

PFAS Sampling Results in the Marinette and Peshtigo Area Due to Foam Sightings

In September 2019, following reports of foam sightings by community members, DNR mobilized an environmental consultant to collect and analyze foam and surface water microlayer (SML) samples (i.e., samples taken from the surface of the waterbody) from the Peshtigo River and at a roadside ditch near the intersection of Leaf and Kraus Roads in the Town of Peshtigo. The DNR received the sample results for the foam and SML samples that were collected from these two locations in Marinette County. All sample locations and sample results for PFOS and PFOA (perfluorooctane sulfonic acid and perfluorooctanoic acid) are displayed on the attached map. Analytical reports for the foam and SML samples are also attached. Additional information regarding the state-wide fish and water chemistry study can be found on the DNR's [Water quality PFAS initiatives page](#).

The sampling in September for the foam sighting is in addition to samples collected by the DNR in the Peshtigo River in August 2019 as part of a statewide monitoring project to sample fish tissue and water chemistry at select sites around the state near known or probable sources of per- and polyfluoroalkyl substances (PFAS). Three water samples were collected in the Peshtigo River associated with this initiative; fish tissue data were not collected. The August sampling was not due to a specific foam sighting incident.

PFOS and PFOA were detected in the September foam and SML samples, and the August surface water samples

| Sample Results for Foam, SML, and Water (see attached map) | | | | | | | | |
|--|-----------|---|------------------|----------------|------------------|------------------|------------|------------|
| Sample Location | Sample ID | Location Description | Water Body | Date Collected | Substance Sample | Sample Depth | PFOA (ppt) | PFOS (ppt) |
| 1 | 1 | Above HWY 64 at Boat Landing | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 0.73 | 0.19J |
| 2 | 2 | Below the City of Peshtigo Dam between Railroad Bridges | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 0.87 | 0.27J |
| 3 | 3 | Below the City of Peshtigo | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 1.0 | 0.41 |
| 4 | 4S | Below the City of Peshtigo Dam | Peshtigo River | 9/18/2019 | SML | top 2mm of water | 2.1 | 6.2I |
| | 4F | Below the City of Peshtigo Dam | Peshtigo River | 9/18/2019 | Foam | Surface | 230 | 17,000E |
| 5 | 5S | Roadside ditch leading to Little River | Leaf/Kraus Ditch | 9/18/2019 | SML | top 2mm of water | 2.3 | ND |
| | 5F | Roadside ditch leading to Little River | Leaf/Kraus Ditch | 9/18/2019 | Foam | Surface | 990 | 17,000E |
| Values are approximations. For additional information, please see the attached lab report. | | | | | | | | |

Sample results of varying concentration

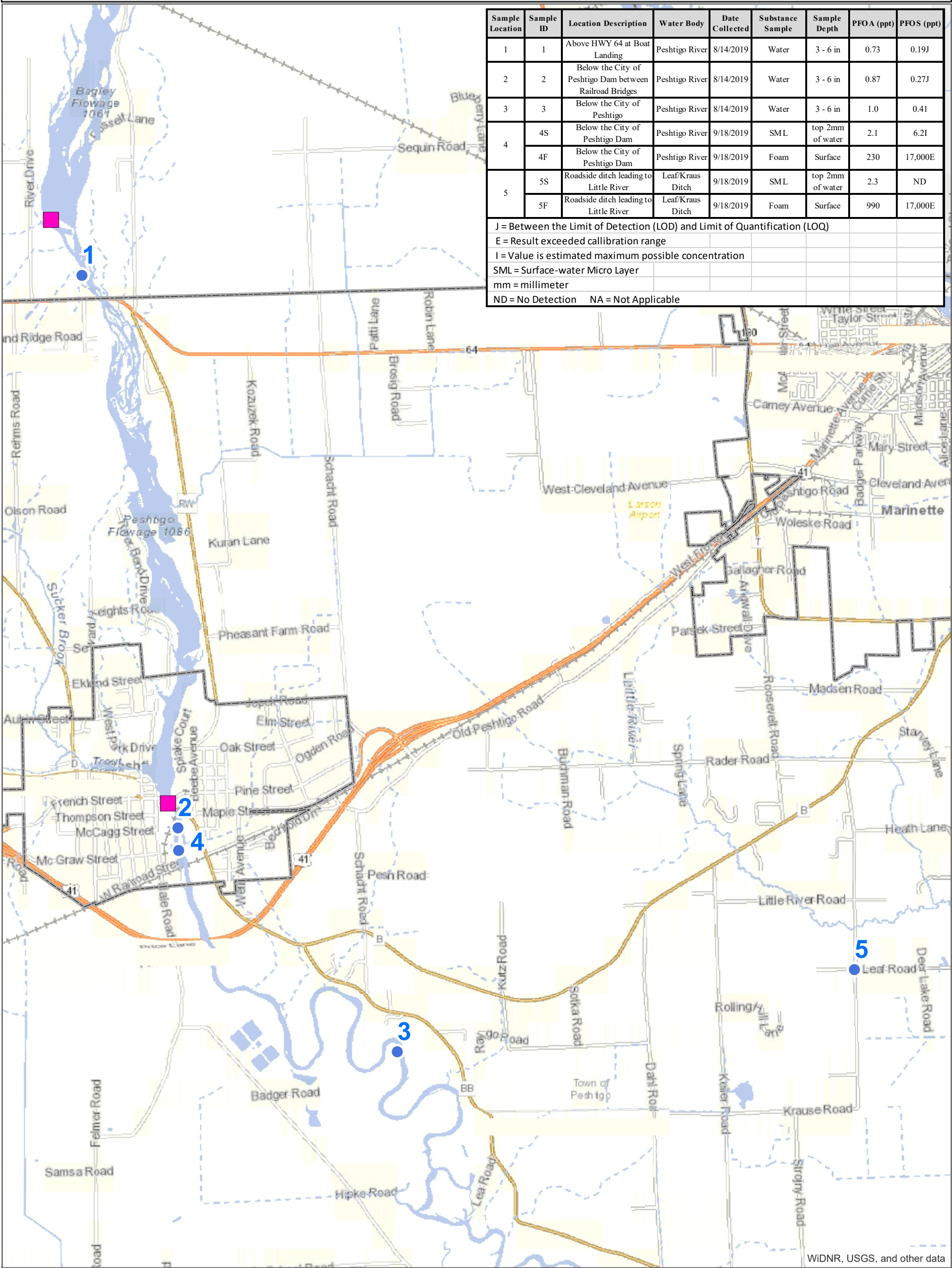
There are some likely reasons for the variation in water sample results. between the foam and the sampling at varying depths in the surface water for PFAS. PFAS substances are well known for

exhibiting “surfactant properties,” meaning that some PFAS may have a high affinity to reside at the water’s surface and the ambient air. To capture PFAS at where PFAS contaminated water intersects with air, SML samples were collected by ‘scooping’ water off the top 2 millimeters of the water’s surface using a sample bottle.

In contrast, the water samples collected as part of the August statewide monitoring project were collected 3-6 inches below the surface of the water as part of an effort to determine water chemistry conditions where fish are likely to reside. The difference in sample location combined with the surfactant properties of PFAS may explain why the September SML samples contained more PFAS than the August water samples. Finally, the foam appeared after a heavy rain event; high water conditions created turbulent flow which is a likely factor in the foam formation.

The DNR is responding to foam events in areas where there is known or suspected PFAS contamination and will identify PFAS compounds as well as the sources of PFAS which may be causing the foam. The DNR is also working closely with the Wisconsin Department of Health Services and local health officials to ensure that the public stays informed of these situations when they develop, and the [precautions to undertake](#) in these events.

