non turbid, colourless, no odour, no sheen. |
| TC_SW02 | 16/03/2021 | 3.72 | 495.1 | 321.82 | 6.78 | 149.1 | 21.8 | Non turbid, colourless, no odour, no sheen. |
| TC_SW03 | 12/03/2021 | 4.37 | 610 | 396.50 | 6.87 | 148.5 | 23.3 | Slightly turbid, orange, no odour, no sheen. |
| TC_SW04 | 12/03/2021 | 4.63 | 490.5 | 318.83 | 6.04 | 146.3 | 22.4 | Non turbid, colourless, no odour, no sheen. |
| TC_SW05 | 12/03/2021 | 1.97 | 587 | 381.55 | 5.85 | 108.8 | 29.1 | Non turbid, colourless, no odour, no sheen. |
| TC_SW06 | 12/03/2021 | 0.7 | 522 | 339.30 | 5.95 | 1.5 | 22.8 | Non turbid, colourless, no odour, no sheen. |
| TC_SW07 | 12/03/2021 | 3.5 | 62293 | 40490.45 | 7.59 | 188.7 | 27.7 | Non turbid, colourless, no odour, no sheen. |
| TC_SW12 | 15/03/2021 | 2.47 | 2407 | 1564.55 | 8.1 | 155.7 | 23.8 | Non turbid, colourless, no odour, no sheen. |
| TC_SW13 | 16/03/2021 | 3.74 | 370.4 | 240.76 | 6.21 | 161 | 20.2 | Non turbid, colourless, no odour, no sheen. |

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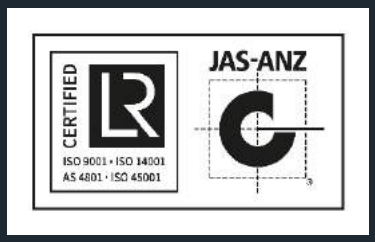

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