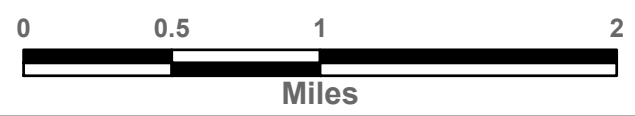
PFAS SAMPLING LOCATIONS IN MARINETTE-PESHTIGO AREA



| Sample Location | Sample ID | Location Description | Water Body | Date Collected | Substance Sample | Sample Depth | PFOA (ppt) | PFOS (ppt) |
|-----------------|-----------|---|------------------|----------------|------------------|------------------|------------|------------|
| 1 | 1 | Above HWY 64 at Boat Landing | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 0.73 | 0.19J |
| 2 | 2 | Below the City of Peshtigo Dam between Railroad Bridges | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 0.87 | 0.27J |
| 3 | 3 | Below the City of Peshtigo | Peshtigo River | 8/14/2019 | Water | 3 - 6 in | 1.0 | 0.41 |
| 4 | 4S | Below the City of Peshtigo Dam | Peshtigo River | 9/18/2019 | SML | top 2mm of water | 2.1 | 6.2I |
| | 4F | Below the City of Peshtigo Dam | Peshtigo River | 9/18/2019 | Foam | Surface | 230 | 17,000E |
| 5 | 5S | Roadside ditch leading to Little River | Leaf/Kraus Ditch | 9/18/2019 | SML | top 2mm of water | 2.3 | ND |
| | 5F | Roadside ditch leading to Little River | Leaf/Kraus Ditch | 9/18/2019 | Foam | Surface | 990 | 17,000E |

J = Between the Limit of Detection (LOD) and Limit of Quantification (LOQ)
 E = Result exceeded calibration range
 I = Value is estimated maximum possible concentration
 SML = Surface-water Micro Layer
 mm = millimeter
 ND = No Detection NA = Not Applicable

- Sample Location
- Dam
- Municipal Boundary



N

Oct 29, 2019

*Fiscal & Information Technology Section
Remediation & Redevelopment Program*

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not intended to be used for navigation, nor is this map an authoritative source of information about legal land ownership or public access. Users of this map should confirm the ownership of land through other means in order to avoid trespassing. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54528-1

Client Project/Site: PFAS, Reactive Foam Water Way 60614940

For:

AECOM Technical Services Inc.
1555 North RiverCenter Drive
Suite 214
Milwaukee, Wisconsin 53212

Attn: Lanette Altenbach



Authorized for release by:
10/21/2019 5:45:54 PM

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Qualifiers

LCMS

| Qualifier | Qualifier Description |
|-----------|--|
| * | Isotope Dilution analyte is outside acceptance limits. |
| B | Compound was found in the blank and sample. |
| E | Result exceeded calibration range. |
| I | Value is EMPC (estimated maximum possible concentration). |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

Case Narrative

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Job ID: 320-54528-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54528-1

Comments

No additional comments.

Receipt

The samples were received on 9/20/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Equipment Blank-Leafrake+Cheesecloth (320-54528-2). The container labels list Equipment Blank, while the COC lists Equipment Blank-Leafrake+cloth.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-330274/11)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-8:2 FTS in the following samples: Field Blank (320-54528-1), Equipment Blank-Leafrake+Cheesecloth (320-54528-2) and 1-Surfacewater-Culvert (320-54528-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C2 PFHxDA: 1-Surfacewater-Culvert (320-54528-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). 2-Surfacewater-River (320-54528-6)

Method 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for Perfluorododecanesulfonic acid (PFDoS) and F-53B Minor were outside control limits. Sample matrix interference are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) recovery was within acceptance limits.

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recoveries associated with the following samples were below the method recommended limit: 1-Foam-Culvert (320-54528-3) and 2-Foam-River (320-54528-5). The samples were re-analyzed with concurring results. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method 537 (modified): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorononanoic acid (PFNA) associated with the following sample exceeded the instrument calibration range: 1-Foam-Culvert (320-54528-3). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The concentration Perfluorooctanesulfonic acid (PFOS) and N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) associated with the following sample exceeded the instrument calibration range: 2-Foam-River (320-54528-5). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Due to the matrix being turbid dark brown/black and contains lots of floating particulates, 10X dilution (25mL) were made for

Case Narrative

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Job ID: 320-54528-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

the following samples: 1-Foam-Culvert (320-54528-3) and 2-Foam-River (320-54528-5). After diluting the samples into new container, they were fortified with IDA then extracted. The 10X dilution of these samples are brown and contain particulates floating in them.

320-326510
Method: 3535 PFC

Method 3535: The following sample is light brown contain particulates at the bottom of the bottle prior to extraction:
2-Surfacewater-River (320-54528-6)

320-326510
Method: 3535 PFC

Method 3535: The following sample is brown prior to extraction
1-Surfacewater-Culvert (320-54528-4)

320-326510
Method: 3535 PFC

Method 3535: During the solid phase extraction process, the following samples have non-settable particulates which clogged the extraction column: 1-Foam-Culvert (320-54528-3) and 2-Foam-River (320-54528-5).

320-326510
Method: 3535 PFC

Method 3535: The following samples are yellow after extraction:
1-Foam-Culvert (320-54528-3), 1-Surfacewater-Culvert (320-54528-4), 2-Foam-River (320-54528-5) and 2-Surfacewater-River (320-54528-6)

320-326510
Method: 3535 PFC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Field Blank

Lab Sample ID: 320-54528-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorohexanesulfonic acid (PFHxS) | 0.27 | J B | 1.8 | 0.15 | ng/L | 1 | | 537 (modified) | Total/NA |

Client Sample ID: Equipment Blank-Leafrake+Cheesecloth

Lab Sample ID: 320-54528-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorohexanesulfonic acid (PFHxS) | 0.29 | J B | 1.9 | 0.16 | ng/L | 1 | | 537 (modified) | Total/NA |

Client Sample ID: 1-Foam-Culvert

Lab Sample ID: 320-54528-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|--------|-----------|-----|-----|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 34 | | 20 | 3.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 13 | J | 20 | 4.9 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 21 | | 20 | 5.8 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 210 | | 20 | 2.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 990 | | 20 | 8.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 5400 | E | 20 | 2.7 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorodecanoic acid (PFDA) | 1800 | | 20 | 3.1 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroundecanoic acid (PFUnA) | 590 | | 20 | 11 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorododecanoic acid (PFDoA) | 31 | | 20 | 5.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 23 | B | 20 | 1.7 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanesulfonic Acid (PFHpS) | 60 | | 20 | 1.9 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonic acid (PFOS) | 17000 | E | 20 | 5.4 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonamide (FOSA) | 21 | B | 20 | 3.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 19 | J | 200 | 19 | ng/L | 1 | | 537 (modified) | Total/NA |
| 6:2 FTS | 180 | J | 200 | 20 | ng/L | 1 | | 537 (modified) | Total/NA |
| 8:2 FTS | 24 | J | 200 | 20 | ng/L | 1 | | 537 (modified) | Total/NA |
| NMeFOSE | 140 | | 40 | 14 | ng/L | 1 | | 537 (modified) | Total/NA |
| NEtFOSE | 36 | | 20 | 8.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| 10:2 FTS | 4.8 | J | 20 | 1.9 | ng/L | 1 | | 537 (modified) | Total/NA |

Client Sample ID: 1-Surfacewater-Culvert

Lab Sample ID: 320-54528-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 15 | | 1.8 | 0.32 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 7.3 | | 1.8 | 0.45 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 5.6 | | 1.8 | 0.53 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 7.9 | | 1.8 | 0.23 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 2.3 | | 1.8 | 0.78 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 1.5 | J | 1.8 | 0.25 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorodecanoic acid (PFDA) | 0.34 | J | 1.8 | 0.28 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorobutanesulfonic acid (PFBS) | 0.69 | J | 1.8 | 0.18 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 0.50 | J B | 1.8 | 0.16 | ng/L | 1 | | 537 (modified) | Total/NA |

Client Sample ID: 2-Foam-River

Lab Sample ID: 320-54528-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---------------------------------|--------|-----------|----|-----|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 30 | | 20 | 3.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 11 | J | 20 | 5.8 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 13 | J | 20 | 2.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 230 | | 20 | 8.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 1300 | | 20 | 2.7 | ng/L | 1 | | 537 (modified) | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 2-Foam-River (Continued)

Lab Sample ID: 320-54528-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|--|--------|-----------|-----|-----|------|---------|---|----------------|-----------|
| Perfluorodecanoic acid (PFDA) | 1300 | | 20 | 3.1 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroundecanoic acid (PFUnA) | 550 | | 20 | 11 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorododecanoic acid (PFDoA) | 51 | | 20 | 5.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | 26 | | 20 | 8.9 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 6.5 | J B | 20 | 1.7 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanesulfonic Acid (PFHpS) | 24 | | 20 | 1.9 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonic acid (PFOS) | 17000 | E | 20 | 5.4 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorodecanesulfonic acid (PFDS) | 6.5 | J | 20 | 3.2 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonamide (FOSA) | 1400 | B | 20 | 3.5 | ng/L | 1 | | 537 (modified) | Total/NA |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | 220 | | 200 | 31 | ng/L | 1 | | 537 (modified) | Total/NA |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 8700 | E | 200 | 19 | ng/L | 1 | | 537 (modified) | Total/NA |
| 6:2 FTS | 52 | J | 200 | 20 | ng/L | 1 | | 537 (modified) | Total/NA |
| NEtFOSA | 59 | | 20 | 8.7 | ng/L | 1 | | 537 (modified) | Total/NA |
| NMeFOSE | 320 | | 40 | 14 | ng/L | 1 | | 537 (modified) | Total/NA |
| NEtFOSE | 89 | | 20 | 8.5 | ng/L | 1 | | 537 (modified) | Total/NA |

Client Sample ID: 2-Surfacewater-River

Lab Sample ID: 320-54528-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 6.3 | | 1.8 | 0.32 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 2.5 | | 1.8 | 0.45 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 2.2 | | 1.8 | 0.53 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 1.5 | J | 1.8 | 0.23 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 2.1 | | 1.8 | 0.77 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 0.38 | J | 1.8 | 0.25 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorodecanoic acid (PFDA) | 0.29 | J | 1.8 | 0.28 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorobutanesulfonic acid (PFBS) | 0.32 | J | 1.8 | 0.18 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 0.36 | J B | 1.8 | 0.15 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonic acid (PFOS) | 6.2 | I | 1.8 | 0.49 | ng/L | 1 | | 537 (modified) | Total/NA |
| Perfluorooctanesulfonamide (FOSA) | 0.90 | J B | 1.8 | 0.32 | ng/L | 1 | | 537 (modified) | Total/NA |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 4.4 | J | 18 | 1.7 | ng/L | 1 | | 537 (modified) | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Field Blank

Lab Sample ID: 320-54528-1

Date Collected: 09/18/19 11:45

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|------------|----------|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | <0.31 | | 1.8 | 0.31 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoropentanoic acid (PFPeA) | <0.44 | | 1.8 | 0.44 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorohexanoic acid (PFHxA) | <0.52 | | 1.8 | 0.52 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoroheptanoic acid (PFHpA) | <0.22 | | 1.8 | 0.22 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorooctanoic acid (PFOA) | <0.76 | | 1.8 | 0.76 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorononanoic acid (PFNA) | <0.24 | | 1.8 | 0.24 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorodecanoic acid (PFDA) | <0.28 | | 1.8 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoroundecanoic acid (PFUnA) | <0.99 | | 1.8 | 0.99 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorododecanoic acid (PFDoA) | <0.49 | | 1.8 | 0.49 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <1.2 | | 1.8 | 1.2 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <0.26 | | 1.8 | 0.26 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <0.80 | | 1.8 | 0.80 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | <0.18 | | 1.8 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <0.41 | | 1.8 | 0.41 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <0.27 | | 1.8 | 0.27 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.27 | J B | 1.8 | 0.15 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | <0.49 | | 1.8 | 0.49 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <0.14 | | 1.8 | 0.14 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorooctanesulfonamide (FOSA) | <0.31 | | 1.8 | 0.31 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <2.8 | | 18 | 2.8 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | <1.7 | | 18 | 1.7 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 4:2 FTS | <4.7 | | 18 | 4.7 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 6:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 8:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| NEtFOSA | <0.78 | | 1.8 | 0.78 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| NMeFOSA | <0.39 | | 1.8 | 0.39 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| NMeFOSE | <1.3 | | 3.6 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| NEtFOSE | <0.76 | | 1.8 | 0.76 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <0.40 | | 1.8 | 0.40 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| F-53B Major | <0.22 | | 1.8 | 0.22 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| HFPO-DA (GenX) | <1.3 | | 3.6 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| F-53B Minor | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 10:2 FTS | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| DONA | <0.16 | | 1.8 | 0.16 | ng/L | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C4 PFBA | 101 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C5 PFPeA | 104 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C2 PFHxA | 102 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C4 PFHpA | 104 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C4 PFOA | 108 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C5 PFNA | 100 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:46 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Field Blank

Lab Sample ID: 320-54528-1

Date Collected: 09/18/19 11:45

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C2 PFDA | 107 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C2 PFUnA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C2 PFDoA | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C2 PFTeDA | 108 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 18O2 PFHxS | 110 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C4 PFOS | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C8 FOSA | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d3-NMeFOSAA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d5-NEtFOSAA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| M2-6:2 FTS | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| M2-8:2 FTS | 157 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| M2-4:2 FTS | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d9-N-EtFOSE-M | 38 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d-N-MeFOSA-M | 69 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d7-N-MeFOSE-M | 47 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| d-N-EtFOSA-M | 54 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C2 PFHxDA | 92 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |
| 13C3 HFPO-DA | 89 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:46 | 1 |

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Equipment Blank-Leafrake+Cheesecloth

Lab Sample ID: 320-54528-2

Date Collected: 09/18/19 11:55

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|------------|----------|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | <0.33 | | 1.9 | 0.33 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoropentanoic acid (PFPeA) | <0.46 | | 1.9 | 0.46 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorohexanoic acid (PFHxA) | <0.55 | | 1.9 | 0.55 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoroheptanoic acid (PFHpA) | <0.24 | | 1.9 | 0.24 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorooctanoic acid (PFOA) | <0.81 | | 1.9 | 0.81 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorononanoic acid (PFNA) | <0.26 | | 1.9 | 0.26 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorodecanoic acid (PFDA) | <0.29 | | 1.9 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoroundecanoic acid (PFUnA) | <1.0 | | 1.9 | 1.0 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorododecanoic acid (PFDoA) | <0.52 | | 1.9 | 0.52 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <1.2 | | 1.9 | 1.2 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <0.28 | | 1.9 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <0.84 | | 1.9 | 0.84 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | <0.19 | | 1.9 | 0.19 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <0.44 | | 1.9 | 0.44 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <0.28 | | 1.9 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.29 | J B | 1.9 | 0.16 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | <0.18 | | 1.9 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | <0.51 | | 1.9 | 0.51 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <0.15 | | 1.9 | 0.15 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <0.30 | | 1.9 | 0.30 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorooctanesulfonamide (FOSA) | <0.33 | | 1.9 | 0.33 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <2.9 | | 19 | 2.9 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | <1.8 | | 19 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 4:2 FTS | <4.9 | | 19 | 4.9 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 6:2 FTS | <1.9 | | 19 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 8:2 FTS | <1.9 | | 19 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| NEtFOSA | <0.83 | | 1.9 | 0.83 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| NMeFOSA | <0.41 | | 1.9 | 0.41 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| NMeFOSE | <1.3 | | 3.8 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| NEtFOSE | <0.81 | | 1.9 | 0.81 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <0.43 | | 1.9 | 0.43 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| F-53B Major | <0.23 | | 1.9 | 0.23 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| HFPO-DA (GenX) | <1.4 | | 3.8 | 1.4 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| F-53B Minor | <0.30 | | 1.9 | 0.30 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 10:2 FTS | <0.18 | | 1.9 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| DONA | <0.17 | | 1.9 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C4 PFBA | 97 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C5 PFPeA | 104 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C2 PFHxA | 103 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C4 PFHpA | 106 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C4 PFOA | 111 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C5 PFNA | 100 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 11:56 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Equipment Blank-Leafrake+Cheesecloth

Lab Sample ID: 320-54528-2

Date Collected: 09/18/19 11:55

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C2 PFDA | 110 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C2 PFUnA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C2 PFDoA | 75 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C2 PFTeDA | 89 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 18O2 PFHxS | 116 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C4 PFOS | 103 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C8 FOSA | 103 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d3-NMeFOSAA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d5-NEtFOSAA | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| M2-6:2 FTS | 104 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| M2-8:2 FTS | 169 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| M2-4:2 FTS | 105 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d9-N-EtFOSE-M | 42 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d-N-MeFOSA-M | 72 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d7-N-MeFOSE-M | 59 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| d-N-EtFOSA-M | 46 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C2 PFHxDA | 37 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |
| 13C3 HFPO-DA | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:56 | 1 |

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 1-Foam-Culvert

Lab Sample ID: 320-54528-3

Date Collected: 09/18/19 12:00

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 34 | | 20 | 3.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoropentanoic acid (PFPeA) | 13 | J | 20 | 4.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorohexanoic acid (PFHxA) | 21 | | 20 | 5.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 210 | | 20 | 2.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorooctanoic acid (PFOA) | 990 | | 20 | 8.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorononanoic acid (PFNA) | 5400 | E | 20 | 2.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorodecanoic acid (PFDA) | 1800 | | 20 | 3.1 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 590 | | 20 | 11 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorododecanoic acid (PFDoA) | 31 | | 20 | 5.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <13 | | 20 | 13 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <2.9 | | 20 | 2.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <8.9 | | 20 | 8.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | <2.0 | | 20 | 2.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <4.6 | | 20 | 4.6 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <3.0 | | 20 | 3.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 23 | B | 20 | 1.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 60 | | 20 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 17000 | E | 20 | 5.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <1.6 | | 20 | 1.6 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <3.2 | | 20 | 3.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorooctanesulfonamide (FOSA) | 21 | B | 20 | 3.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <31 | | 200 | 31 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 19 | J | 200 | 19 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 4:2 FTS | <52 | | 200 | 52 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 6:2 FTS | 180 | J | 200 | 20 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 8:2 FTS | 24 | J | 200 | 20 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| NEtFOSA | <8.7 | | 20 | 8.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| NMeFOSA | <4.3 | | 20 | 4.3 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| NMeFOSE | 140 | | 40 | 14 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| NEtFOSE | 36 | | 20 | 8.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <4.5 | | 20 | 4.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| F-53B Major | <2.4 | | 20 | 2.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| HFPO-DA (GenX) | <15 | | 40 | 15 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| F-53B Minor | <3.2 | | 20 | 3.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 10:2 FTS | 4.8 | J | 20 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| DONA | <1.8 | | 20 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:05 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C4 PFBA | 33 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C5 PFPeA | 35 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFHxA | 33 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 1-Foam-Culvert

Lab Sample ID: 320-54528-3

Date Collected: 09/18/19 12:00

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C4 PFHpA | 31 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C4 PFOA | 27 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C5 PFNA | 23 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFDA | 21 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFUnA | 19 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFDoA | 15 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFTeDA | 15 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 18O2 PFHxS | 41 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C4 PFOS | 32 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C8 FOSA | 17 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d3-NMeFOSAA | 15 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d5-NEtFOSAA | 15 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| M2-6:2 FTS | 36 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| M2-8:2 FTS | 41 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| M2-4:2 FTS | 43 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d9-N-EtFOSE-M | 11 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d-N-MeFOSA-M | 15 * | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d7-N-MeFOSE-M | 15 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| d-N-EtFOSA-M | 13 * | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C2 PFHxDA | 9 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |
| 13C3 HFPO-DA | 18 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:05 | 1 |

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 1-Surfacewater-Culvert

Lab Sample ID: 320-54528-4

Date Collected: 09/18/19 12:00

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 15 | | 1.8 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoropentanoic acid (PFPeA) | 7.3 | | 1.8 | 0.45 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorohexanoic acid (PFHxA) | 5.6 | | 1.8 | 0.53 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 7.9 | | 1.8 | 0.23 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorooctanoic acid (PFOA) | 2.3 | | 1.8 | 0.78 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorononanoic acid (PFNA) | 1.5 | J | 1.8 | 0.25 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorodecanoic acid (PFDA) | 0.34 | J | 1.8 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoroundecanoic acid (PFUnA) | <1.0 | | 1.8 | 1.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorododecanoic acid (PFDoA) | <0.50 | | 1.8 | 0.50 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <1.2 | | 1.8 | 1.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <0.27 | | 1.8 | 0.27 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <0.82 | | 1.8 | 0.82 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 0.69 | J | 1.8 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <0.42 | | 1.8 | 0.42 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <0.28 | | 1.8 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.50 | J B | 1.8 | 0.16 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | <0.50 | | 1.8 | 0.50 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <0.15 | | 1.8 | 0.15 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorooctanesulfonamide (FOSA) | <0.32 | | 1.8 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <2.8 | | 18 | 2.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | <1.7 | | 18 | 1.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 4:2 FTS | <4.8 | | 18 | 4.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 6:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 8:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| NEtFOSA | <0.80 | | 1.8 | 0.80 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| NMeFOSA | <0.39 | | 1.8 | 0.39 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| NMeFOSE | <1.3 | | 3.7 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| NEtFOSE | <0.78 | | 1.8 | 0.78 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <0.41 | | 1.8 | 0.41 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| F-53B Major | <0.22 | | 1.8 | 0.22 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| HFPO-DA (GenX) | <1.4 | | 3.7 | 1.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| F-53B Minor | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 10:2 FTS | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| DONA | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 12:15 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C4 PFBA | 39 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C5 PFPeA | 74 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFHxA | 87 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C4 PFHpA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C4 PFOA | 105 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 1-Surfacewater-Culvert

Lab Sample ID: 320-54528-4

Date Collected: 09/18/19 12:00

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C5 PFNA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFDA | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFUnA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFDoA | 78 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFTeDA | 48 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 18O2 PFHxS | 105 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C4 PFOS | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C8 FOSA | 94 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d3-NMeFOSAA | 86 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d5-NEtFOSAA | 88 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| M2-6:2 FTS | 121 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| M2-8:2 FTS | 153 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| M2-4:2 FTS | 94 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d9-N-EtFOSE-M | 37 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d-N-MeFOSA-M | 52 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d7-N-MeFOSE-M | 51 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| d-N-EtFOSA-M | 34 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C2 PFHxDA | 14 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |
| 13C3 HFPO-DA | 70 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:15 | 1 |

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 2-Foam-River

Lab Sample ID: 320-54528-5

Date Collected: 09/18/19 14:40

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorobutanoic acid (PFBA) | 30 | | 20 | 3.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoropentanoic acid (PFPeA) | <4.9 | | 20 | 4.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorohexanoic acid (PFHxA) | 11 | J | 20 | 5.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 13 | J | 20 | 2.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorooctanoic acid (PFOA) | 230 | | 20 | 8.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorononanoic acid (PFNA) | 1300 | | 20 | 2.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorodecanoic acid (PFDA) | 1300 | | 20 | 3.1 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 550 | | 20 | 11 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorododecanoic acid (PFDoA) | 51 | | 20 | 5.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <13 | | 20 | 13 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <2.9 | | 20 | 2.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | 26 | | 20 | 8.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | <2.0 | | 20 | 2.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <4.6 | | 20 | 4.6 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <3.0 | | 20 | 3.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 6.5 | J B | 20 | 1.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 24 | | 20 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 17000 | E | 20 | 5.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <1.6 | | 20 | 1.6 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 6.5 | J | 20 | 3.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorooctanesulfonamide (FOSA) | 1400 | B | 20 | 3.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| N-methylperfluorooctanesulfonamide | 220 | | 200 | 31 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| N-ethylperfluorooctanesulfonamide | 8700 | E | 200 | 19 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| doacetic acid (NEtFOSAA) | | | | | | | | | |
| 4:2 FTS | <52 | | 200 | 52 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 6:2 FTS | 52 | J | 200 | 20 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 8:2 FTS | <20 | | 200 | 20 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| NEtFOSA | 59 | | 20 | 8.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| NMeFOSA | <4.3 | | 20 | 4.3 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| NMeFOSE | 320 | | 40 | 14 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| NEtFOSE | 89 | | 20 | 8.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <4.5 | | 20 | 4.5 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| F-53B Major | <2.4 | | 20 | 2.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| HFPO-DA (GenX) | <15 | | 40 | 15 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| F-53B Minor | <3.2 | | 20 | 3.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 10:2 FTS | <1.9 | | 20 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| DONA | <1.8 | | 20 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C4 PFBA | 69 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C5 PFPeA | 91 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:24 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 2-Foam-River

Lab Sample ID: 320-54528-5

Date Collected: 09/18/19 14:40

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C2 PFHxA | 90 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C4 PFHpA | 88 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C4 PFOA | 72 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C5 PFNA | 57 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C2 PFDA | 44 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C2 PFUnA | 34 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C2 PFDoA | 18 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C2 PFTeDA | 11 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 18O2 PFHxS | 107 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C4 PFOS | 82 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C8 FOSA | 44 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d3-NMeFOSAA | 30 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d5-NEtFOSAA | 31 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| M2-6:2 FTS | 97 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| M2-8:2 FTS | 81 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| M2-4:2 FTS | 115 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d9-N-EtFOSE-M | 24 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d-N-MeFOSA-M | 29 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d7-N-MeFOSE-M | 30 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| d-N-EtFOSA-M | 21 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C2 PFHxDA | 8 * | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |
| 13C3 HFPO-DA | 56 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:24 | 1 |

Client Sample Results

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 2-Surfacewater-River

Lab Sample ID: 320-54528-6

Date Collected: 09/18/19 14:40

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------------|------------------|---------------|------|------|---|-----------------|-----------------|----------------|
| Perfluorobutanoic acid (PFBA) | 6.3 | | 1.8 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoropentanoic acid (PFPeA) | 2.5 | | 1.8 | 0.45 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorohexanoic acid (PFHxA) | 2.2 | | 1.8 | 0.53 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 1.5 | J | 1.8 | 0.23 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorooctanoic acid (PFOA) | 2.1 | | 1.8 | 0.77 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorononanoic acid (PFNA) | 0.38 | J | 1.8 | 0.25 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorodecanoic acid (PFDA) | 0.29 | J | 1.8 | 0.28 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoroundecanoic acid (PFUnA) | <1.0 | | 1.8 | 1.0 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorododecanoic acid (PFDoA) | <0.50 | | 1.8 | 0.50 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <1.2 | | 1.8 | 1.2 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | <0.26 | | 1.8 | 0.26 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <0.81 | | 1.8 | 0.81 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 0.32 | J | 1.8 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <0.42 | | 1.8 | 0.42 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <0.27 | | 1.8 | 0.27 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.36 | J B | 1.8 | 0.15 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 6.2 | I | 1.8 | 0.49 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <0.15 | | 1.8 | 0.15 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorooctanesulfonamide (FOSA) | 0.90 | J B | 1.8 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <2.8 | | 18 | 2.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 4.4 | J | 18 | 1.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 4:2 FTS | <4.7 | | 18 | 4.7 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 6:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 8:2 FTS | <1.8 | | 18 | 1.8 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| NEtFOSA | <0.79 | | 1.8 | 0.79 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| NMeFOSA | <0.39 | | 1.8 | 0.39 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| NMeFOSE | <1.3 | | 3.6 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| NEtFOSE | <0.77 | | 1.8 | 0.77 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <0.41 | | 1.8 | 0.41 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| F-53B Major | <0.22 | | 1.8 | 0.22 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| HFPO-DA (GenX) | <1.4 | | 3.6 | 1.4 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| F-53B Minor | <0.29 | | 1.8 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 10:2 FTS | <0.17 | | 1.8 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| DONA | <0.16 | | 1.8 | 0.16 | ng/L | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C4 PFBA | 60 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C5 PFPeA | 90 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFHxA | 95 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C4 PFHpA | 104 | | 25 - 150 | | | | 09/27/19 05:39 | 09/28/19 12:34 | 1 |

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: 2-Surfacewater-River

Lab Sample ID: 320-54528-6

Date Collected: 09/18/19 14:40

Matrix: Water

Date Received: 09/20/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C4 PFOA | 108 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C5 PFNA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFDA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFUnA | 100 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFDoA | 92 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFTeDA | 75 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 18O2 PFHxS | 111 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C4 PFOS | 98 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C8 FOSA | 99 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d3-NMeFOSAA | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d5-NEtFOSAA | 96 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| M2-6:2 FTS | 113 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| M2-8:2 FTS | 126 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| M2-4:2 FTS | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d9-N-EtFOSE-M | 43 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d-N-MeFOSA-M | 60 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d7-N-MeFOSE-M | 47 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| d-N-EtFOSA-M | 44 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C2 PFHxDA | 41 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |
| 13C3 HFPO-DA | 75 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 12:34 | 1 |

Isotope Dilution Summary

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID | Client Sample ID | PFBA (25-150) | PFPeA (25-150) | PFHxA (25-150) | PFHpA (25-150) | PFOA (25-150) | PFNA (25-150) | PFDA (25-150) | PFUnA (25-150) |
|---------------------|--|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|-------------------|
| 320-54528-1 | Field Blank | 101 | 104 | 102 | 104 | 108 | 100 | 107 | 99 |
| 320-54528-2 | Equipment Blank-Leafrake+Cheese cloth | 97 | 104 | 103 | 106 | 111 | 100 | 110 | 99 |
| 320-54528-3 | 1-Foam-Culvert | 33 | 35 | 33 | 31 | 27 | 23 * | 21 * | 19 * |
| 320-54528-4 | 1-Surfacewater-Culvert | 39 | 74 | 87 | 99 | 105 | 99 | 101 | 99 |
| 320-54528-5 | 2-Foam-River | 69 | 91 | 90 | 88 | 72 | 57 | 44 | 34 |
| 320-54528-6 | 2-Surfacewater-River | 60 | 90 | 95 | 104 | 108 | 102 | 102 | 100 |
| LCS 320-326510/2-A | Lab Control Sample | 102 | 110 | 104 | 111 | 110 | 105 | 103 | 101 |
| LCSD 320-326510/3-A | Lab Control Sample Dup | 100 | 102 | 102 | 108 | 106 | 105 | 104 | 104 |
| MB 320-326510/1-A | Method Blank | 102 | 107 | 102 | 105 | 106 | 101 | 98 | 97 |

Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID | Client Sample ID | PFDoA (25-150) | PFTDA (25-150) | PFHxS (25-150) | PFOS (25-150) | PFOSA (25-150) | -NMeFOS ₁ (25-150) | -NEtFOS ₁ (25-150) | M262FTS (25-150) |
|---------------------|--|-------------------|-------------------|-------------------|------------------|-------------------|----------------------------------|----------------------------------|---------------------|
| 320-54528-1 | Field Blank | 101 | 108 | 110 | 101 | 101 | 99 | 102 | 99 |
| 320-54528-2 | Equipment Blank-Leafrake+Cheese cloth | 75 | 89 | 116 | 103 | 103 | 102 | 95 | 104 |
| 320-54528-3 | 1-Foam-Culvert | 15 * | 15 * | 41 | 32 | 17 * | 15 * | 15 * | 36 |
| 320-54528-4 | 1-Surfacewater-Culvert | 78 | 48 | 105 | 95 | 94 | 86 | 88 | 121 |
| 320-54528-5 | 2-Foam-River | 18 * | 11 * | 107 | 82 | 44 | 30 | 31 | 97 |
| 320-54528-6 | 2-Surfacewater-River | 92 | 75 | 111 | 98 | 99 | 95 | 96 | 113 |
| LCS 320-326510/2-A | Lab Control Sample | 107 | 112 | 116 | 109 | 103 | 101 | 97 | 90 |
| LCSD 320-326510/3-A | Lab Control Sample Dup | 104 | 103 | 110 | 95 | 92 | 92 | 96 | 143 |
| MB 320-326510/1-A | Method Blank | 98 | 109 | 108 | 100 | 94 | 95 | 98 | 89 |

Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID | Client Sample ID | M282FTS (25-150) | M242FTS (25-150) | NEFM (10-120) | I-MeFOSA (20-150) | NMFM (10-120) | ↓-EtFOSA (20-150) | PFHxDA (25-150) | HFPODA (25-150) |
|---------------------|--|---------------------|---------------------|------------------|----------------------|------------------|----------------------|--------------------|--------------------|
| 320-54528-1 | Field Blank | 157 * | 102 | 38 | 69 | 47 | 54 | 92 | 89 |
| 320-54528-2 | Equipment Blank-Leafrake+Cheese cloth | 169 * | 105 | 42 | 72 | 59 | 46 | 37 | 95 |
| 320-54528-3 | 1-Foam-Culvert | 41 | 43 | 11 | 15 * | 15 | 13 * | 9 * | 18 * |
| 320-54528-4 | 1-Surfacewater-Culvert | 153 * | 94 | 37 | 52 | 51 | 34 | 14 * | 70 |
| 320-54528-5 | 2-Foam-River | 81 | 115 | 24 | 29 | 30 | 21 | 8 * | 56 |
| 320-54528-6 | 2-Surfacewater-River | 126 | 101 | 43 | 60 | 47 | 44 | 41 | 75 |
| LCS 320-326510/2-A | Lab Control Sample | 91 | 87 | 27 | 66 | 31 | 46 | 103 | 103 |
| LCSD 320-326510/3-A | Lab Control Sample Dup | 130 | 123 | 27 | 62 | 30 | 44 | 94 | 95 |
| MB 320-326510/1-A | Method Blank | 86 | 91 | 27 | 72 | 32 | 46 | 91 | 95 |

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- PFHpA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: AECOM Technical Services Inc.

Job ID: 320-54528-1

Project/Site: PFAS, Reactive Foam Water Way 60614940

PFOSA = 13C8 FOSA

d3-NMeFOSAA = d3-NMeFOSAA

d5-NEtFOSAA = d5-NEtFOSAA

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

M242FTS = M2-4:2 FTS

NEFM = d9-N-EtFOSE-M

d-N-MeFOSA-M = d-N-MeFOSA-M

NMFM = d7-N-MeFOSE-M

d-N-EtFOSA-M = d-N-EtFOSA-M

PFHxDA = 13C2 PFHxDA

HFPODA = 13C3 HFPO-DA

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QC Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-326510/1-A
Matrix: Water
Analysis Batch: 326873

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 326510

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-----------|--------------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | <0.35 | | 2.0 | 0.35 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoropentanoic acid (PFPeA) | <0.49 | | 2.0 | 0.49 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorohexanoic acid (PFHxA) | <0.58 | | 2.0 | 0.58 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoroheptanoic acid (PFHpA) | <0.25 | | 2.0 | 0.25 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorooctanoic acid (PFOA) | <0.85 | | 2.0 | 0.85 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorononanoic acid (PFNA) | <0.27 | | 2.0 | 0.27 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorodecanoic acid (PFDA) | <0.31 | | 2.0 | 0.31 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoroundecanoic acid (PFUnA) | <1.1 | | 2.0 | 1.1 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorododecanoic acid (PFDoA) | <0.55 | | 2.0 | 0.55 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorotridecanoic acid (PFTriA) | <1.3 | | 2.0 | 1.3 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | 0.329 | J | 2.0 | 0.29 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | <0.89 | | 2.0 | 0.89 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | <0.20 | | 2.0 | 0.20 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoro-n-octadecanoic acid (PFODA) | <0.46 | | 2.0 | 0.46 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoropentanesulfonic acid (PFPeS) | <0.30 | | 2.0 | 0.30 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.371 | J | 2.0 | 0.17 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | <0.19 | | 2.0 | 0.19 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | <0.54 | | 2.0 | 0.54 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorononanesulfonic acid (PFNS) | <0.16 | | 2.0 | 0.16 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | <0.32 | | 2.0 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorooctanesulfonamide (FOSA) | 0.541 | J | 2.0 | 0.35 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | <3.1 | | 20 | 3.1 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | <1.9 | | 20 | 1.9 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 4:2 FTS | <5.2 | | 20 | 5.2 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 6:2 FTS | <2.0 | | 20 | 2.0 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 8:2 FTS | <2.0 | | 20 | 2.0 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| NEtFOSA | <0.87 | | 2.0 | 0.87 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| NMeFOSA | <0.43 | | 2.0 | 0.43 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| NMeFOSE | <1.4 | | 4.0 | 1.4 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| NEtFOSE | <0.85 | | 2.0 | 0.85 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| Perfluorododecanesulfonic acid (PFDoS) | <0.45 | | 2.0 | 0.45 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| F-53B Major | <0.24 | | 2.0 | 0.24 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| HFPO-DA (GenX) | <1.5 | | 4.0 | 1.5 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| F-53B Minor | <0.32 | | 2.0 | 0.32 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 10:2 FTS | <0.19 | | 2.0 | 0.19 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| DONA | <0.18 | | 2.0 | 0.18 | ng/L | | 09/27/19 05:39 | 09/28/19 11:17 | 1 |

| Isotope Dilution | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|--------------|--------------|----------|----------------|----------------|---------|
| 13C4 PFBA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C5 PFPeA | 107 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFHxA | 102 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C4 PFHpA | 105 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C4 PFOA | 106 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |

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QC Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-326510/1-A
Matrix: Water
Analysis Batch: 326873

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 326510

| Isotope Dilution | MB MB | | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| | %Recovery | Qualifier | | | | |
| 13C5 PFNA | 101 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFDA | 98 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFUnA | 97 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFDoA | 98 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFTeDA | 109 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 18O2 PFHxS | 108 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C4 PFOS | 100 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C8 FOSA | 94 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d3-NMeFOSAA | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d5-NEtFOSAA | 98 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| M2-6:2 FTS | 89 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| M2-8:2 FTS | 86 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| M2-4:2 FTS | 91 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d9-N-EtFOSE-M | 27 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d-N-MeFOSA-M | 72 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d7-N-MeFOSE-M | 32 | | 10 - 120 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| d-N-EtFOSA-M | 46 | | 20 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C2 PFHxDA | 91 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |
| 13C3 HFPO-DA | 95 | | 25 - 150 | 09/27/19 05:39 | 09/28/19 11:17 | 1 |

Lab Sample ID: LCS 320-326510/2-A
Matrix: Water
Analysis Batch: 326873

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 326510

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|--|-------------|------------|---------------|------|---|------|----------|
| | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 41.0 | | ng/L | | 103 | 70 - 130 |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 38.4 | | ng/L | | 96 | 66 - 126 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 38.8 | | ng/L | | 97 | 66 - 126 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 38.2 | | ng/L | | 96 | 66 - 126 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 35.8 | | ng/L | | 89 | 64 - 124 |
| Perfluorononanoic acid (PFNA) | 40.0 | 34.2 | | ng/L | | 85 | 68 - 128 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 40.3 | | ng/L | | 101 | 69 - 129 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 37.0 | | ng/L | | 92 | 60 - 120 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 33.2 | | ng/L | | 83 | 71 - 131 |
| Perfluorotridecanoic acid (PFTriA) | 40.0 | 41.8 | | ng/L | | 104 | 72 - 132 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 39.2 | | ng/L | | 98 | 68 - 128 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | 40.0 | 43.0 | | ng/L | | 107 | 72 - 132 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 31.2 | | ng/L | | 88 | 73 - 133 |
| Perfluoro-n-octadecanoic acid (PFODA) | 40.0 | 42.9 | | ng/L | | 107 | 74 - 134 |
| Perfluoropentanesulfonic acid (PFPeS) | 37.5 | 34.1 | | ng/L | | 91 | 70 - 130 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 32.4 | | ng/L | | 89 | 63 - 123 |

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-326510/2-A
Matrix: Water
Analysis Batch: 326873

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 326510

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|--|-------------|------------|---------------|------|---|------|--------------|
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 38.3 | | ng/L | | 101 | 68 - 128 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 34.3 | | ng/L | | 92 | 67 - 127 |
| Perfluorononanesulfonic acid (PFNS) | 38.4 | 38.1 | | ng/L | | 99 | 70 - 130 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 35.1 | | ng/L | | 91 | 68 - 128 |
| Perfluorooctanesulfonamide (FOSA) | 40.0 | 41.8 | | ng/L | | 104 | 70 - 130 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | 40.0 | 39.1 | | ng/L | | 98 | 67 - 127 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 40.0 | 40.5 | | ng/L | | 101 | 65 - 125 |
| 4:2 FTS | 37.4 | 39.8 | | ng/L | | 107 | 70 - 130 |
| 6:2 FTS | 37.9 | 40.3 | | ng/L | | 106 | 66 - 126 |
| 8:2 FTS | 38.3 | 39.1 | | ng/L | | 102 | 67 - 127 |
| NEtFOSA | 40.0 | 41.3 | | ng/L | | 103 | 65 - 135 |
| NMeFOSA | 40.0 | 41.7 | | ng/L | | 104 | 65 - 135 |
| NMeFOSE | 40.0 | 38.7 | | ng/L | | 97 | 65 - 135 |
| NEtFOSE | 40.0 | 39.8 | | ng/L | | 99 | 65 - 135 |
| Perfluorododecanesulfonic acid (PFDoS) | 38.7 | 35.2 | | ng/L | | 91 | 70 - 130 |
| F-53B Major | 37.3 | 36.1 | | ng/L | | 97 | 70 - 130 |
| HFPO-DA (GenX) | 40.0 | 41.7 | | ng/L | | 104 | 70 - 130 |
| F-53B Minor | 37.7 | 31.3 | | ng/L | | 83 | 70 - 130 |
| 10:2 FTS | 38.6 | 38.3 | | ng/L | | 99 | 70 - 130 |
| DONA | 37.7 | 36.8 | | ng/L | | 98 | 70 - 130 |

| Isotope Dilution | LCS | | Limits |
|------------------|-----------|-----------|----------|
| | %Recovery | Qualifier | |
| 13C4 PFBA | 102 | | 25 - 150 |
| 13C5 PFPeA | 110 | | 25 - 150 |
| 13C2 PFHxA | 104 | | 25 - 150 |
| 13C4 PFHpA | 111 | | 25 - 150 |
| 13C4 PFOA | 110 | | 25 - 150 |
| 13C5 PFNA | 105 | | 25 - 150 |
| 13C2 PFDA | 103 | | 25 - 150 |
| 13C2 PFUnA | 101 | | 25 - 150 |
| 13C2 PFDoA | 107 | | 25 - 150 |
| 13C2 PFTeDA | 112 | | 25 - 150 |
| 18O2 PFHxS | 116 | | 25 - 150 |
| 13C4 PFOS | 109 | | 25 - 150 |
| 13C8 FOSA | 103 | | 25 - 150 |
| d3-NMeFOSAA | 101 | | 25 - 150 |
| d5-NEtFOSAA | 97 | | 25 - 150 |
| M2-6:2 FTS | 90 | | 25 - 150 |
| M2-8:2 FTS | 91 | | 25 - 150 |
| M2-4:2 FTS | 87 | | 25 - 150 |
| d9-N-EtFOSE-M | 27 | | 10 - 120 |
| d-N-MeFOSA-M | 66 | | 20 - 150 |
| d7-N-MeFOSE-M | 31 | | 10 - 120 |

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-326510/2-A
Matrix: Water
Analysis Batch: 326873

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 326510

| <i>Isotope Dilution</i> | <i>LCS %Recovery</i> | <i>LCS Qualifier</i> | <i>Limits</i> |
|-------------------------|----------------------|----------------------|---------------|
| <i>d-N-EtFOSA-M</i> | 46 | | 20 - 150 |
| <i>13C2 PFHxDA</i> | 103 | | 25 - 150 |
| <i>13C3 HFPO-DA</i> | 103 | | 25 - 150 |

Lab Sample ID: LCSD 320-326510/3-A
Matrix: Water
Analysis Batch: 331773

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 326510

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | Limits | RPD | RPD Limit |
|--|--------------------|--------------------|-----------------------|-------------|----------|-------------|---------------|------------|------------------|
| Perfluorobutanoic acid (PFBA) | 40.0 | 40.6 | | ng/L | | 101 | 70 - 130 | 1 | 30 |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 39.7 | | ng/L | | 99 | 66 - 126 | 3 | 30 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 40.3 | | ng/L | | 101 | 66 - 126 | 4 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 39.5 | | ng/L | | 99 | 66 - 126 | 3 | 30 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 37.4 | | ng/L | | 94 | 64 - 124 | 4 | 30 |
| Perfluorononanoic acid (PFNA) | 40.0 | 39.7 | | ng/L | | 99 | 68 - 128 | 15 | 30 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 39.1 | | ng/L | | 98 | 69 - 129 | 3 | 30 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 35.3 | | ng/L | | 88 | 60 - 120 | 5 | 30 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 42.3 | | ng/L | | 106 | 71 - 131 | 24 | 30 |
| Perfluorotridecanoic acid (PFTriA) | 40.0 | 38.7 | | ng/L | | 97 | 72 - 132 | 8 | 30 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 35.8 | | ng/L | | 90 | 68 - 128 | 9 | 30 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | 40.0 | 43.2 | | ng/L | | 108 | 72 - 132 | 1 | 30 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 31.8 | | ng/L | | 90 | 73 - 133 | 2 | 30 |
| Perfluoro-n-octadecanoic acid (PFODA) | 40.0 | 39.7 | | ng/L | | 99 | 74 - 134 | 8 | 30 |
| Perfluoropentanesulfonic acid (PFPeS) | 37.5 | 32.5 | | ng/L | | 87 | 70 - 130 | 5 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 30.4 | | ng/L | | 83 | 63 - 123 | 7 | 30 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 39.5 | | ng/L | | 104 | 68 - 128 | 3 | 30 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 33.4 | | ng/L | | 90 | 67 - 127 | 3 | 30 |
| Perfluorononanesulfonic acid (PFNS) | 38.4 | 40.2 | | ng/L | | 105 | 70 - 130 | 5 | 30 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 37.5 | | ng/L | | 97 | 68 - 128 | 6 | 30 |
| Perfluorooctanesulfonamide (FOSA) | 40.0 | 40.7 | | ng/L | | 102 | 70 - 130 | 3 | 30 |
| N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) | 40.0 | 40.7 | | ng/L | | 102 | 67 - 127 | 4 | 30 |
| N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) | 40.0 | 41.8 | | ng/L | | 105 | 65 - 125 | 3 | 30 |
| 4:2 FTS | 37.4 | 43.0 | | ng/L | | 115 | 70 - 130 | 8 | 30 |
| 6:2 FTS | 37.9 | 37.2 | | ng/L | | 98 | 66 - 126 | 8 | 30 |
| 8:2 FTS | 38.3 | 37.2 | | ng/L | | 97 | 67 - 127 | 5 | 30 |
| NEtFOSA | 40.0 | 43.8 | | ng/L | | 110 | 65 - 135 | 6 | 30 |
| NMeFOSA | 40.0 | 43.8 | | ng/L | | 110 | 65 - 135 | 5 | 30 |

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-326510/3-A
Matrix: Water
Analysis Batch: 331773

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 326510

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|--|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| NMeFOSE | 40.0 | 36.0 | | ng/L | | 90 | 65 - 135 | 7 | 30 |
| NEtFOSE | 40.0 | 40.0 | | ng/L | | 100 | 65 - 135 | 1 | 30 |
| Perfluorododecanesulfonic acid (PFDoS) | 38.7 | 40.0 | | ng/L | | 103 | 70 - 130 | 13 | 30 |
| F-53B Major | 37.3 | 40.6 | | ng/L | | 109 | 70 - 130 | 12 | 30 |
| HFPO-DA (GenX) | 40.0 | 35.9 | | ng/L | | 90 | 70 - 130 | 15 | 30 |
| F-53B Minor | 37.7 | 33.4 | | ng/L | | 89 | 70 - 130 | 7 | 30 |
| 10:2 FTS | 38.6 | 31.5 | | ng/L | | 82 | 70 - 130 | 19 | 30 |
| DONA | 37.7 | 41.7 | | ng/L | | 111 | 70 - 130 | 13 | 30 |

| Isotope Dilution | LCSD %Recovery | LCSD Qualifier | LCSD Limits |
|------------------|----------------|----------------|-------------|
| 13C4 PFBA | 100 | | 25 - 150 |
| 13C5 PFPeA | 102 | | 25 - 150 |
| 13C2 PFHxA | 102 | | 25 - 150 |
| 13C4 PFHpA | 108 | | 25 - 150 |
| 13C4 PFOA | 106 | | 25 - 150 |
| 13C5 PFNA | 105 | | 25 - 150 |
| 13C2 PFDA | 104 | | 25 - 150 |
| 13C2 PFUnA | 104 | | 25 - 150 |
| 13C2 PFDoA | 104 | | 25 - 150 |
| 13C2 PFTeDA | 103 | | 25 - 150 |
| 18O2 PFHxS | 110 | | 25 - 150 |
| 13C4 PFOS | 95 | | 25 - 150 |
| 13C8 FOSA | 92 | | 25 - 150 |
| d3-NMeFOSAA | 92 | | 25 - 150 |
| d5-NEtFOSAA | 96 | | 25 - 150 |
| M2-6:2 FTS | 143 | | 25 - 150 |
| M2-8:2 FTS | 130 | | 25 - 150 |
| M2-4:2 FTS | 123 | | 25 - 150 |
| d9-N-EtFOSE-M | 27 | | 10 - 120 |
| d-N-MeFOSA-M | 62 | | 20 - 150 |
| d7-N-MeFOSE-M | 30 | | 10 - 120 |
| d-N-EtFOSA-M | 44 | | 20 - 150 |
| 13C2 PFHxDA | 94 | | 25 - 150 |
| 13C3 HFPO-DA | 95 | | 25 - 150 |

QC Association Summary

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

LCMS

Prep Batch: 326510

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|--------------------------------------|-----------|--------|--------|------------|
| 320-54528-1 | Field Blank | Total/NA | Water | 3535 | |
| 320-54528-2 | Equipment Blank-Leafrake+Cheesecloth | Total/NA | Water | 3535 | |
| 320-54528-3 | 1-Foam-Culvert | Total/NA | Water | 3535 | |
| 320-54528-4 | 1-Surfacewater-Culvert | Total/NA | Water | 3535 | |
| 320-54528-5 | 2-Foam-River | Total/NA | Water | 3535 | |
| 320-54528-6 | 2-Surfacewater-River | Total/NA | Water | 3535 | |
| MB 320-326510/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-326510/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-326510/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Analysis Batch: 326873

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------------------------|-----------|--------|----------------|------------|
| 320-54528-1 | Field Blank | Total/NA | Water | 537 (modified) | 326510 |
| 320-54528-2 | Equipment Blank-Leafrake+Cheesecloth | Total/NA | Water | 537 (modified) | 326510 |
| 320-54528-3 | 1-Foam-Culvert | Total/NA | Water | 537 (modified) | 326510 |
| 320-54528-4 | 1-Surfacewater-Culvert | Total/NA | Water | 537 (modified) | 326510 |
| 320-54528-5 | 2-Foam-River | Total/NA | Water | 537 (modified) | 326510 |
| 320-54528-6 | 2-Surfacewater-River | Total/NA | Water | 537 (modified) | 326510 |
| MB 320-326510/1-A | Method Blank | Total/NA | Water | 537 (modified) | 326510 |
| LCS 320-326510/2-A | Lab Control Sample | Total/NA | Water | 537 (modified) | 326510 |

Analysis Batch: 331773

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| LCSD 320-326510/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (modified) | 326510 |

Lab Chronicle

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Client Sample ID: Field Blank

Date Collected: 09/18/19 11:45

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 278.2 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 11:46 | P1N | TAL SAC |

Client Sample ID: Equipment Blank-Leafrake+Cheesecloth

Date Collected: 09/18/19 11:55

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 263.5 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 11:56 | P1N | TAL SAC |

Client Sample ID: 1-Foam-Culvert

Date Collected: 09/18/19 12:00

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 25 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 12:05 | P1N | TAL SAC |

Client Sample ID: 1-Surfacewater-Culvert

Date Collected: 09/18/19 12:00

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 272.3 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 12:15 | P1N | TAL SAC |

Client Sample ID: 2-Foam-River

Date Collected: 09/18/19 14:40

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-5

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 25 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 12:24 | P1N | TAL SAC |

Client Sample ID: 2-Surfacewater-River

Date Collected: 09/18/19 14:40

Date Received: 09/20/19 09:15

Lab Sample ID: 320-54528-6

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 275 mL | 10.0 mL | 326510 | 09/27/19 05:39 | MTN | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 326873 | 09/28/19 12:34 | P1N | TAL SAC |

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins TestAmerica, Sacramento

Accreditation/Certification Summary

Client: AECOM Technical Services Inc.
 Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|--------------------|-----------------------|-----------------------|-----------------|
| Alaska (UST) | State Program | 17-020 | 01-20-21 |
| ANAB | Dept. of Defense ELAP | L2468 | 01-20-21 |
| ANAB | Dept. of Energy | L2468.01 | 01-20-21 |
| ANAB | ISO/IEC 17025 | L2468 | 08-09-21 |
| Arizona | State | AZ0708 | 08-11-20 |
| Arkansas DEQ | State | 19-042-0 | 06-17-20 |
| Arkansas DEQ | State Program | 88-0691 | 06-17-20 |
| California | State | 2897 | 01-31-20 |
| Colorado | State | CA0004 | 08-31-20 |
| Connecticut | State | PH-0691 | 06-30-21 |
| Florida | NELAP | E87570 | 06-30-20 |
| Hawaii | State | <cert No.> | 01-29-20 |
| Illinois | NELAP | 200060 | 03-17-20 |
| Kansas | NELAP | E-10375 | 10-31-19 |
| Louisiana | NELAP | 01944 | 06-30-20 |
| Maine | State | 2018009 | 04-14-20 |
| Maine | State Program | CA0004 | 04-14-20 |
| Michigan | State | 9947 | 01-29-20 |
| Michigan | State Program | 9947 | 01-31-20 |
| Nevada | State | CA000442020-1 | 07-31-20 |
| Nevada | State Program | CA00044 | 07-31-20 |
| New Hampshire | NELAP | 2997 | 04-20-20 |
| New Hampshire | NELAP | 2997 | 04-18-20 |
| New Jersey | NELAP | CA005 | 06-30-20 |
| New York | NELAP | 11666 | 04-01-20 |
| Oregon | NELAP | 4040 | 01-29-20 |
| Pennsylvania | NELAP | 68-01272 | 03-31-20 |
| Texas | NELAP | T104704399-19-13 | 05-31-20 |
| US Fish & Wildlife | US Federal Programs | 58448 | 07-31-20 |
| USDA | US Federal Programs | P330-18-00239 | 07-31-21 |
| USEPA UCMR | Federal | CA00044 | 12-31-20 |
| Utah | NELAP | CA00044 | 02-29-20 |
| Vermont | State | VT-4040 | 04-16-20 |
| Virginia | NELAP | 460278 | 03-14-20 |
| Washington | State | C581 | 05-05-20 |
| West Virginia (DW) | State | 9930C | 12-31-19 |
| Wyoming | State Program | 8TMS-L | 01-28-19 * |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

| Method | Method Description | Protocol | Laboratory |
|----------------|------------------------------|----------|------------|
| 537 (modified) | Fluorinated Alkyl Substances | EPA | TAL SAC |
| 3535 | Solid-Phase Extraction (SPE) | SW846 | TAL SAC |

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: AECOM Technical Services Inc.
Project/Site: PFAS, Reactive Foam Water Way 60614940

Job ID: 320-54528-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Asset ID |
|---------------|--------------------------------------|--------|----------------|----------------|----------|
| 320-54528-1 | Field Blank | Water | 09/18/19 11:45 | 09/20/19 09:15 | |
| 320-54528-2 | Equipment Blank-Leafrake+Cheesecloth | Water | 09/18/19 11:55 | 09/20/19 09:15 | |
| 320-54528-3 | 1-Foam-Culvert | Water | 09/18/19 12:00 | 09/20/19 09:15 | |
| 320-54528-4 | 1-Surfacewater-Culvert | Water | 09/18/19 12:00 | 09/20/19 09:15 | |
| 320-54528-5 | 2-Foam-River | Water | 09/18/19 14:40 | 09/20/19 09:15 | |
| 320-54528-6 | 2-Surfacewater-River | Water | 09/18/19 14:40 | 09/20/19 09:15 | |

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Eurofins TestAmerica, Sacramento

880 Riverside Parkway
 West Sacramento, CA 95605
 Phone: 916-373-5600 Fax: 916-372-1059

Chain of Custody Record

Client Information
 Client Contact: Janel Dean
 Company: AECOM
 Address: 558 North Main Street
 City: Oshkosh
 State/Zip: WI, 54902
 Phone: 920-236-6723(Tel)
 Email: janel.dean@aecom.com
 Project Name: PFAS Testing
 Site: WDNR - as need PFAS sampling

Sampler: J. Dean
Lab P/N: Fredrick, Sandie
Phone: 517-745-7192
E-Mail: sandie.fredrick@testamericainc.com

Due Date Requested:
TAT Requested (days): Standard TAT
Purchase Order Requested:
PO #:
WO #:
Project #: 50016595
SSOH#:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=soil, etc.) | Preservation Code | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | PFAS (P, F, A, S) |
|---|-------------|-------------|------------------------------|---|-------------------|-----------------------------------|----------------------------|-------------------|
| Field Blank | 9/18/19 | 1145 | G | Water | | X | X | N |
| Equipment Blank (leaf in kit + check cloth) | | | | | | | | |
| 1. Foam - culvert | | 1155 | | | | | | X |
| 2. Surface water - culvert | | 1200 | | | | | | X |
| 3. Foam - river | | 1200 | | | | | | X |
| 4. Surface water - river | | 1440 | | | | | | X |
| 5. Surface water - river | 9/18/19 | 1440 | G | Water | | X | X | X |



Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

Deliverable Requested: (I, II, III, IV, Other (specify))

Empty Kit Relinquished by: Janel Dean
Date: 9/19/19
Time: 10:00

Received by: Janel Dean
Date/Time: 9/19/19 10:00

Relinquished by:

| | | | | | |
|---|-----------|---|-------------|----|----------------|
| 5 | PFOA | Perfluorooctanoic acid | 335-67-1 | 8 | |
| 6 | PFNA | Perfluorononanoic acid | 375-95-1 | 9 | |
| 7 | PFDA | Perfluorodecanoic acid | 335-76-2 | 10 | |
| 8 | PFOA | Perfluoroundecanoic acid | 2058-94-8 | 11 | PFUDA, PFOA |
| 9 | PFDoA | Perfluorododecanoic acid | 307-55-1 | 12 | PFDoDA |
| 10 | PFTriA | Perfluorotridecanoic acid | 72629-94-8 | 13 | PFTriA, PFTriA |
| 11 | PFTeA | Perfluorotetradecanoic acid | 376-06-7 | 14 | PFTeDA |
| 12 | PFHxDA | Perfluorohexadecanoic acid | 67905-19-5 | 16 | |
| 13 | PFODA | Perfluorooctadecanoic acid | 16517-11-6 | 18 | |
| Sulfonic Acids | | | | | |
| 14 | PFBS | Perfluorobutanesulfonic acid | 375-73-5 | 4 | |
| 15 | PFPeS | Perfluoropentanesulfonic acid | 2706-91-4 | 5 | |
| 16 | PFHxS | Perfluorohexanesulfonic acid | 355-46-4 | 6 | |
| 17 | PFHpS | Perfluoroheptanesulfonic acid | 375-92-8 | 7 | |
| 18 | PFOS | Perfluorooctanesulfonic acid | 1763-23-1 | 8 | |
| 19 | PFNS | Perfluorononanesulfonic acid | 68259-12-1 | 9 | |
| 20 | PFDS | Perfluorodecanesulfonic acid | 335-77-3 | 10 | |
| 21 | PFDoS | Perfluorododecanesulfonic acid | 79780-39-5 | 12 | PFDoDS |
| 22 | 4:2 FTSA | 4:2 Fluorotelomer sulfonic acid | 757124-72-4 | 6 | |
| 23 | 6:2 FTSA | 6:2 Fluorotelomer sulfonic acid | 27619-97-2 | 8 | |
| 24 | 8:2 FTSA | 8:2 Fluorotelomer sulfonic acid | 39108-34-4 | 10 | |
| 25 | 10:2 FTSA | 10:2 Fluorotelomer sulfonic acid | 120226-60-0 | 12 | |
| Sulfonamides, Sulfomidoacetic acids, Sulfonamidoethanols | | | | | |
| 26 | FOSA | Perfluorooctane sulfonamide | 754-91-6 | 8 | PFOSA |
| 27 | NMeFOSA | N-Methyl perfluorooctane sulfonamide | 31506-32-8 | 9 | MeFOSA |
| 28 | NEtFOSA | N-Ethyl perfluorooctane sulfonamide | 4151-50-2 | 10 | EtFOSA |
| 29 | NMeFOSAA | N-Methyl perfluorooctane sulfonamidoacetic acid | 2355-31-9 | 11 | MeFOSAA |
| 30 | NEtFOSAA | N-Ethyl perfluorooctane sulfonamidoacetic acid | 2991-50-6 | 12 | EtFOSAA |
| 31 | NMeFOSE | N-Methyl perfluorooctane sulfonamidoethanol | 24448-09-7 | 11 | MeFOSE |
| 32 | NEtFOSE | N-Ethyl perfluorooctane sulfonamidoethanol | 1691-99-2 | 12 | EtFOSE |

| | | |
|--|---|---|
| | 2 - Also available as the ammonium salt = ADONA (Ammonium 4,8-dioxa-3H-perfluorononanoate) # 958445-44-8 | 4 |
| | 3 - Also available as the potassium salt = Potassium, 9-chlorohexadecafluoro-3-oxanone-1-sulfonate # 73606-19-6 | 5 |
| | 4 - Also available as the potassium salt = Potassium, 11-chloroeicosafuoro-3-oxaundecane-1-sulfonate # 83329-89-9 | 6 |

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Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 320-54528-1

Login Number: 54528

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Nuval, Mark-Anthony M

| Question | Answer | Comment |
|--|--------|--|
| Radioactivity wasn't checked or is <=/ background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | 747046 |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | False | IDs on containers do not match the COC. Logged in per COC. |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |