DECEMBER 20, 2018

BREVARD COUNTY PER-AND POLYFLUOROALKYL (PFAS) SUBSTANCES AND PRIORITY POLLUTANTS WATER QUALITY SAMPLING REPORT

TASK ORDER #271010-14-001-006

CLAUDIA LISTOPAD
APPLIED ECOLOGY, INC.
122 Fourth Ave, Suite 104 Indialantic, FL 32903

Executive Summary

As part of an investigation into potential concerns regarding Per- and Polyfluoroalkyl Substances (PFAS), Brevard County contracted with Applied Ecology, Inc. to sample and analyze 50 samples (including one blank) throughout Brevard County for a full suite of PFAS compounds. These samples included 13 groundwater monitoring well samples, 13 surface water grab samples, eight sediment/muck samples, eleven irrigation well samples, four push point samples (equivalent to shallow groundwater well sampling), and one trip/equipment blank for quality assurance/quality control. In addition, Applied Ecology was also contracted to sample three shallow irrigation wells in South Patrick Shores for the full suite of federally listed priority pollutants, carcinogens, volatile and semi-volatile organics, pesticides, heavy metals and radionuclides due to community concerns about cancer rates and the potential environmental impacts from historical dumping in that area prior to residential development.

Two of the PFAS compounds tested under this study (PFOS and PFOA) have been identified as having potential human health and/or environmental impacts. Since limited research is available to conclusively link these compounds to health effects or describe specific pathways of exposure and transport, no enforceable regulatory standards for protection of human health or environment have been developed as of today in Florida. U.S. Environmental Protection Agency (USEPA) established a **lifetime drinking water health-advisory** (HAL) of 0.07 micrograms per liter (µg/L) for PFOS and/or PFOA. Seventy parts per trillion is the equivalent of 0.07 µg/L, also described as 70 nanograms per liter. This non-regulatory LHA is based on daily ingestion of PFOA and PFOS over a lifetime and does not apply to less direct or frequent exposure such as swimming, bathing, or similar contact. Provisional Irrigation Water Screening Levels (IWSLs) have just recently been developed by the Florida Department of Environmental Protection (FDEP) through the University of Florida Center for Environment & Human Toxicology (UF) and have not been fully implemented yet but do appear to derive much higher concentrations (6.7 and 72 µg/L for Residential IWSL for PFOA and PFAS, respectively) based on applicable exposure scenarios. Any detected sampled concentrations of PFOA and PFOS were compared against the LHA and the provisional IWSLs and are presented under the Results section. Overall, 23 of the 50 samples had measured PFOA concentrations below laboratory detection limits, and 13 out of the 50 samples had measured PFOS concentrations below laboratory detection limits. None of the samples had PFOA concentrations exceeding the LHA of 0.07 µg/L and four (8%) of the samples exceeded the LHA for PFOS. Combining measured concentrations of PFOA and PFOS, six (12%) of the samples were at or above the LHA of 0.07 µg/L. Finally, none of the 50 samples exceeded the newly proposed IWSLs for either PFOA and PFOS. Most of the other PFAS compounds sampled in this study were consistently below laboratory detection limits.

Results for the expanded sampling for the three sampling locations in the South Patrick Shores were also compared to available standards, including Florida's Groundwater Cleanup Targets (GCTLs) and IWSLs for the appropriate constituent of concern (COCs). Overall, the vast majority of COCs, including volatile and semi-volatile organics, pesticides, herbicides, heavy metals, dioxins and radionuclides in the laboratory analyzed groundwater samples were non-detectable or well below the appropriate screening values. The following items were detected above GCTLs which are based upon groundwater consumption, but below IWSLs for residential use: the metal manganese and the pesticide dieldrin. Manganese is naturally ubiquitous in the environment, trace amounts are essential to animal health, and the concentrations measured were representative of typical background levels for the surficial aquifer. Dieldrin (detected at one well) is a broad-spectrum insecticide that was historically frequently used to control termites and can have potential health impacts at certain concentrations (if used for groundwater consumption). Strontium another metal was found above the GCTL with no available IWSL for comparison. Strontium is a naturally occurring metal in groundwater,

contained in certain foods, and typically seen in Florida's groundwater in the concentrations measured in these samples.

Project Background

In September 2018, Applied Ecology, Inc. was contracted by Brevard County to sample for the presence of and concentrations of Per- and Polyfluoroalkyl Substances (PFAS) throughout the County in shallow groundwater wells, shallow irrigation wells, deep (Floridan Aquifer) irrigation wells, surface water grabs, sediment/muck, and push point sampling as a response to community concerns about the presence of these compounds on local military bases (Patrick Air Force Base and Cape Canaveral Air Force Station). The community was also concerned about cancer rates and historical dumping prior to residential development in the South Patrick Shores (SP) area, so a full suite of federally listed priority pollutants, carcinogens, volatile and semi-volatile organics, pesticides, heavy metals and radionuclides were laboratory analyzed from groundwater samples.

In 2016, the USEPA reduced the HAL for PFAS (PFOA + PFOS) in drinking water from 400 to 70 parts per trillion (also referred to as nanograms per liter). Based upon requests from USEPA, this triggered the Department of Defense to sample for PFAS at all its facilities. During the summer of 2018, the Department of Defense released data indicating high levels of PFAS in groundwater at Patrick Air Force Base (PAFB) and Cape Canaveral Air Force Station. High levels of PFAS were attributed to decades of prior use of Aqueous Film Forming Foam (AFFF) for fire-fighting. Levels at PAFB were up to 4.3 million parts per trillion while levels at Cape Canaveral Air Force Station were up to 53,000 parts per trillion. It was unknown if the PFAS was moving through the groundwater to adjacent communities off-base and the Indian River Lagoon. Adjacent communities were concerned about their drinking water supply so the School Board tested drinking water fountains at all its beach schools in August 2018. The drinking water, which comes from mainland sources and is piped to the beach, was not impacted with PFAS. The County, Satellite Beach and Cocoa Beach also tested irrigation water north and south of PAFB in July and August 2018. Most levels were below the HAL, but some wells that were not used for drinking water did have levels above the HAL. In order to better understand the distribution of PFAS levels in Brevard County waters, the County contracted to test 49 locations distributed county-wide.

PFAS make up a large group of persistent anthropogenic chemicals used in industrial processes and commercial products over the past 60 years (Kissa, 2010; Hu *et al.* 2016). Their thermal stability and lipid and water repelling properties make these compounds extremely useful in a variety of applications, including AFFFs (Kucharzyk *et al*. 2017), as well as household products such as carpets, paper, and non-stick cookware (Fujii *et al*., 2007; Houtz *et al*.,2013; Prevedouros *et al.,* 2006). The widespread use and subsequent contamination of ground and surface waters by PFASs, including perfluoroalkyl sulfonic acids, fluorotelomer sulfonic acids, and perfluoroalkyl carboxylic acids, (Place and Field, 2012; Backe *et al*. 2013; Barzen-Hanson, 2015) has emerged as an environmental and health crisis in many communities. Health concerns in the early 2000s prompted manufacturers in Europe and North America to phase out production of some long-chain PFASs (Land *et al.* 2015; Wang *et al*. 2014; Butenhoff *et al*. 2009).

Main exposure pathways include dietary sources, household dust, air, and drinking water (Vestergren and Cousins, 2009; D'Hollander *et al*. 2010). Drinking water exposure is currently the pathway of greatest concern, since many of the PFASs are highly soluble in water (Emmett *et al*. 2006; Landsteiner *et al*. 2014). As a result of concerns for these emergent compounds, particularly the sulfonate and carboxylate PFAS forms, USEPA (USEPA, 2016a and 2016b) established a lifetime drinking water HAL of 70 nanograms per liter (ng/L) (70 parts per trillion or 0.07 µg/L) for perfluorooctanesulfonic acid (PFOS) and/or perfluorooctanoic acid (PFOA). When these two constituents co-occur in the same drinking water source, a conservative and human health

protective approach recommends comparing the sum of both PFOA and PFOS against the HAL target. An HAL target is not considered to be a legally enforceable federal standard and is subject to change as new information becomes available. USEPA has not established Maximum Contaminant Levels (MCLs) for drinking water regarding PFAS. EPA's HAL for PFOA and PFOS were designed to offer a margin of protection for all Americans, including the most sensitive populations, throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water. These HAL levels are specific to **drinking water** and do not apply to exposure by any other pathways, such as dermal exposure (*i.e.* bathing), indirect consumption (*i.e.* food consumption), or inhalation. Currently, FDEP is developing GCTLs and Soil Cleanup Target Levels (SCTLs) and these have just been recently drafted and have not been adopted yet at the time of this report. However, these provisional values, as well as newly developed Irrigation Water Screening Levels (IWSLs) are provided in the results section of this report for reference. To date neither the USEPA or the FDEP have issued HAL values or promulgated standards for any other PFAS constituents. However, USEPA has derived a residential screening level for perfluorobutanesulfonic acid (PFBS) of 400 µg/l, for which there is a Tier 2 toxicity value (Provisional Peer Review Toxicity Value, USEPA, 2017).

Much of the science related to PFAS in regard to health risks, fate and transport, as well as detection methods for drinking water, groundwater, and soil, is in initial development stages. As the attention has shifted to these emerging contaminants, new science and likely associated regulatory target levels are anticipated in the near future.

Data collected in this study were compared against the available screening levels. It is important to note, however, that the HAL levels for PFOS and PFOA are for drinking water and not intended to be applied to non-drinking water sources, such as groundwater or surface water that is not used for drinking water.

Methods

In September and October, Applied Ecology, Inc. worked closely with County staff to determine sampling locations to provide an accurate representation of groundwater and surface water quality and potential PFAS concentrations throughout Brevard County. A total of 49 locations were selected for sampling of PFAS and an additional equipment blank was included in the sampling plan for quality assurance purposes. There were 28 locations that were selected for groundwater sampling (groundwater monitoring wells, irrigation wells, or push points), 13 locations selected for surface water sampling, and eight locations selected for sediment/muck sampling (Figure 1). The sampled groundwater monitoring wells were distributed throughout the mainland and Barrier Islands in communities serviced by central sewer and included three wells each in the following locations: Titusville, Suntree, Palm Bay, South Patrick Shores and Satellite Beach. In addition, one groundwater sample was collected to provide background information on PFAS concentrations from an undeveloped area located in Titusville. Six surface grab samples were collected from the Grand Canal system, three from the Banana River (BR) Lagoon proper, and the remaining four from the North and Central Indian River Lagoon (IRL). The same six locations in the Grand Canal System were used for sediment/muck sampling with two additional sediment samples located in the BR and central IRL proper. All 11 irrigation samples were collected in the Barrier Island, seven from the South Patrick Shores community (north of the City of Satellite Beach) and the remaining four from the Cocoa Beach Snug Harbor area. Four shallow irrigation wells and three deep (Floridan Aquifer) irrigation wells were sampled in the Patrick Shores community, while one shallow irrigation well and three deep (Floridan Aquifer) irrigation wells were sampled in the Snug Harbor community. Lastly, the push point method was used to collect shallow groundwater samples from the Snug Harbor community (2 samples) and the proposed spoil site located north of the Grand Canal system (2 samples). The proposed spoil site will

be used as a Dredged Material Management Area (DMMA) for the upcoming Grand Canal Dredging project. In October 2018, all sampling was initiated and completed with the final laboratory analytical reports provided by the laboratory in October and November 2018. Three of the shallow irrigation wells in South Patrick Shores were also tested for a full suite of federally listed priority pollutants, carcinogens, volatile and semi-volatile organics, pesticides, heavy metals, and radionuclides to further assess shallow groundwater in this area.

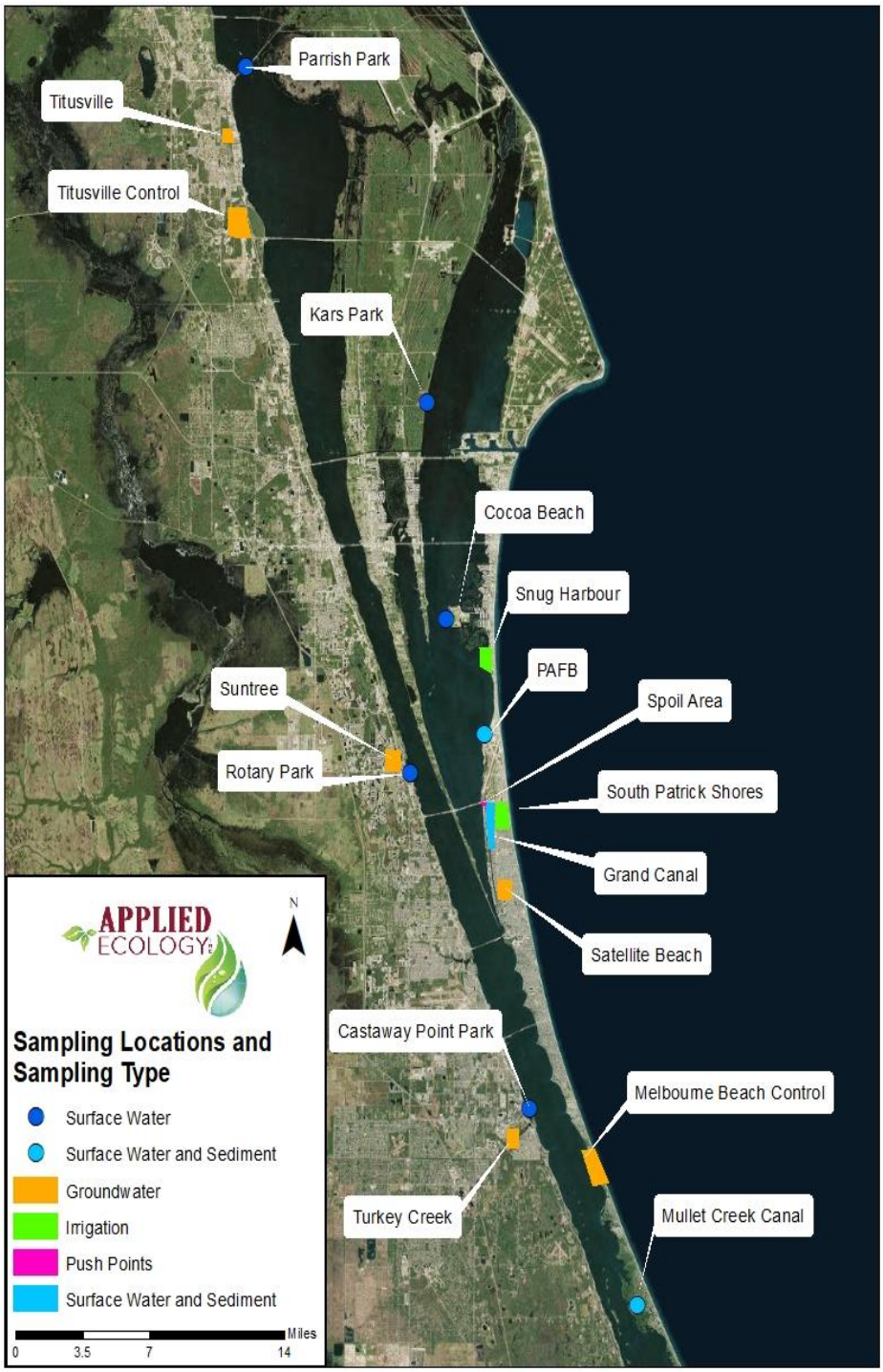


Figure 1. Locations of PFAs sampling throughout Brevard County, Florida.

For all sampling, precautions for PFAS cross contamination were used, including the use of new High-Density Poly Ethylene (HDPE) tubing to purge and collect groundwater samples at each monitoring well. All shallow groundwater monitoring wells were sampled in compliance with FDEP-SOP-001/01; FS2200 Groundwater Sampling. During sampling, field data was collected at regular intervals using a multimeter with a flow through cell until three consecutive measurements were stable (Figure 2). Field parameters included temperature, depth to water (DTW), pH, conductivity, dissolved oxygen, and turbidity. Surface water sampling was performed in compliance with FDEP-SOP-001/01; FS2100 Surface Water Sampling. The surface water samples were collected either by direct grab with sample bottle or with a peristaltic pump with HDPE tubing. All surface water samples were collected from 0.5-m below the water surface consistent with typical FDEP protocols for grab sampling. Field data were also collected for the surface water samples using a multimeter to collect field parameters such as temperature, DTW, pH, conductivity, dissolved oxygen, and turbidity.

Figure 2. Groundwater sampling set-up with well and equipment.

Sediment and muck sampling utilized an Ekman sampler. The Ekman sampler is a device that allows sediment to be collected from the bottom of a body of water, then brought up to the surface, and placed into appropriately prepared sampling bottles. The sampler has opposable jaws that are closed when a messenger is dropped down the line activating a spring, which then trap the muck and sediment inside the sampler until they can be appropriately sampled (Figure 3).

Figure 3. Ekman sampler (typical) used in muck and sediment sampling.

Push point sampling is accomplished by pushing a small-diameter steel rod, with perforation/screening at the bottom of the rod, into the ground. Silicone and HDPE tubing are used to connect the rod to a peristaltic pump. The pump is then turned on to determine if groundwater can be extracted. If groundwater is easily extracted, purging is initiated to reduce turbidity to values equal to, or preferentially, less than 20 NTUs. Turbidity is measured using a turbidity meter that has been appropriately calibrated following FDEP-SOP-001/01; FT 1600 Field Measurement of Turbidity. Once the sampled water has reached 20 NTUs or less, the value was recorded, and a sample was taken from the pump. An estimated DTW was also recorded.

To sample for PFAS, a 125-mL aliquot was collected in a laboratory-provided container with no preservative, sealed, labeled, packed in ice, and shipped under chain-of-custody protocol to SGS Laboratories for analysis of PFAS, including PFOA, PFOS, and 22 additional compounds using a modified USEPA Method 537Mod.

For each of the three selected irrigation wells multiple laboratory bottles were collected to allow the analysis of all priority pollutants, dioxins, and radionuclides. Two, 1-liter aliquots were collected in an amber glass container with no preservative for semi-volatile analysis. Three, 40-mL aliquots were collected in glass vials preserved with hydrochloric acid (HCL) for the volatile analysis. Two, 250-mL glass amber bottles with no

preservative were collected for Priority Pollutant Pesticide analysis. Two, 250-mL plastic bottles were collected with HNO_3 as a preservative for polychlorinated biphenyl (PCB) analysis. One, 125-mL plastic bottle with NaOH as preservative was collected for cyanide analysis. One, 500mL plastic bottle with HNO_3 as a preservative was collected for Priority Pollutant Metal analysis and Manganese analysis. Two, 1-liter amber glass bottles with no preservative were collected for Dioxin analysis. Three, 1-liter plastic bottles preserved with HNO_3 were collected for the radionucleotide (gross alpha, gross beta, radium 226, and radium 228) analysis. One, 500-mL plastic bottle with HNO_3 preservative was collected for Strontium analysis. Finally, one, 1-liter plastic bottle preserved with HNO_3 was collected for Strontium-90 analysis. All samples were then sealed, labeled, packed on ice, and shipped under chain-of-custody protocol to SGS Laboratories for analysis.

Field Sampling Results

Complete laboratory analytical results from the one-time sampling for PFAS, priority pollutants, and radionuclides are included in Attachment A and corresponding field and calibration logs are included in Appendix B. The field parameters for the muck/sediment, surface water, groundwater monitoring well, and push point sampling are presented in tabular form in Table 2 - Table 4. There were no field parameters collected for the irrigation wells. All samples had a specific labeling scheme, described in Table 1, which provides an indication of sample type and/or location within Brevard County.

Table 1. Labeling scheme for all samples.

Labeling Scheme	Sample Type	Location
MS	Muck/Sediment	Grand Canal, IRL, and Banana River
BR	Surface Sample	Banana River
IRL	Surface Sample	Indian River Lagoon
GC	Surface Sample	Grand Canal
N	Groundwater Well	Natural-Titusville
TITUS	Groundwater Well	Titusville
SUN	Groundwater Well	Suntree
SAT	Groundwater Well	Satellite Beach
TC	Groundwater Well	Palm Bay- Turkey Creek Area
PS	Irrigation Well	Satellite Beach- South Patrick Shores Subdivision
SH	Irrigation Well and Push Point	Cocoa Beach- Sung Harbor Subdivision
PP	Push Point	Spoil Area

Sediment

Several field parameters were recorded for the sediment samples which includes three depth measurements (total depth of the water, the depth that the readings were collected, and the depth the sample was collected) in meters, air and water temperature (˚C), the pH (SU), the dissolved oxygen (DO) percentage and milligrams per liter (mg/L), and the specific conductance (µS/cm) which are provided in Table 2.

Table 2. Field parameters for the muck and sediment sampling for Brevard County.

Site ID	Sample Date	Total Depth of Water (m)	Air Temp (˚C)	Reading Depth (m)	pH (SU)	DO (%, mg/L)	Temp (˚C)	Sp. Conductance (µS/cm)	Sample Collection Depth (m)
MS-1	10/5/18	3.25	25.0	3.25	7.25	3.9%, 0.28	28.9	32,427	3.25
MS-2	10/5/18	2.50	26.4	2.50	7.36	2.6%, 0.15	29.2	31,800	2.50
MS-3	10/5/18	5.67	25.6	4.42	6.86	1.4%, 0.10	26.0	35,686	5.67
MS-4	10/5/18	4.75	26.1	4.42	7.18	1.3%, 0.09	28.8	31,701	4.75
MS-5	10/5/18	2.00	26.6	2.00	7.23	1.1%, 0.08	29.0	31,140	2.00
MS-6	10/5/18	2.25	25.6	2.25	7.39	12.8%, 0.88	28.8	30,693	2.25
MS-7	10/5/18	1.50	25.8	1.50	8.03	81.7%, 5.82	27.6	29,349	1.50
MS-8	10/8/18	0.75	28.9	0.75	7.71	45.5%, 2.95	28.4	50,525	0.75

Surface Water Grabs

Several parameters were collected for surface water sampling which includes two depth measurements (total depth of the water and the depth the sample/ readings were taken) in meters, air and water temperature (˚C), the pH (SU), the DO percentage and mg/L, the specific conductance (µS/cm), and turbidity (NTUs) which are provided in Table 3.

Table 3. Field parameters for the surface water sampling for Brevard County. Sampling was performed at 0.5-m from surface.

Site ID	Sample Date	Total Depth of Water (m)	Air Temp (˚C)	pH (SU)	DO (%, mg/L)	Temp (˚C)	Sp. Conductance (µS/cm)	Turbidity (NTUs)	Sample Depth (m)
BR-1	10/5/18	3.00	25.8	8.02	84.2%, 6.01	27.6	29,317	N/A	0.5
BR-2	10/5/18	1.00	26	8.19	88.6%, 6.24	27.9	30,167	6.37	0.5
BR-3	10/16/18	1.00	26.4	8.4	92.3%, 6.32	29.1	33,049	17.60	0.5
IRL-1	10/16/18	0.75	28.5	8.41	128.9%, 8.16	30.1	42,820	9.09	0.5
IRL-2	10/16/18	0.75	26.5	8.39	119.0%, 7.96	30.8	31,362	7.90	0.5
IRL-3	10/8/18	0.75	28.9	7.68	43.2%. 2.68	28.5	49,815	8.79	0.5
IRL-4	10/16/18	0.75	26.2	7.81	61.9%, 2.46	28.9	33,131	8.13	0.5
GC-1	10/5/18	3.25	25	7.52	10.7%, 1.04	28.2	29,677	21.4	0.5
GC-2	10/5/18	2.50	26.4	8.34	153.1%, 10.55	29.6	28,757	6.96	0.5
GC-3	10/5/18	5.67	25.6	8.73	181.9%, 12.52	29.6	29,088	9.29	0.5
GC-4	10/5/18	4.75	26.1	8.66	209.9%, 14.20	30.5	29,275	5.17	0.5
GC-5	10/5/18	2.00	26.6	7.9	81.9%, 5.68	29.1	29,940	11.40	0.5
GC-6	10/5/18	2.25	25.6	8.15	122.5%, 8.47	25	29,751	8.56	0.5

Groundwater Monitoring Wells and Push Points

Several parameters were collected for groundwater sampling which includes the total volume purged (gal), the DTW in meters, water temperature in (˚C), the pH (SU), the DO percentage and mg/L, the specific conductance (µS/cm), and turbidity (NTUs). The push point parameters included the DTW (m) and the turbidity (NTUs) which are provided in Table 4.

Table 4. Field parameters for the groundwater monitoring well and push point sampling for Brevard County. (GW indicates that the sample was a groundwater sample and PP indicates that the sample is a push point sample)

Site ID	GW/ PP	Sample Date	Total Volume Purged (gal)	DTW (ft)	pH (SU)	Temp (˚C)	Sp. Conductance (µS/cm)	Dissolved Oxygen (%, mg/L)	Turbidity (NTUs)
GW-N1	GW	10/24/18	1.00	5.10	6.95	25.0	888.0	3.2%,0.27	1.35
GW-TITUS1	GW	10/24/18	1.00	8.67	7.45	27.5	206.6	3.0%, 0.25	2.45
GW-TITUS2	GW	10/24/18	1.25	4.39	6.25	26.9	530.0	1.8%,0.15	3.29
GW-TITUS3	GW	10/24/18	1.25	3.96	6.45	28.6	425.3	1.4%,0.11	2.42
GW-SUN1	GW	10/17/18	1.50	6.25	5.60	26.6	2,339.0	1.1%,0.09	0.65
GW-SUN2	GW	10/17/18	2.00	6.07	6.10	27.8	1,429.0	2.3%,0.18	0.45
GW-SUN3	GW	10/17/18	2.00	3.93	5.37	27.6	1,336.0	1.9%,0.15	2.19
GW-SAT1	GW	10/17/18	1.50	3.95	7.19	27.6	2,477.0	1.5%,0.12	3.92
GW-SAT2	GW	10/17/18	1.50	4.16	7.03	28.8	2,843.0	2.4%, 0.18	0.99
GW-SAT3	GW	10/17/18	1.50	4.11	6.83	28.1	2,707.0	9.3%,0.72	0.79
GW-TC1	GW	10/17/18	1.00	11.62	6.71	26.1	3,951.0	1.5%,0.12	1.17
GW-TC2	GW	10/17/18	1.50	13.11	6.18	25.6	1,750.0	1.6%,0.13	6.22
GW-TC3	GW	10/17/18	1.25	12.93	6.13	26.2	1,568.0	1.4%,0.11	5.52
SH 5	PP	10/24/18	NA	4.13	NA	NA	NA	NA	4.78
SH 6	PP	10/24/18	NA	3.96	NA	NA	NA	NA	0.62
PP1	PP	10/25/18	NA	2.68	NA	NA	NA	NA	9.79
PP2	PP	10/25/18	NA	1.83	NA	NA	NA	NA	8.88

PFAS Analytical Results

Applied Ecology, Inc. compared the surface water, groundwater monitoring well, push point, and irrigation well PFOA and PFAS laboratory measured results to the 0.070 µg/L HAL for PFOA and PFOS, as well as to the provisional IWSL values. In addition, a comparison between the PFBS residential screening level of 400 µg/L and sampled values with detectable measured concentrations are provided in Table 5 through Table 10.

For quality assurance, a field reagent blank was also collected, which exhibited concentrations below laboratory MDL values for all 24 PFAS compounds.

Sediment

Eight muck and/or sediment samples were collected from the Grand Canal System in Satellite Beach, the Indian River Lagoon, and the Banana River (Figure 4). MS-1 through MS-6 were collected in the Grand Canal, MS-7 was collected near Patrick Air Force Base (PAFB), and MS-8 was collected in the Melbourne Beach area, near Mullet Creek. None of the eight sediment samples have detectable concentrations of PFOA and only 3 out of 8 sediment samples have measurable concentrations of PFOS. MS-6, MS-7, and MS-8 were not included in Table 5, because there were no detectable concentrations of either PFOA or PFOS. The muck and sediment samples had PFOA plus PFOS concentrations that ranged from 0.62 micrograms per kilogram (µg/kg) to 8.83 µg/kg, well below the 1,260 µg/kg USEPA Soil Screening Level or 1,300 µg/kg Alternative Soil Cleanup Target Level (UF 2018a). USEPA has more conservative regulatory levels (Human health Soil Screening Levels or HHSLs) for PFOA and PFOS that were not appropriate for screening the measured concentrations in muck. HHSLs are appropriate for traditional soil samples with direct exposure routes to humans, unlike the muck samples retrieved from the bottom of the Grand Canal system.

Table 5. Muck and sediment PFAS analytical results, in µg/kg, for Brevard County. Samples with concentration values below the MDL were excluded from this table. Concentration values that were <PQL but >MDL are italicized and the values >PQL are bolded.

Compound	MS-1	MS-2	MS-3	MS-4	MS-5	USEPA Soil/SL[3] (µg/kg)	Proposed UF SCTL[4] (µg/kg)
Perfluorooctanoic acid (PFOA)	1.40 U[2]	0.77 U[2]	1.30 U[2]	2.00 U[2]	0.85 U[2]	1,260	1,300
Perfluorooctanesulfonic acid (PFOS)	*4.39 I[3]*	*2.16 I[3]*	**7.53**	*6.17 I[3]*	2.54 I[3]	1,260	1,300
PFOA + PFOS	*5.79 U[2], I[3]*	*2.93 U[2],I[3]*	**8.83**	*8.17 U[2], I[3]*	*3.39 U[2],I[3]*	NA	NA

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA Soil screening level for groundwater protection

[4] Proposed Soil Cleanup Target Levels (SCTL)

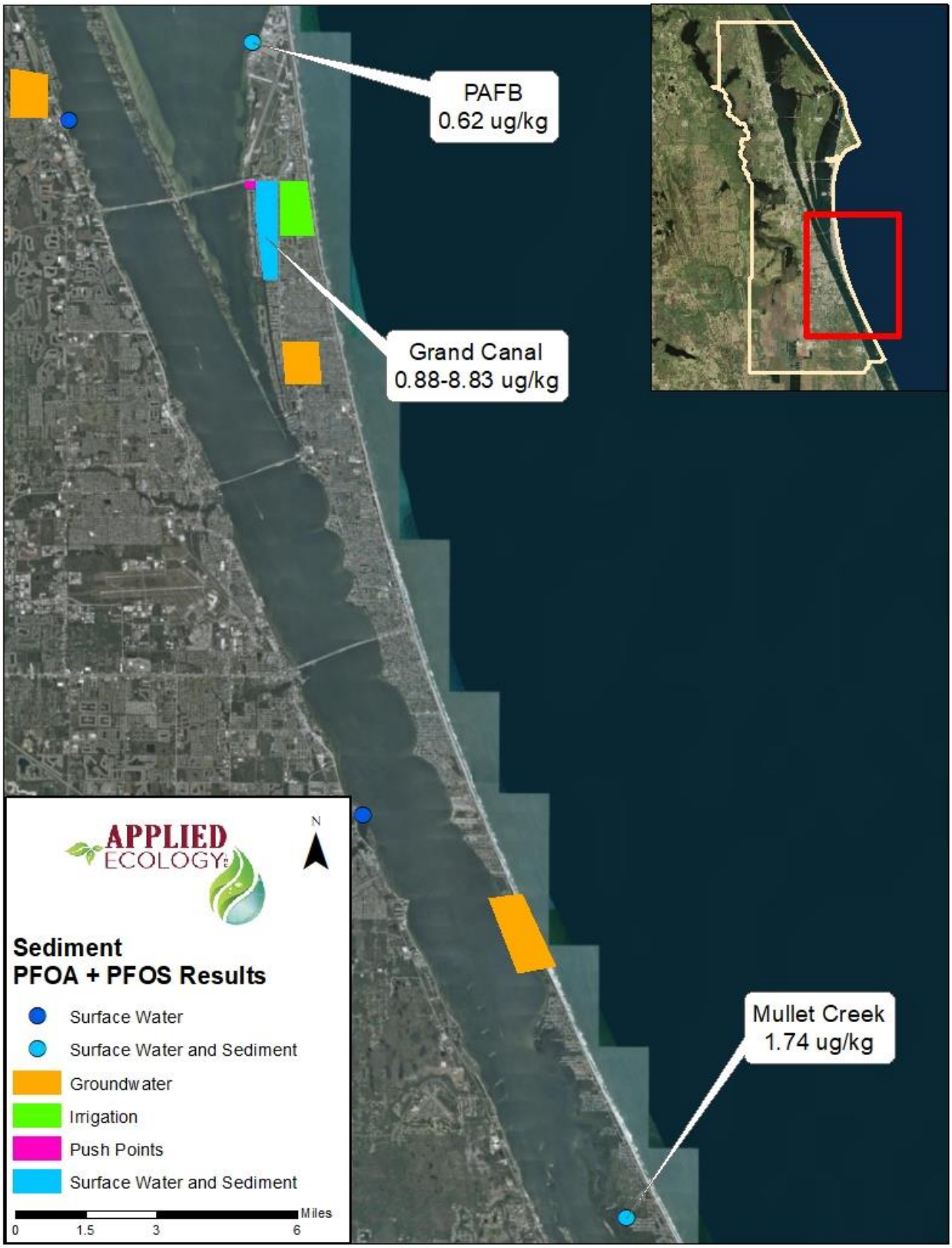


Figure 4. Muck and sediment PFAS results.

Surface Water

Thirteen surface water samples were sampled in the Grand Canal in Satellite Beach (GC), the Indian River Lagoon (IRL), and the Banana River (BR) (Figure 5). Table 6 provides a summary of the detectable concentrations of PFAS compounds in the Indian River Lagoon and Banana River sites. There were three sites (IRL-1, IRL-2, and BR-3) that had PFOA+PFOS concentrations greater than the HAL of 0.07 µg/L for PFOS and/or PFOA. None of the samples had values above the provisional irrigation water risk-based screening levels for PFOA and PFOS (UF, 2018b). It should be noted that while the surface water samples were screened against HALs and IWSLs, the USEPA and FDEP currently do not have specific standards for marine surface water bodies.

Table 6. Indian River Lagoon and Banana River surface water PFAS analytical results for Brevard County. Samples with concentrations below the MDL were excluded. Concentration values that were <PQL but >MDL are italicized, values that were >than the PQL are in bold. Values that exceeded the USEPA LHA are bolded and highlighted in grey.

Compound	Surface Water Lab Results (µg/L)							USEPA HA/SL[3] (µg/L)	USEPA HA/GW[4] (µg/L)	Proposed UF IWSL[5] (µg/L)
	BR-1	BR-2	BR-3	IRL-1	IRL-2	IRL-3	IRL-4			
Perfluorobutanoic acid	*0.00915 I*[2]	*0.0107 I*[2]	*0.0116 I*[2]	0.008 U[1]	0.008 U[1]	0.0083 U[1]	*0.00895 I*[2]	NA	NA	NA
Perfluoropentanoic acid	*0.00875 I*[2]	0.0083 U[1]	*0.0123 I*[2]	0.008 U[1]	0.008 U[1]	0.0083 U[1]	0.008 U[1]	NA	NA	NA
Perfluorohexanoic acid	*0.00857 I*[2]	*0.00862 I*[2]	*0.00852 I*[2]	0.008 U[1]	0.008 U[1]	0.0083 U[1]	0.008 U[1]	NA	NA	NA
Perfluoroheptanoic acid	0.0077 U[1]	0.0083 U[1]	0.008 U[1]	0.008 U[1]	*0.00958 I*[2]	0.0083 U[1]	0.008 U[1]	NA	NA	NA
Perfluorooctanoic acid (PFOA)	*0.00777 I*[2]	*0.00843 I*[2]	*0.0119 I*[2]	*0.00545 I*[2]	*0.00796 I*[2]	0.0042 U[1]	*0.00614 I*[2]	**0.07**	**0.4**	**6.7**
Perfluorononanoic acid	0.0038 U[1]	0.0042 U[1]	**0.0239**	**0.0231**	**0.0181**	0.0042 U[1]	0.004 U[1]	NA	NA	NA
Perfluoroundecanoic acid	0.0077 U[1]	0.0083 U[1]	*0.0123 I*[2]	*0.0115 I*[2]	*0.00871 I*[2]	0.0083 U[1]	0.008 U[1]	NA	NA	NA
Perfluorotridecanoic acid	0.0077 U[1]	0.0083 U[1]	*0.00874 I*[2]	0.008 U[1]	0.008 U[1]	0.0083 U[1]	0.008 U[1]	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	0.0077 U[1]	0.0083 U[1]	0.008 U[1]	*0.00801 I*[2]	*0.00808 I*[2]	0.0083 U[1]	0.008 U[1]	NA	**400**	NA
Perfluorohexanesulfonic acid	*0.0148 I*[2]	*0.0164 I*[2]	0.0316	**0.0319**	**0.0274**	0.0083 U[1]	*0.011 I*[2]	NA	NA	NA
Perfluorooctanesulfonic acid (PFOS)	**0.0276**	**0.0275**	**0.115**	**0.0978**	**0.0987**	*0.00496 I*[2]	**0.0261**	**0.07**	**0.4**	**72.0**
PFOA+PFOS	***0.03537 I***[2]	***0.03593 I***[2]	***0.1269 I***[2]	***0.10325 I***[2]	***0.10666 I***[2]	*0.00916 U*[1] *I*[2]	***0.03224 I***[2]	**0.07**	NA	NA

[1] "U" qualified value indicate the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA lifetime drinking water health-advisory (LHA); [4] USEPA groundwater health-advisory (HA); [5] Proposed UF Irrigation water screening level (IWSL)

Table 7 provides a summary of the detectable concentrations of PFAS analytes for the surface water samples collected in the Grand Canal. All Grand Canal samples had PFOA+PFOS concentrations below the HAL of 0.07 µg/L (which is based upon groundwater consumption) and many were barely above minimum detection limit for PFOA and PFOS. Most other PFAS analytes were not detected in these samples.

Table 7. Grand Canal surface water PFAS analytical results for Brevard County. Samples that did not exceed the MDL were excluded from this table. Concentration values that were <PQL but >MDL are italicized and values >PQL are bolded.

Compound	Surface Water Lab Results (µg/L)						USEPA HA/SL[3] (µg/L)	USEPA HA/GW[4] (µg/L)	Proposed UF IWSL[5] (µg/L)
	GC-1	GC-2	GC-3	GC-4	GC-5	GC-6			
Perfluorobutanoic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	*0.00772 I[2]*	NA	NA	NA
Perfluoropentanoic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorohexanoic acid	0.0077 U[1]	*0.00841 I[2]*	*0.00904 I[2]*	*0.00856 I[2]*	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluoroheptanoic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorooctanoic acid (PFOA)	*0.0053 I[2]*	*0.00676 I[2]*	*0.00586 I[2]*	*0.00606 I[2]*	*0.00542 I[2]*	*0.00572 I[2]*	**0.07**	**0.4**	**6.7**
Perfluorononanoic acid	0.0038 U[1]	0.0042 U[1]	0.0042 U[1]	0.0038 U[1]	0.0038 U[1]	0.0038 U[1]	NA	NA	NA
Perfluoroundecanoic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorotridecanoic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	**400**	NA
Perfluorohexanesulfonic acid	0.0077 U[1]	0.0083 U[1]	0.0083 U[1]	0.0077 U[1]	0.0077 U[1]	*0.00777 I[2]*	NA	NA	NA
Perfluorooctanesulfonic acid (PFOS)	*0.0142 I[2]*	*0.0157 I[2]*	*0.0117 I[2]*	**0.0156**	*0.0128 I[2]*	*0.0141 I[2]*	**0.07**	**0.4**	**72.0**
PFOA+PFOS	*0.0195 I[2]*	*0.02246 I[2]*	*0.01756 I[2]*	***0.02166 I[2]***	*0.01822 I[2]*	*0.01982 I[2]*	**0.07**	NA	NA

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA lifetime drinking water health-advisory (HA) or residential screening level

[4] USEPA groundwater health-advisory (HA)

[5] Proposed UF Irrigation water screening level

Groundwater Monitoring Wells and Push Points

Thirteen samples were collected from shallow groundwater monitoring wells in Titusville (TITUS), Suntree (SUN), Satellite Beach (SAT), Palm Bay (TC), and a natural area in Titusville (N). Table 8 provides the detectable concentrations of PFAS analytes for the shallow groundwater monitoring wells.

Table 8. Groundwater PFAS analytical results for Brevard County. Samples with concentrations below the MDL were excluded. Concentration values that were <PQL but >MDL are italicized, values that were >than the PQL are in bold. Values that exceeded the USEPA HAL are bolded and highlighted in grey.

Compound	Groundwater Well Lab Results (µg/L)										USEPA HA/SL[3] (µg/L)	USEPA HA/GW [4] (µg/L)	Proposed UF IWSL[5] (µg/L)
	GW-TITUS1	GW-TITUS3	GW-SUN1	GW-SUN2	GW-SUN3	GW-SAT1	GW-SAT2	GW-SAT3	GW-TC1	GW-TC2			
Perfluorobutanoic acid	0.0080 U[1]	*0.0156 I[2]*	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	*0.0127 I[2]*	0.008 U[1]	0.0080 U[1]	0.015 U[1]	0.0077 U[1]	NA	NA	NA
Perfluoropentanoic acid	*0.0084 I[2]*	**0.0225**	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	0.0077 U[1]	0.008 U[1]	0.0080 U[1]	0.015 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorooctanoic acid (PFOA)	*0.0063 I[2]*	*0.0043 I[2]*	0.0038 U[1]	*0.0082 I[2]*	*0.0038 I[2]*	0.0038 U[1]	0.004 U[1]	*0.0053 I[2]*	*0.0228 I[2]*	0.0038 U[1]	**0.07**	**0.4**	**6.7**
Perfluorononanoic acid	0.0040 U[1]	0.0042 U[1]	0.0038 U[1]	*0.0117 I[2]*	0.0077 U[1]	0.0038 U[1]	0.004 U[1]	0.0040 U[1]	**0.209**	0.0038 U[1]	NA	NA	NA
Perfluoroundecanoic acid	0.0080 U[1]	0.0083 U[1]	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	0.0077 U[1]	0.008 U[1]	0.0080 U[1]	**0.0775**	0.0077 U[1]	NA	NA	NA
Perfluorotridecanoic acid	0.0080 U[1]	0.0083 U[1]	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	0.0077 U[1]	0.008 U[1]	0.0080 U[1]	**0.0402**	0.0077 U[1]	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	0.0080 U[1]	*0.0103 I[2]*	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	*0.0133 I[2]*	0.008 U[1]	0.0080 U[1]	*0.0179 I[2]*	*0.0137 I[2]*	NA	**400**	NA
Perfluoropentanesulfonic acid	0.0080 U[1]	0.0083 U[1]	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	0.0077 U[1]	0.008 U[1]	0.0080 U[1]	*0.0194 I[2]*	0.0077 U[1]	NA	NA	NA
Perfluorohexanesulfonic acid	0.0080 U[1]	0.0083 U[1]	0.0077 U[1]	0.0150 U[1]	0.0077 U[1]	0.0077 U[1]	0.008 U[1]	0.0080 U[1]	**0.134**	0.0077 U[1]	NA	NA	NS
Perfluorooctanesulfonic acid (PFOS)	**0.0355**	*0.0048 I[2]*	*0.0043 I[2]*	**0.0472**	*0.0081 I[2]*	*0.0088 I[2]*	**0.0246**	*0.0084 I[2]*	**0.471**	0.0038 U[1]	**0.07**	**0.4**	**72.0**
PFOA+PFOS	*0.0418 I[2]*	*0.0090 I[2]*	*0.0081 U[1] I[2]*	***0.0554 I[2]***	*0.0119 I[2]*	*0.0126 U[1] I[2]*	**0.0286**	*0.0137 I[2]*	***0.4938 I[2]***	0.0076 U[1]	**0.07**	NA	NA

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA lifetime drinking water health-advisory (LHA)

[4] USEPA groundwater health-advisory (HA); [5] Proposed UF Irrigation water screening level (IWSL)

A total of 7 and 4 out of 13 total groundwater samples had concentrations of PFOS and PFOA, respectively, below MDLs. Twelve of the thirteen wells had concentrations of PFOA+PFOS that were less than the HAL of 0.07 µg/L. Only one well located in the Palm Bay area had PFOA+PFOS concentrations that exceeded the HAL of 0.07 µg/L.

Push Point sampling took place in two areas, the proposed DMMA for the Grand Canal Dredging project and in the Snug Harbor subdivision in Cocoa Beach (Figure 5) for a total of 4 samples. The push points were taken in the Cocoa Beach subdivision to supplement the shallow irrigation well sampling in this area. Pushpoint samples provide a surrogate measure of water quality in the discrete interval of sample collection (in this instance, the top of the surficial water table). Table 9 provides a summary of the detectable concentrations of PFAS compounds for the push point sampling. All four samples had PFOA and PFAS concentration values above MDL, but only one of these samples had concentrations of PFOA+PFOS barely exceeding the LHA of 0.07 µg/L.

Table 9. Push point PFAS analytical results for Brevard County. Concentration values that were <PQL but >MDL are italicized, values that were >than the PQL are in bold. Values that exceeded the USEPA LHA are bolded and highlighted in grey.

Compound	Push Points Lab Results (µg/L)				USEPA HA/SL[3] (µg/L)	USEPA HA/GW[4] (µg/L)	Proposed UF IWSL[5] (µg/L)
	PP-1	PP-2	SH-5	SH-6			
Perfluorobutanoic acid	**0.0389**	*0.00916 I*[2]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluoropentanoic acid	*0.0119 I*[2]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorohexanoic acid	*0.0090 I*[2]	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	NA	NA	NA
Perfluorooctanoic acid (PFOA)	*0.00845 I*[2]	*0.00744 I*[2]	*0.00883 I*[2]	*0.0109 I*[2]	**0.07**	**0.4**	**6.7**
Perfluorohexanesulfonic acid	0.0077 U[1]	*0.00935 I*[2]	0.0077 U[1]	*0.0123 I*[2]	NA	NA	NA
Perfluorooctanesulfonic acid (PFOS)	*0.00419 I*[2]	**0.0346**	**0.0543**	**0.0603**	**0.07**	**0.4**	**72.0**
PFOA+PFOS	*0.01264 I*[2]	***0.04204 I***[2]	***0.06313 I***[2]	***0.0712 I***[2]	**0.07**	NA	NA

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA lifetime drinking water health-advisory (HA) or residential screening level

[4] USEPA groundwater health-advisory (HA)

[5] Proposed UF Irrigation water screening level

Irrigation Wells

Eleven irrigation wells, four shallow (<25') and five deep (Floridan Aquifer) wells, were sampled in the South Patrick Shores (PS) area of unincorporated Brevard County between Patrick Air Force Base and Satellite Beach and the subdivision of Snug Harbor (SH) in unincorporated Brevard County between Patrick Air Force Base and Cocoa Beach (Figure 5). Table 10 provides a summary of the detectable concentrations of PFAS compounds for the residential irrigation wells. None of the deep irrigation wells had detectable levels of the 24 PFAS compounds tested, including PFOA and PFOS. All five shallow irrigation wells had concentrations of PFOA and PFOS above MDLs, only one of the irrigation wells had concentrations of PFOA+PFOS greater than the HAL 0.07 µg/L, and all irrigation well results were significantly less than the proposed IWSL.

Table 10. Irrigation well PFAS analytical results for Brevard County. Data that did not exceed the MDL was excluded from this table. (Values that were <PQL but >MDL but are italicized, values that were >than the PQL are in bold, and values that exceeded the USEPA lifetime drinking water health-advisory (HAL) are in bold and highlighted in grey)

Compound	Irrigation Water Lab Results (µg/L)					USEPA HA/SL[3] (µg/L)	USEPA HA/GW[4] (µg/L)	Proposed UF IWSL[5] (µg/L)
	PS-1	PS-2	PS-4	PS-6	SH-4			
Perfluorobutanoic acid	*0.0129 I[2]*	0.0077 U[1]	*0.0122 I[2]*	*0.00957 I[2]*	0.008 U[1]	NA	NA	NA
Perfluoropentanoic acid	*0.014 I[2]*	0.0077 U[1]	**0.0167**	*0.0134 I[2]*	0.008 U[1]	NA	NA	NA
Perfluorohexanoic acid	*0.00841 I[2]*	0.0077 U[1]	*0.012 I[2]*	*0.00887 I[2]*	0.008 U[1]	NA	NA	NA
Perfluoroheptanoic acid	*0.00869 I[2]*	0.0077 U[1]	*0.0123 I[2]*	0.0077 U[1]	0.008 U[1]	NA	NA	NA
Perfluorooctanoic acid (PFOA)	**0.0198**	*0.00783 I[2]*	**0.0348**	*0.00845 I[2]*	*0.0156 I[2]*	**0.07**	**0.4**	**6.7**
Perfluorononanoic acid	*0.00602 I[2]*	0.0038 U[1]	*0.00464 I[2]*	0.0038 U[1]	0.004 U[1]	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	**0.0786**	0.008 U[1]	NA	**400**	NA
Perfluorohexanesulfonic acid	0.0077 U[1]	0.0077 U[1]	0.0077 U[1]	*0.00773 I[2]*	0.008 U[1]	NA	NA	NA
Perfluorooctanesulfonic acid (PFOS)	**0.049**	**0.0371**	**0.0656**	**0.0359**	**0.0209**	**0.07**	**0.4**	**72.0**
PFOA+PFOS	**0.0688**	***0.04493 I[2]***	**0.1004**	***0.04435 I[2]***	***0.0365 I[2]***	**0.07**	NA	NA

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

[3] USEPA lifetime drinking water health-advisory (HA) or residential screening level

[4] USEPA groundwater health-advisory (HA)

[5] Proposed UF Irrigation water screening level

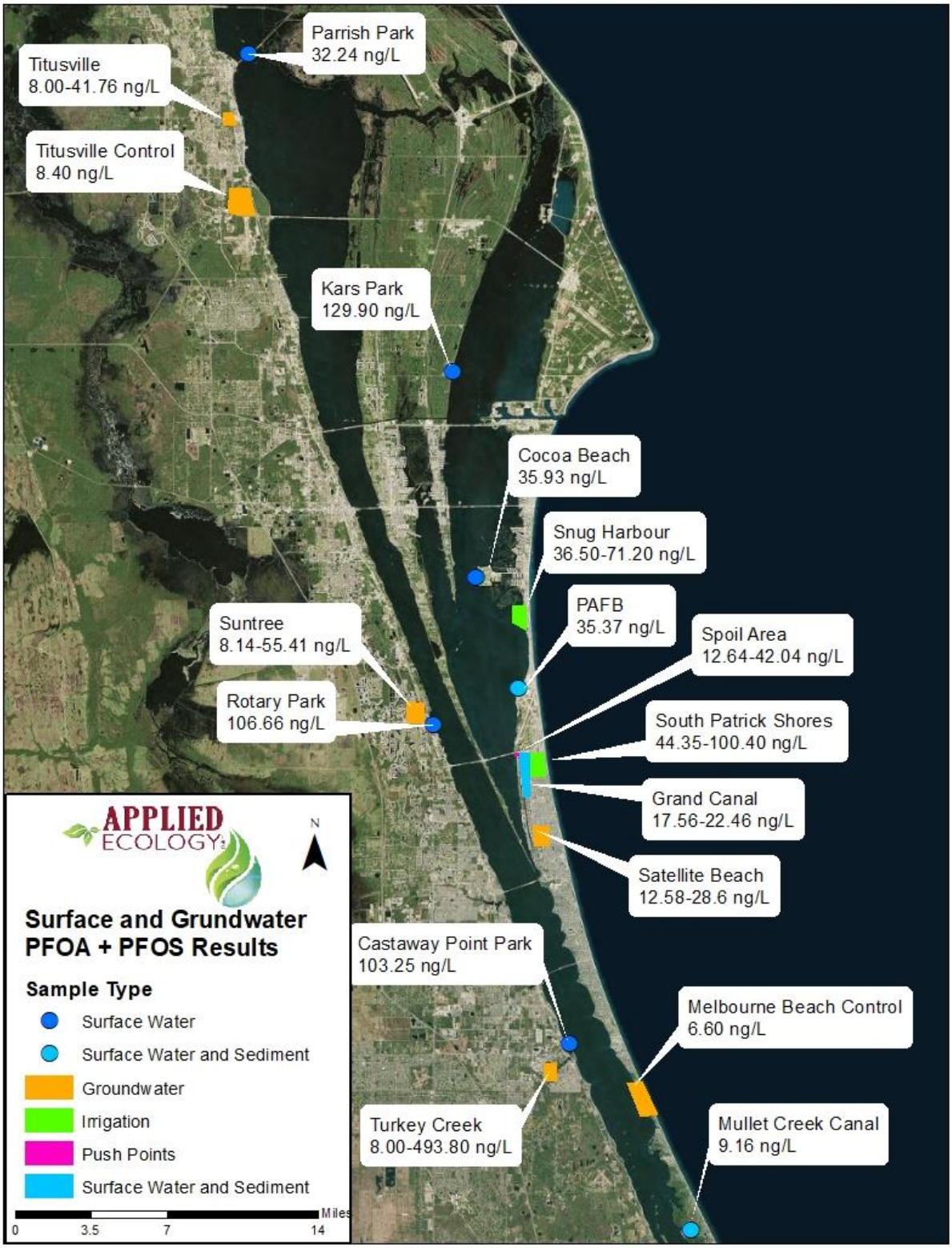


Figure 5. Surface water, groundwater monitoring wells, and irrigation wells PFAS (PFOA+PFOS) results. Some of the minimum values provided include estimated minimum detection laboratory values. Units provided correspond to parts per trillion.

Priority Pollutants and Radiochemistry Analytical Results

The community was concerned about cancer rates and historical dumping prior to residential development in the South Patrick Shore area, just south of Patrick Air Force Base, so a full suite of federally listed priority pollutants, carcinogens, volatile and semi-volatile organics, pesticides, heavy metals and radionuclides were sampled in three shallow residential irrigation wells in the South Patrick Shores subdivision. The results are summarized in tabular form in Table 11 - Table 17 and mapped in Figure 6 through Figure 10. Overall, most of the sampled analytes results in values below detection limit or health standards, such as the Groundwater Cleanup Target Levels (GCTLs) and Irrigation Water Screening Levels (IWSLs, UF 2016).

It should be noted that laboratories are expected to achieve Practical Quantification Limits (PQLs) as low as or lower than the Cleanup Target Levels (CTLs). However, samples may require dilution prior to analyses when high concentrations of one or more chemicals are present or because of matrix interference. In that case, all Method Detection Limits (MDLs) and PQLs are raised based on the dilution factors used. This procedure should not be considered to be a problem when contaminants are present, even though PQLs for contaminants not detected may be higher than their respective CTLs. In any case where the MDLs and PQLs were adjusted by the laboratory and above CTLs, the measured concentrations were below the laboratory detection limits.

Volatiles and Semi-Volatiles

Volatiles and semi-volatiles were sampled at the three shallow irrigation wells in the South Patrick Shores subdivision (Figure 6). Out of the 37 volatiles tested, 36 had non-detectable concentrations for all three irrigation samples. One volatile, Tricholoroethylene (TCE) was detected in one of the irrigation wells, although the measured concentrations didn't exceed the laboratory PQL value (Table 11) and is less than the GCTL and IWSL. It should be noted, that while TCE was detected at a concentration which was less than the GCTL, the presence of TCE (a chlorinated solvent) in the shallow irrigation well sample could be an indication of higher concentrations located laterally or vertically (deeper) in the shallow aquifer system. For all three irrigation wells, none of the tested 60 semi-volatiles had detectable concentrations.

Table 11. Volatile results for the three irrigation wells in the South Patrick Shores area. Samples with concentrations below the MDL were excluded. Concentration values that were <PQL but >MDL are italicized.

VOA PPL List + MTBE	Shallow South Patrick Shores Irrigation Well Lab Results (µg/L)				
	PS-4	GW Cleanup Target Level (GCTL)	IWSLs Residential Irrigation	IWSLs Produce Irrigation	Primary DW MCL
Trichloroethylene (TCE)	0.87 I[1]	3	930	38	5

[1] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

Figure 6. Volatiles and Semi-Volatile results for the three irrigation wells in the South Patrick Shore area.

Pesticides and PCBs

The same shallow irrigation samples from the South Patrick Shores area were tested for a full suite of pesticides and PCBs (Figure 7). Out of the 19 pesticides tested, 18 had laboratory reported concentration values below the MDLs. Dieldrin was the only pesticide detected at one irrigation well with a concentration value of 0.11 µg/L (Table 12). The measured concentration of dieldrin exceeded the GCTLs of 0.002 µg/L but is well below the IWSL of 0.7 µg/L. Dieldrin is a broad-spectrum insecticide that was historically frequently used to control termites and can have potential health impacts at certain concentrations (if used for groundwater consumption). None of the irrigation wells in this area are used for groundwater consumption.

None of the 7 PCB compounds tested had detectible concentration values.

Table 12. Pesticide results for the three irrigation wells in the South Patrick Shores area. Concentration values > PQL are in bold and values > than the GCTLs are highlighted in grey.

Pesticide PPL List	Irrigation Well Lab Results (µg/L)					
	PS-1	GW Cleanup Target Level (GCTL)	IWSLs Residential Irrigation	IWSLs Produce Irrigation	Primary DW MCL	Primary DW Public Health Goal
Dieldrin	**0.11**	0.002	0.700	NA	NA	NA

Figure 7. Pesticide and PCB results for the three irrigation wells in the South Patrick Shores area.

Metals

There was a total of 14 metals included in the priority sampling of the three shallow irrigation wells in the South Patrick Shores area (Figure 8), but only eight had detectable concentration values. Beryllium, cadmium, mercury, selenium, silver, and thalium were all measured below laboratory detection limits. Seven of the metals had concentrations above MDLs, but all were detected below the PQL (Table 13). Manganese was the only metal with concentrations above the PQL in all three wells, but below the GCTLs for two of the three wells. For PS-2, the manganese concentration exceeded the GCTL of 50 µg/L (65.5 µg/L) but was well below the irrigation standards (IWSL). Manganese is naturally ubiquitous in the environment, trace amounts are essential to animal health, and the concentrations measured were representative of typical background levels for the surficial aquifer.

Table 13. Metal results for the three irrigation wells in the South Patrick Shores area. Concentration values > MDL but < PQL are italicized, values > the PQL are bolded, and values > GCTLs are highlighted in grey.

Total Metals Analysis	Irrigation Well Lab Results (µg/L)							
	PS-1	PS-2	PS-4	GCTL	IWSLs Residential Irrigation	Primary DW MCL	Primary DW Public Health Goal	Secondary DW Public Health Goal
Antimony	*3.2 I*[2]	*3.4 I*[2]	*1.9 I*[2]	*	1,400	6	6	NA
Arsenic	*1.7 I*[2]	1.3 U[1]	1.3 U[1]	*	63	10	0	NA
Chromium	1.0 U[1]	1.0 U[1]	*1.1 I*[2]	*	250	100	100	NA
Copper	*2.5 I*[2]	*3.4 I*[2]	*1.9 I*[2]	*	420,000	1,300	1,300	1,000
Lead	*1.9 I*[2]	*2.8 I*[2]	*2.8 I*[2]	*	NA	15	0	NA
Manganese	**18.9**	**65.5**	**40.2**	50	170,000	NA	NA	50
Nickel	*0.4 I*[2]	0.4 U[1]	0.4 U[1]	*	83,000	NA	NA	NA
Zinc	*15.3 I*[2]	*7.3 I*[2]	*10.5 I*[2]	*	**	NA	NA	5,000

[1] "U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample (see Appendix)

[2] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

* In Chapter 62-520, F.A.C., which is equivalent to the EPA National Primary Drinking Water Regulations

Strontium was tested for in the three shallow irrigation wells in the South Patrick Shores area (Figure 8). All three wells had results that were greater than the GCTL; and unfortunately, no irrigation screening level (IWSL) exists for a more appropriate reference. Strontium is a naturally occurring metal in groundwater, contained in certain foods, and typically seen in Florida's groundwater in the measured concentrations.

Table 14. Strontium results for the three irrigation wells in the South Patrick Shores area. Concentration values > MDL but < PQL are italicized, values > the PQL are bolded, and values > GCTLs are highlighted in grey.

Strontium Analysis	Irrigation Well Lab Results (µg/L)							
	PS-1	PS-2	PS-4	GCTL	IWSLs Residential Irrigation	IWSLs Produce Irrigation	Primary DW MCL	Primary DW Public Health Goal
Strontium	**6,740**	**10,400**	**4,340**	4,200	NA	NA	NA	NA

Figure 8. Metal results for the three irrigation wells in the South Patrick Shore area.

Dioxins and Cyanide

Dioxins were tested for in the three shallow irrigation wells in South Patrick Shores area (Figure 9). None of the Dioxin concentrations exceed the GCTL of 30 picograms per liter (pg/L), using any of the three methods included in Table 15.

Table 15. Dioxin results for the three irrigation wells in the South Patrick Shores area.

Dioxins	Irrigation Well Lab Results (pg/L)			
	PS-1	PS-2	PS-4	Groundwater Cleanup Target Level (GCTL)
1234678-HpCDD	0.509 EMPC[1],J[2],B[3]	0.708 EMPC[1],J[2],B[3]	0.978 J[2],B[3]	NA
OCDD	1.60 ND[4]	2.130 EMPC[1], J[2]	1.950 EMPC[1],J[2]	NA
Total HpCDD	1.020	0.987	0.978	NA
TEQ: ND=0	0.00000	0.00000	0.00978	30
TEQ: ND=DL/2	1.40	1.50	1.44	30
TEQ: ND=DL	2.79	3.00	2.87	30

[1]EMPC= Estimated maximum possible concentration. Indicates that a peak is identified but did not meet the method specified ion-abundance ratio

[2]J= The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL).

[3]B= Analyte found in the sample and associated method blank.

[4]ND= Non-detect

Cyanide was tested for in the three shallow irrigation wells in South Patrick Shores area (Figure 9). All results for cyanide were greater than the MDL but less than the PQL. None of the results exceed the target health levels from the EPA or the state of Florida (Table 16).

Table 16. Cyanide results for the three irrigation wells in the South Patrick Shores area (Values > the MDL but < the PQL are italicized).

General Chemistry	Irrigation Well Lab Results (mg/L)							
	PS-1	PS-2	PS-4	GCTL	IWSLs Residential Irrigation	IWSLs Produce Irrigation	Primary DW MCL	Primary DW Public Health Goal
Cyanide, Total	*0.0056 I[1]*	*0.0037 I[1]*	*0.0039 I[1]*	*	0.96	1.50	0.20	0.20

[1] "I" qualified value indicates the analytical concentration is greater than or equal to the method detection limit but less than the practical quantitation limit.

* In Chapter 62-520, F.A.C., which is equivalent to the EPA National Primary Drinking Water Regulations

Figure 9. Dioxin and Cyanide results for the three irrigation wells in the South Patrick Shores area.

Radiochemistry

Gross alpha, gross beta, radium 226, radium 228, and strontium 90 were tested for in the samples collected from the three shallow irrigation samples (Figure 10). All results for gross alpha, gross beta, radium 226, and radium 228 were less than the GCTLs (Table 17). All three samples had Strontium-90 concentrations below laboratory detection limits and are, therefore, not included in the table below. Combining both radium 226 and radium 228 still yielded concentrations below the Florida's GCTL and EPA's Implementation Guidance for Radionuclides (EPA, 2002).

Table 17. Radiochemistry results for the three irrigation wells in the South Patrick Shores area.

Radiochemistry	Irrigation Well Lab Results (pCi/l)						
	PS-1	PS-2	PS-4	GCTL	Primary DW MCL	Primary DW Public Health Goal	EPA Guidance for Radionuclides MCL (EPA 2009)
Gross Alpha	5.4 (+/- 3.4)	6.8 (+/-4.6) U[1]	4.4 (+/-2.6) U[1]	15	NA	NA	15
Gross Beta	7.6 (+/- 3.3)	17.3 (+/-4.6)	5.4 (+/-3.3) U[1]	NA	NA	NA	50 for vulnerable system
Radium 226	0.5 (+/- 0.2)	3.1 (+/- 0.5)	1.2 (+/-0.3)	NA	NA	NA	NA
Radium 228	0.8 (+/- 0.5)	0.7 (+/-0.5) U[1]	0.6 (+/-0.4) U[1]	NA	NA	NA	NA
Radium 228 and 226 Combined	1.3	3.8	1.8	*	5	0	5

[1]"U" qualified value indicates the analytical concentration is below laboratory minimum detection limits (MDLs); vary depending on parameter and sample

*In Chapter 62-520, F.A.C., which is equivalent to the EPA National Primary Drinking Water Regulations

Figure 10. Radiochemistry results for the three irrigation wells in the South Patrick Shores area.

Conclusion

A total of 50 samples were collected using a variety of methods and in several locations across Brevard County to assess the distribution of PFAS in the environment. Overall, 23 of the 50 samples had measured PFOA concentrations below laboratory detection limits, and 13 out of the 50 samples had measured PFOS concentrations below laboratory detection limits. None of the samples had PFOA concentrations exceeding the HAL of 0.07 µg/L and four (8%) of the samples exceeded the HAL for PFOS. Combining measured concentrations of PFOA and PFOS, six (12%) of the samples were at or above the HAL of 0.07 µg/L. Finally, none of the 50 samples exceeded the newly proposed IWSLs for either PFOA and PFOS. Most other PFAS sampled in this study were consistently below laboratory detection limits.

Three shallow irrigation wells in South Patrick Shores were tested for priority pollutants, including: carcinogens volatile and semi-volatile organics, pesticides, herbicides, and heavy metals, in addition to dioxins and radionuclides (representing over 150 analyzed individual constituents). Results for the expanded sampling for the three shallow irrigation well sampling locations in the South Patrick Shores area were are also compared to available standards, including GCTLs and IWSLs. Overall, the vast majority of COCs, including volatile and semi-volatile organics, pesticides, herbicides, heavy metals, dioxins and radionuclides, were non-detectable or well below the appropriate screening values. The following items were detected above Florida's GCTLs which are based upon groundwater consumption, but below IWSLs for residential irrigation use: the metal manganese and the pesticide dieldrin. Manganese is naturally ubiquitous in the environment, trace amounts are essential to animal health, and the concentrations measured were representative of typical background levels for the surficial aquifer. Dieldrin (detected at one well) is a broad-spectrum insecticide that was historically frequently used to control termites and can have potential health impacts at certain concentrations (if used for groundwater consumption). Strontium another metal was found above the Florida GCTL with no available IWSL for comparison. Strontium is a naturally occurring metal in groundwater, contained in certain foods, and typically documented in Florida's groundwater within the range of measured concentrations

A shallow groundwater well in a large conservation area such as the Enchanted Forest Sanctuary, in Titusville, was sampled to determine background levels present in non-developed areas in mainland Brevard County. This location had PFAS (PFOA + PFOS) levels below detection levels (assumed to be at or below 0.0084 µg/L). Shallow groundwater wells located in residential areas in Titusville, Suntree, Palm Bay, Cocoa Beach (push points), and Satellite Beach had PFAS levels that ranged from 0.0076 (below MDL) to 0.4938 µg/L. Deep Floridan Aquifer irrigation wells (most irrigation wells are deep to avoid salt and iron) located in residential areas in Cocoa Beach and Satellite Beach had levels that ranged from 0.0076 to 0.0084 µg/L (all below MDL). Shallow irrigation wells located in residential areas in Cocoa Beach and Satellite Beach had levels that ranged from 0.0365 to 0.1004 µg/L. Lagoon water located off Parish Park in Titusville, Rotary Park in Rockledge, Castaway Park in Palm Bay, Kars Park in Merritt Island, Cocoa Beach, PAFB, the Grand Canal in Satellite Beach, and Melbourne Beach had levels that ranged from 0.00916 (below MDL) to 0.1269 µg/L. Muck and sediment samples collected near PAFB, in the Grand Canal in Satellite Beach, and Melbourne Beach had levels that ranged from 0.00062 (below MDL) to 0.00883 µg/kg.

The results from this investigation will also be sent to the FDEP, the Florida Department of Health, the Florida Fish and Wildlife Commission, the Air Force and the USEPA for their assessment and response. Florida is coordinating with researchers at the University of Florida to develop provisional PFAS standards for irrigation water, surface water and soil that may be complete/finalized in 2019. Provisional data were used in this report to provide an initial reference point for comparison of irrigation value standards, in addition to the currently established GCTLs and USEPA's lifetime drinking water health-advisory (HAL). More studies are

needed on other pathways where PFAS can impact human health and wildlife (i.e. marine surface water standards, biota tissue standards, etc.).

References

Backe, W. J.; Day, T. C.; Field, J. A. 2013. Zwitterionic, cationic, and anionic fluorinated chemicals in aqueous film forming foam formulations and groundwater from US military bases by nonaqueous large-volume injection HPLC-MS/MS. *Environ. Sci. Technol.,* 47, 5226– 5234. DOI: 10.1021/es3034999

Barzen-Hanson, K. A.; Field. 2015. Discovery and Implications of C2 and C3 Perfluoroalkyl Sulfonates in Aqueous Film-Forming Foams and Groundwater. *J. A. Environ. Sci. Technol. Lett.*, 2, 95-99. DOI: 10.1021/acs.estlett.5b00049

Butenhoff, J. L.; Chang, S.-C.; Ehresman, D. J.; York, R. G. 2009. Evaluation of potential reproductive and developmental toxicity of potassium perfluorohexanesulfonate in Sprague Dawley rats. *Reprod. Toxicol.*, 27 (3), 331−341.

D'Hollander, W.; de Voogt, P.; De Coen, W.; Bervoets, L. 2010. Perfluorinated Substances in Human Food and Other Sources of Human Exposure. In Reviews of Environmental Contamination and Toxicology; De Voogt, P., Ed.; Springer: New York; Vol. 208, pp. 179 − 215.

Emmett, E. A.; Shofer, F. S.; Zhang, H.; Freeman, D.; Desai, C.; Shaw, L. M. 2006. Community exposure to perfluorooctanoate: relationships between serum concentrations and exposure sources. J*. Occup. Environ. Med.*, 48 (8), 759−770.

Fujii, S., Tanaka, S., Lien, N.P.H., Qiu, Y., Polprasert, C. 2007. New POPs in the water environment: distribution, bioaccumulation and treatment of perfluorinated compounds-a review paper. *J. Water Supply;* 56, 313-326.

Houtz, E.F., Higgins, C.P., Field, J.A., Sedlak, D.L. 2013. Persistence of perfluoroalkyl acid precursors in AFFF-impacted groundwater and soil. *Environ. Sci. Technol*. 47, 8187-8195.

Kissa, E. 2001. Fluorinated surfactants and repellents, 2nd ed.; Marcel Dekker, Inc.; New York; p. 615.

Kucharzyk, Katarzyna H; Darlington, Ramona; Benotti, Mark; Deeb, Rula; Hawley, Elisabeth. 2017. Novel treatment technologies for PFAS compounds: A critical review. *Journal of environmental management*; 204 (2), 757-764. DOI: 10.1016/j.jenvman.2017.08.016

Land, M.; de Wit, C. A.; Cousins, I. T.; Herzke, D.; Johansson, J.; Martin, J. W. 2015. What is the effect of phasing out long-chain per- and polyfluoroalkyl substances on the concentrations of perfluoroalkyl acids and their precursors in the environment? A systematic review protocol. *Environmental Evidence*, 4 (1), 1−13.

Landsteiner, A.; Huset, C.; Williams, A.; Johnson, J. 2014. Biomonitoring for Perfluorochemicals in a Minnesota Community with Known Drinking Water Contamination. *Journal of Environmental Health,* 77 (5), 14−19.

Place, B. J.; Field. 2012 Identification of Novel Fluorochemicals in Aqueous Film-Forming Foams Used by the US Military. *J. A. Environ. Sci. Technol.* 2012, 46, 7120– 7127. DOI: 10.1021/es301465n.

Prevedouros, K., Cousins, I.T., Buck, R.C., Korzeniowski, S.H. 2006. Sources, fate and transport of perfluorocarboxylates. *Environ. Sci. Technol.*; 40, 32-44.

University of Florida (UF). 2016. Update to the assumption for the development of irrigation water screening levels (IWSLs). Memorandum produced for the Florida Department of Environmental Protection, June 28.

University of Florida (UF). 2018a. Development of alternative soil cleanup target levels for PFOA and PFOS. Memorandum produced for the Florida Department of Environmental Protection, April 16.

University of Florida (UF). 2018b. Provisional irrigation water risk-based screening levels for PFOA and PFOS. Memorandum produced for the Florida Department of Environmental Protection, June 18.

USEPA. 2002. Implementation Guidance for Radionuclides. EPA 816-F-00-002, March 2002.

USEPA. 2016a. Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS), 19 May.

USEPA. 2016b. Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA), 19 May.

USEPA. 2016. Lifetime Health Advisories and Health Effects Support Documents for Perfluorooctanoic Acid and Perfluorooctane Sulfonate; Washington, DC, 2016.

USEPA, 2017. Regional Screening Levels. Retrieved from https://www.epa.gov/risk/regional-screeninglevels-rsls-generic-tables-june-2017.

Vestergren, R.; Cousins, I. T. 2009. Tracking the Pathways of Human Exposure to Perfluorocarboxylates. *Environ. Sci. Technol.*, 43 (15), 5565 − 5575.

Wang, Z.; Cousins, I. T.; Scheringer, M.; Buck, R. C.; Hungerbühler, K. 2014. Global emission inventories for C 4−C 14 perfluoroalkyl carboxylic acid (PFCA) homologues from 1951 to 2030, Part I: production and emissions from quantifiable sources. *Environ. Int.*, 70, 62−75.

Xindi C. Hu, David Q. Andrews, Andrew B. Lindstrom, Thomas A. Bruton, Laurel A. Schaider, Philippe Grandjean, Rainer Lohmann, Courtney C. Carignan, Arlene Blum, Simona A. Balan, Christopher P. Higgins, and Elsie M. Sunderland. 2016. Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants. *Environmental Science & Technology Letters*; 3 (10), 344-350. DOI: 10.1021/acs.estlett.6b00260

Appendix A: Analytical Results For PFAS, Priority Pollutants, and Radionuclides

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Applied Ecology Inc.

Countywide PFAS Screening

SGS Job Number: FA58292

Sampling Dates: 10/05/18 - 10/08/18

Report to:

Applied Ecology Inc
122 Fourth Ave Suite 104
Indialantic, FL 32903
clistopad@appliedecologyinc.com

ATTN: Claudia Listopad

Total number of pages in report: **63**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **5**
Section 3: Summary of Hits **7**
Section 4: Sample Results **10**
4.1: FA58292-1: GC-1 11
4.2: FA58292-2: MS-1 13
4.3: FA58292-3: BR-1 15
4.4: FA58292-4: MS-7 17
4.5: FA58292-5: BR-2 19
4.6: FA58292-6: GC-6 21
4.7: FA58292-7: MS-6 23
4.8: FA58292-8: GC-5 25
4.9: FA58292-9: MS-5 27
4.10: FA58292-10: IRL-3 29
4.11: FA58292-11: MS-8 31
4.12: FA58292-12: GC-4 33
4.13: FA58292-13: MS-4 35
4.14: FA58292-14: GC-3 37
4.15: FA58292-15: MS-3 39
4.16: FA58292-16: GC-2 41
4.17: FA58292-17: MS-2 43
4.18: FA58292-18: EB 45
Section 5: Misc. Forms **47**
5.1: Chain of Custody 48
Section 6: MS Semi-volatiles - QC Data Summaries **53**
6.1: Method Blank Summary 54
6.2: Blank Spike Summary 57
6.3: Matrix Spike Summary 60
6.4: Matrix Spike/Matrix Spike Duplicate Summary 61
6.5: Duplicate Summary 63

SGS North America Inc.

Sample Summary

Applied Ecology Inc.

Job No: FA58292

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA58292-1	10/05/18	09:09	KDDH	10/10/18	AQ	Surface Water	GC-1
FA58292-2	10/05/18	09:30	KDDH	10/10/18	SO	Soil	MS-1
FA58292-3	10/05/18	11:55	KDDH	10/10/18	AQ	Surface Water	BR-1
FA58292-4	10/05/18	12:02	KDDH	10/10/18	SO	Soil	MS-7
FA58292-5	10/05/18	12:44	KDDH	10/10/18	AQ	Surface Water	BR-2
FA58292-6	10/05/18	15:35	KDDH	10/10/18	AQ	Surface Water	GC-6
FA58292-7	10/05/18	15:40	KDDH	10/10/18	SO	Soil	MS-6
FA58292-8	10/05/18	16:24	KDDH	10/10/18	AQ	Surface Water	GC-5
FA58292-9	10/05/18	16:32	KDDH	10/10/18	SO	Soil	MS-5
FA58292-10	10/08/18	13:35	KDDH	10/10/18	AQ	Surface Water	IRL-3
FA58292-11	10/08/18	13:41	KDDH	10/10/18	SO	Soil	MS-8
FA58292-12	10/05/18	17:00	KDDH	10/10/18	AQ	Surface Water	GC-4
FA58292-13	10/05/18	17:05	KDDH	10/10/18	SO	Soil	MS-4

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Applied Ecology Inc.

Job No: FA58292

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA58292-14	10/05/18	17:30	KDDH	10/10/18	AQ	Surface Water	GC-3
FA58292-15	10/05/18	17:39	KDDH	10/10/18	SO	Soil	MS-3
FA58292-16	10/05/18	18:06	KDDH	10/10/18	AQ	Surface Water	GC-2
FA58292-17	10/05/18	18:11	KDDH	10/10/18	SO	Soil	MS-2
FA58292-18	10/05/18	08:45	KDDH	10/10/18	AQ	Equipment Blank	EB

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Applied Ecology Inc. **Job No:** FA58292

Site: Countywide PFAS Screening **Report Date:** 10/29/2018 2:36:40

18 Sample(s) were collected between 10/05/2018 and 10/08/2018 and were received at SGS North America Inc - Orlando on 10/10/2018 properly preserved, at 4.4 Deg. C and intact. These Samples received an SGS Orlando job number of FA58292. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP72186

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58292-10DUP, FA58292-5MS were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluoroheptanesulfonic acid, Perfluorononanesulfonic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid are outside control limits. % Recovery for Matrix Spike and % RPD for Duplicate were within control limits.

Sample(s) FA58292-16 have surrogates outside control limits.

FA58292-5 for Perfluorononanesulfonic acid: Associated BS recovery outside control limits.

FA58292-5 for Perfluoroheptanesulfonic acid: Associated BS recovery outside control limits.

FA58292-5 for Perfluorononanoic acid: Associated BS recovery outside control limits.

FA58292-5 for Perfluorooctanesulfonic acid: Associated BS recovery outside control limits.

FA58292-5: Associated BS recovery outside control limits. Insufficient sample for re-extraction.

FA58292-10 for Perfluoroheptanesulfonic acid: Associated BS recovery outside control limits.

FA58292-10 for Perfluorononanesulfonic acid: Associated BS recovery outside control limits.

FA58292-10 for Perfluorononanoic acid: Associated BS recovery outside control limits.

FA58292-10 for Perfluorooctanesulfonic acid: Associated BS recovery outside control limits.

FA58292-10: Associated BS recovery outside control limits. Insufficient sample for re-extraction.

FA58292-14: Associated BS recovery outside control limits. Insufficient sample for re-extraction, inadvertently spiked.

FA58292-14 for Perfluoroheptanesulfonic acid: Associated BS recovery outside control limits.

FA58292-14 for Perfluorononanesulfonic acid: Associated BS recovery outside control limits.

FA58292-14 for Perfluorooctanesulfonic acid: Associated BS recovery outside control limits.

FA58292-14 for Perfluorononanoic acid: Associated BS recovery outside control limits.

FA58292-16 for Perfluorooctanesulfonic acid: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.

FA58292-16 for Perfluorononanesulfonic acid: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.

FA58292-16 for Perfluoroheptanesulfonic acid: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.

FA58292-16 for Perfluorononanoic acid: Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.

Matrix: AQ **Batch ID:** OP72243

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58416-24MS, FA58416-24MSD were used as the QC samples indicated.

Sample(s) FA58292-16 have surrogates outside control limits.

FA58292-16: Confirmation run.

FA58292-16 for d5-NEtFOSAA: Outside control limits.

FA58292-16 for 13C2-PFDA: Outside control limits.

FA58292-16 for 13C2-PFHxA: Outside control limits.

MS Semi-volatiles By Method EPA 537 MOD

Matrix: SO **Batch ID:** OP72146

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58290-1MS, FA58290-1MSD were used as the QC samples indicated.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN80032

Sample(s) FA58310-1DUP were used as the QC samples for Solids, Percent.

Matrix: SO **Batch ID:** GN80038

Sample(s) FA58247-1DUP were used as the QC samples for Solids, Percent.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA58292
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/05/18 thru 10/08/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA58292-1	**GC-1**					
Perfluorooctanoic acid		0.00530 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0142 I	0.015	0.0038	ug/l	EPA 537 MOD
FA58292-2	**MS-1**					
Perfluorooctanesulfonic acid		4.39 I	5.4	1.4	ug/kg	EPA 537 MOD
FA58292-3	**BR-1**					
Perfluorobutanoic acid		0.00915 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoropentanoic acid		0.00875 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.00857 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00777 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0148 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0276	0.015	0.0038	ug/l	EPA 537 MOD
FA58292-4	**MS-7**					
No hits reported in this sample.						
FA58292-5	**BR-2**					
Perfluorobutanoic acid [a]		0.0107 I	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorohexanoic acid [a]		0.00862 I	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [a]		0.00843 I	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.0164 I	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [b]		0.0275	0.017	0.0042	ug/l	EPA 537 MOD
FA58292-6	**GC-6**					
Perfluorobutanoic acid		0.00772 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00572 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.00777 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0141 I	0.015	0.0038	ug/l	EPA 537 MOD
FA58292-7	**MS-6**					
No hits reported in this sample.						
FA58292-8	**GC-5**					
Perfluorooctanoic acid		0.00542 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0128 I	0.015	0.0038	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA58292
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/05/18 thru 10/08/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA58292-9	**MS-5**					
Perfluorooctanesulfonic acid		2.54 I	3.4	0.85	ug/kg	EPA 537 MOD
FA58292-10	**IRL-3**					
Perfluorooctanesulfonic acid [b]		0.00496 I	0.017	0.0042	ug/l	EPA 537 MOD
FA58292-11	**MS-8**					
No hits reported in this sample.						
FA58292-12	**GC-4**					
Perfluorohexanoic acid		0.00856 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00606 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0156	0.015	0.0038	ug/l	EPA 537 MOD
FA58292-13	**MS-4**					
Perfluorooctanesulfonic acid		6.17 I	8.0	2.0	ug/kg	EPA 537 MOD
FA58292-14	**GC-3**					
Perfluorohexanoic acid [c]		0.00904 I	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid [c]		0.00586 I	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [d]		0.0117 I	0.017	0.0042	ug/l	EPA 537 MOD
FA58292-15	**MS-3**					
Perfluorooctanesulfonic acid		7.53	5.2	1.3	ug/kg	EPA 537 MOD
FA58292-16	**GC-2**					
Perfluorohexanoic acid		0.00841 I	0.017	0.0083	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00676 I	0.017	0.0042	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [e]		0.0157 I	0.017	0.0042	ug/l	EPA 537 MOD
FA58292-17	**MS-2**					
Perfluorooctanesulfonic acid		2.16 I	3.1	0.77	ug/kg	EPA 537 MOD

Summary of Hits

Job Number: FA58292
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/05/18 thru 10/08/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method

FA58292-18 **EB**

No hits reported in this sample.

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction.
(b) Associated BS recovery outside control limits. Insufficient sample for re-extraction. Associated BS recovery outside control limits.
(c) Associated BS recovery outside control limits. Insufficient sample for re-extraction, inadvertently spiked.
(d) Associated BS recovery outside control limits. Insufficient sample for re-extraction, inadvertently spiked. Associated BS recovery outside control limits.
(e) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GC-1		
Lab Sample ID:	FA58292-1	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54775.D	1	10/26/18 17:48	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00530	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0142	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-1		
Lab Sample ID:	FA58292-1	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	87%		62-128%
	d5-EtFOSAA	82%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-1		
Lab Sample ID:	FA58292-2	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	18.4
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54129.D	1	10/15/18 15:22	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	2.01 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.4 U	5.4	1.4	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.1 U	5.4	1.1	ug/kg	
307-24-4	Perfluorohexanoic acid	1.1 U	5.4	1.1	ug/kg	
375-85-9	Perfluoroheptanoic acid	1.4 U	5.4	1.4	ug/kg	
335-67-1	Perfluorooctanoic acid	1.4 U	5.4	1.4	ug/kg	
375-95-1	Perfluorononanoic acid	1.4 U	5.4	1.4	ug/kg	
335-76-2	Perfluorodecanoic acid	1.4 U	5.4	1.4	ug/kg	
2058-94-8	Perfluoroundecanoic acid	1.4 U	5.4	1.4	ug/kg	
307-55-1	Perfluorododecanoic acid	1.4 U	5.4	1.4	ug/kg	
72629-94-8	Perfluorotridecanoic acid	1.4 U	5.4	1.4	ug/kg	
376-06-7	Perfluorotetradecanoic acid	1.4 U	5.4	1.4	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	4.39	5.4	1.4	ug/kg	I
68259-12-1	Perfluorononanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	1.4 U	5.4	1.4	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	1.4 U	5.4	1.4	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	5.4 U	14	5.4	ug/kg	
2991-50-6	EtFOSAA	5.4 U	14	5.4	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	5.4 U	14	5.4	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	5.4 U	14	5.4	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-1		
Lab Sample ID:	FA58292-2	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	18.4
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	5.4 U	14	5.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%		60-124%
	13C2-PFDA	103%		61-134%
	d5-EtFOSAA	99%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	FA58292-3	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54776.D	1	10/26/18 18:08	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.00915	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.00875	0.015	0.0077	ug/l	I
307-24-4	Perfluorohexanoic acid	0.00857	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00777	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0148	0.015	0.0077	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0276	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	FA58292-3	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%		61-134%
	13C2-PFDA	77%		62-128%
	d5-EtFOSAA	72%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-7		
Lab Sample ID:	FA58292-4	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	79.9
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54130.D	1	10/15/18 15:42	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	2.00 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.31 U	1.3	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.25 U	1.3	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	0.25 U	1.3	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.31 U	1.3	0.31	ug/kg	
335-67-1	Perfluorooctanoic acid	0.31 U	1.3	0.31	ug/kg	
375-95-1	Perfluorononanoic acid	0.31 U	1.3	0.31	ug/kg	
335-76-2	Perfluorodecanoic acid	0.31 U	1.3	0.31	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.31 U	1.3	0.31	ug/kg	
307-55-1	Perfluorododecanoic acid	0.31 U	1.3	0.31	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.31 U	1.3	0.31	ug/kg	
376-06-7	Perfluorotetradecanoic acid	0.31 U	1.3	0.31	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.31 U	1.3	0.31	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.31 U	1.3	0.31	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	1.3 U	3.1	1.3	ug/kg	
2991-50-6	EtFOSAA	1.3 U	3.1	1.3	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	1.3 U	3.1	1.3	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.3 U	3.1	1.3	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-7		
Lab Sample ID:	FA58292-4	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	79.9
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	1.3 U	3.1	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	91%		60-124%
	13C2-PFDA	111%		61-134%
	d5-EtFOSAA	103%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	FA58292-5	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q54258.D	1	10/17/18 11:18	NAF	10/13/18 11:00	OP72186	SQ1254
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0107	0.017	0.0083	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.00862	0.017	0.0083	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.00843	0.017	0.0042	ug/l	I
375-95-1	Perfluorononanoic acid [b]	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0164	0.017	0.0083	ug/l	I
375-92-8	Perfluoroheptanesulfonic aci [b]	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [b]	0.0275	0.017	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid [b]	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	FA58292-5	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	100%		61-134%
	13C2-PFDA	116%		62-128%
	d5-EtFOSAA	108%		57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction.
(b) Associated BS recovery outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-6		
Lab Sample ID:	FA58292-6	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54777.D	1	10/26/18 18:29	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.00772	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00572	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00777	0.015	0.0077	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0141	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-6		
Lab Sample ID:	FA58292-6	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	82%		61-134%
	13C2-PFDA	83%		62-128%
	d5-EtFOSAA	77%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-6		
Lab Sample ID:	FA58292-7	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	58.5
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54134.D	1	10/15/18 17:01	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.44 U	1.7	0.44	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.35 U	1.7	0.35	ug/kg	
307-24-4	Perfluorohexanoic acid	0.35 U	1.7	0.35	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.44 U	1.7	0.44	ug/kg	
335-67-1	Perfluorooctanoic acid	0.44 U	1.7	0.44	ug/kg	
375-95-1	Perfluorononanoic acid	0.44 U	1.7	0.44	ug/kg	
335-76-2	Perfluorodecanoic acid	0.44 U	1.7	0.44	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.44 U	1.7	0.44	ug/kg	
307-55-1	Perfluorododecanoic acid	0.44 U	1.7	0.44	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.44 U	1.7	0.44	ug/kg	
376-06-7	Perfluorotetradecanoic acid	0.44 U	1.7	0.44	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.44 U	1.7	0.44	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.44 U	1.7	0.44	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	1.7 U	4.4	1.7	ug/kg	
2991-50-6	EtFOSAA	1.7 U	4.4	1.7	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	1.7 U	4.4	1.7	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.7 U	4.4	1.7	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-6		
Lab Sample ID:	FA58292-7	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	58.5
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	1.7 U	4.4	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	91%		60-124%
	13C2-PFDA	114%		61-134%
	d5-EtFOSAA	110%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-5		
Lab Sample ID:	FA58292-8	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54778.D	1	10/26/18 18:49	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00542	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0128	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-5		
Lab Sample ID:	FA58292-8	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%		61-134%
	13C2-PFDA	80%		62-128%
	d5-EtFOSAA	73%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-5		
Lab Sample ID:	FA58292-9	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	29.6
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54135.D	1	10/15/18 17:21	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	1.99 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.85 U	3.4	0.85	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.68 U	3.4	0.68	ug/kg	
307-24-4	Perfluorohexanoic acid	0.68 U	3.4	0.68	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.85 U	3.4	0.85	ug/kg	
335-67-1	Perfluorooctanoic acid	0.85 U	3.4	0.85	ug/kg	
375-95-1	Perfluorononanoic acid	0.85 U	3.4	0.85	ug/kg	
335-76-2	Perfluorodecanoic acid	0.85 U	3.4	0.85	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.85 U	3.4	0.85	ug/kg	
307-55-1	Perfluorododecanoic acid	0.85 U	3.4	0.85	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.85 U	3.4	0.85	ug/kg	
376-06-7	Perfluorotetradecanoic acid	0.85 U	3.4	0.85	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	2.54	3.4	0.85	ug/kg	I
68259-12-1	Perfluorononanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.85 U	3.4	0.85	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.85 U	3.4	0.85	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	3.4 U	8.5	3.4	ug/kg	
2991-50-6	EtFOSAA	3.4 U	8.5	3.4	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	3.4 U	8.5	3.4	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	3.4 U	8.5	3.4	ug/kg	

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-5		
Lab Sample ID:	FA58292-9	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	29.6
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	3.4 U	8.5	3.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	80%		60-124%
	13C2-PFDA	99%		61-134%
	d5-EtFOSAA	99%		59-140%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-3		
Lab Sample ID:	FA58292-10	**Date Sampled:**	10/08/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q54248.D	1	10/17/18 07:54	NAF	10/13/18 11:00	OP72186	SQ1254
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0083 U	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid [b]	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic aci [b]	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [b]	0.00496	0.017	0.0042	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [b]	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-3		
Lab Sample ID:	FA58292-10	**Date Sampled:**	10/08/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	104%		61-134%
	13C2-PFDA	109%		62-128%
	d5-EtFOSAA	108%		57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction.
(b) Associated BS recovery outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-8		
Lab Sample ID:	FA58292-11	**Date Sampled:**	10/08/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	28.3
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54122.D	1	10/15/18 13:06	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	2.04 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.87 U	3.5	0.87	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.69 U	3.5	0.69	ug/kg	
307-24-4	Perfluorohexanoic acid	0.69 U	3.5	0.69	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.87 U	3.5	0.87	ug/kg	
335-67-1	Perfluorooctanoic acid	0.87 U	3.5	0.87	ug/kg	
375-95-1	Perfluorononanoic acid	0.87 U	3.5	0.87	ug/kg	
335-76-2	Perfluorodecanoic acid	0.87 U	3.5	0.87	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.87 U	3.5	0.87	ug/kg	
307-55-1	Perfluorododecanoic acid	0.87 U	3.5	0.87	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.87 U	3.5	0.87	ug/kg	
376-06-7	Perfluorotetradecanoic acid	0.87 U	3.5	0.87	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.87 U	3.5	0.87	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.87 U	3.5	0.87	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	3.5 U	8.7	3.5	ug/kg	
2991-50-6	EtFOSAA	3.5 U	8.7	3.5	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	3.5 U	8.7	3.5	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	3.5 U	8.7	3.5	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-8		
Lab Sample ID:	FA58292-11	**Date Sampled:**	10/08/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	28.3
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	3.5 U	8.7	3.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	84%		60-124%
	13C2-PFDA	107%		61-134%
	d5-EtFOSAA	106%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-4		
Lab Sample ID:	FA58292-12	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54779.D	1	10/26/18 19:10	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.00856	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00606	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0156	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-4		
Lab Sample ID:	FA58292-12	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	89%		61-134%
	13C2-PFDA	83%		62-128%
	d5-EtFOSAA	74%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-4		
Lab Sample ID:	FA58292-13	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	12.5
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54136.D	1	10/15/18 17:41	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	1.99 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	2.0 U	8.0	2.0	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.6 U	8.0	1.6	ug/kg	
307-24-4	Perfluorohexanoic acid	1.6 U	8.0	1.6	ug/kg	
375-85-9	Perfluoroheptanoic acid	2.0 U	8.0	2.0	ug/kg	
335-67-1	Perfluorooctanoic acid	2.0 U	8.0	2.0	ug/kg	
375-95-1	Perfluorononanoic acid	2.0 U	8.0	2.0	ug/kg	
335-76-2	Perfluorodecanoic acid	2.0 U	8.0	2.0	ug/kg	
2058-94-8	Perfluoroundecanoic acid	2.0 U	8.0	2.0	ug/kg	
307-55-1	Perfluorododecanoic acid	2.0 U	8.0	2.0	ug/kg	
72629-94-8	Perfluorotridecanoic acid	2.0 U	8.0	2.0	ug/kg	
376-06-7	Perfluorotetradecanoic acid	2.0 U	8.0	2.0	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	6.17	8.0	2.0	ug/kg	I
68259-12-1	Perfluorononanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	2.0 U	8.0	2.0	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	2.0 U	8.0	2.0	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	8.0 U	20	8.0	ug/kg	
2991-50-6	EtFOSAA	8.0 U	20	8.0	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	8.0 U	20	8.0	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	8.0 U	20	8.0	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-4		
Lab Sample ID:	FA58292-13	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	12.5
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	8.0 U	20	8.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%		60-124%
	13C2-PFDA	107%		61-134%
	d5-EtFOSAA	108%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-3		
Lab Sample ID:	FA58292-14	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q54251.D	1	10/17/18 08:59	NAF	10/13/18 11:00	OP72186	SQ1254
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.00904	0.017	0.0083	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.00586	0.017	0.0042	ug/l	I
375-95-1	Perfluorononanoic acid [b]	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic aci [b]	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [b]	0.0117	0.017	0.0042	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [b]	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-3		
Lab Sample ID:	FA58292-14	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	99%		61-134%
	13C2-PFDA	116%		62-128%
	d5-EtFOSAA	106%		57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction, inadvertently spiked.
(b) Associated BS recovery outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-3		
Lab Sample ID:	FA58292-15	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	19.4
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54121.D	1	10/15/18 12:46	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	1.97 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.3 U	5.2	1.3	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.0 U	5.2	1.0	ug/kg	
307-24-4	Perfluorohexanoic acid	1.0 U	5.2	1.0	ug/kg	
375-85-9	Perfluoroheptanoic acid	1.3 U	5.2	1.3	ug/kg	
335-67-1	Perfluorooctanoic acid	1.3 U	5.2	1.3	ug/kg	
375-95-1	Perfluorononanoic acid	1.3 U	5.2	1.3	ug/kg	
335-76-2	Perfluorodecanoic acid	1.3 U	5.2	1.3	ug/kg	
2058-94-8	Perfluoroundecanoic acid	1.3 U	5.2	1.3	ug/kg	
307-55-1	Perfluorododecanoic acid	1.3 U	5.2	1.3	ug/kg	
72629-94-8	Perfluorotridecanoic acid	1.3 U	5.2	1.3	ug/kg	
376-06-7	Perfluorotetradecanoic acid	1.3 U	5.2	1.3	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	7.53	5.2	1.3	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	1.3 U	5.2	1.3	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	1.3 U	5.2	1.3	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	5.2 U	13	5.2	ug/kg	
2991-50-6	EtFOSAA	5.2 U	13	5.2	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	5.2 U	13	5.2	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	5.2 U	13	5.2	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-3		
Lab Sample ID:	FA58292-15	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	19.4
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	5.2 U	13	5.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	86%		60-124%
	13C2-PFDA	103%		61-134%
	d5-EtFOSAA	101%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-2		
Lab Sample ID:	FA58292-16	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54255.D	1	10/17/18 10:18	NAF	10/13/18 11:00	OP72186	SQ1254
Run #2 [a]	Q54780.D	1	10/26/18 19:30	NAF	10/18/18 08:30	OP72243	SQ1263

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	130 ml	1.0 ml

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.00841	0.017	0.0083	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.00676	0.017	0.0042	ug/l	I
375-95-1	Perfluorononanoic acid [b]	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic aci [b]	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid [b]	0.0157	0.017	0.0042	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [b]	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GC-2		
Lab Sample ID:	FA58292-16	**Date Sampled:**	10/05/18
Matrix:	AQ - Surface Water	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	91%	52% c	61-134%
	13C2-PFDA	106%	47% c	62-128%
	d5-EtFOSAA	93%	43% c	57-135%

(a) Confirmation run.
(b) Associated BS recovery outside control limits. Sample confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-2		
Lab Sample ID:	FA58292-17	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	32.5
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54137.D	1	10/15/18 18:01	NAF	10/11/18 09:00	OP72146	SQ1253
Run #2							

	Initial Weight	Final Volume
Run #1	1.99 g	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.77 U	3.1	0.77	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.62 U	3.1	0.62	ug/kg	
307-24-4	Perfluorohexanoic acid	0.62 U	3.1	0.62	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.77 U	3.1	0.77	ug/kg	
335-67-1	Perfluorooctanoic acid	0.77 U	3.1	0.77	ug/kg	
375-95-1	Perfluorononanoic acid	0.77 U	3.1	0.77	ug/kg	
335-76-2	Perfluorodecanoic acid	0.77 U	3.1	0.77	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.77 U	3.1	0.77	ug/kg	
307-55-1	Perfluorododecanoic acid	0.77 U	3.1	0.77	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.77 U	3.1	0.77	ug/kg	
376-06-7	Perfluorotetradecanoic acid	0.77 U	3.1	0.77	ug/kg	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	2.16	3.1	0.77	ug/kg	I
68259-12-1	Perfluorononanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.77 U	3.1	0.77	ug/kg	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.77 U	3.1	0.77	ug/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	3.1 U	7.7	3.1	ug/kg	
2991-50-6	EtFOSAA	3.1 U	7.7	3.1	ug/kg	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	3.1 U	7.7	3.1	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	3.1 U	7.7	3.1	ug/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MS-2		
Lab Sample ID:	FA58292-17	**Date Sampled:**	10/05/18
Matrix:	SO - Soil	**Date Received:**	10/10/18
Method:	EPA 537 MOD IN HOUSE	**Percent Solids:**	32.5
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	3.1 U	7.7	3.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	87%		60-124%
	13C2-PFDA	107%		61-134%
	d5-EtFOSAA	109%		59-140%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB		
Lab Sample ID:	FA58292-18	**Date Sampled:**	10/05/18
Matrix:	AQ - Equipment Blank	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q54781.D	1	10/26/18 19:50	NAF	10/18/18 08:30	OP72243	SQ1263
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB		
Lab Sample ID:	FA58292-18	**Date Sampled:**	10/05/18
Matrix:	AQ - Equipment Blank	**Date Received:**	10/10/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	99%		61-134%
	13C2-PFDA	78%		62-128%
	d5-EtFOSAA	68%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS North America Inc - Orlando

Chain of Custody

FA58292

SGS - ORLANDO JOB # : PAGE_____OF_____

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc.
Address: 122 Fourth Ave
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: Hayleigh Douglass Sampler 2: Danielle Huffner

Project Information

Project Name: Countywide PFAS Sampling
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

EPA 537 Mod

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LAB USE ONLY
	EB (bottle 1 and 2)	10/5/18	8:45	KD	WW	2		2								
1	GC-1	10/5/18	9:09	DH	SW	2		2								
2	MS-1 *	10/5/18	9:30	KD	SO	2		2								
3	BR-1	10/5/18	11:55	DH	SW	2		2								
4	MS-7	10/5/18	12:02	KD	SO	1		1								
5	BR-2	10/5/18	12:44	DH	SW	2		2								
6	GC-6	10/5/18	15:35	DH	SW	2		2								
7	MS-6 *	10/5/18	15:40	KD	SO	2		2								
8	GC-5	10/5/18	16:24	KD	SW	2		2								
9	MS-5 *	10/5/18	16:32	DH	SO	2		2								

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

(*)sample noted with * have sample bottle + sample bag.

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	[signature] / AET	10/9/18 1303	2 [signature]	3 [signature]	10-9-18 1630	4 [signature] 10/10/18 915
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

10-9-18 1205

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 4.4, 4.0, 4.0

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

FA58292

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE_____OF_____

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc
Address: 122 Fourth Ave.
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: Danielle Huffner Sampler 2: Hayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

EPA 537 Mod

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNAA	DI WATER	MEOH	EPA 537 Mod	LAB USE ONLY
10	IRL-3	10/8/18	13:35	DH	GW	2		2								X	
11	MS-8 *	10/8/18	13:41	DH	SO	2		2								X	

Turnaround Time (Business days)

Approved By: / Date:

- 10 Day (Business)
- 7 Day
- 5 Day
- 3 Day *RUSH*
- 2 Day *RUSH*
- 1 Day *RUSH*
- Other

Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

Comments / Remarks

(*) sample noted with * have sample bottle + sample bag

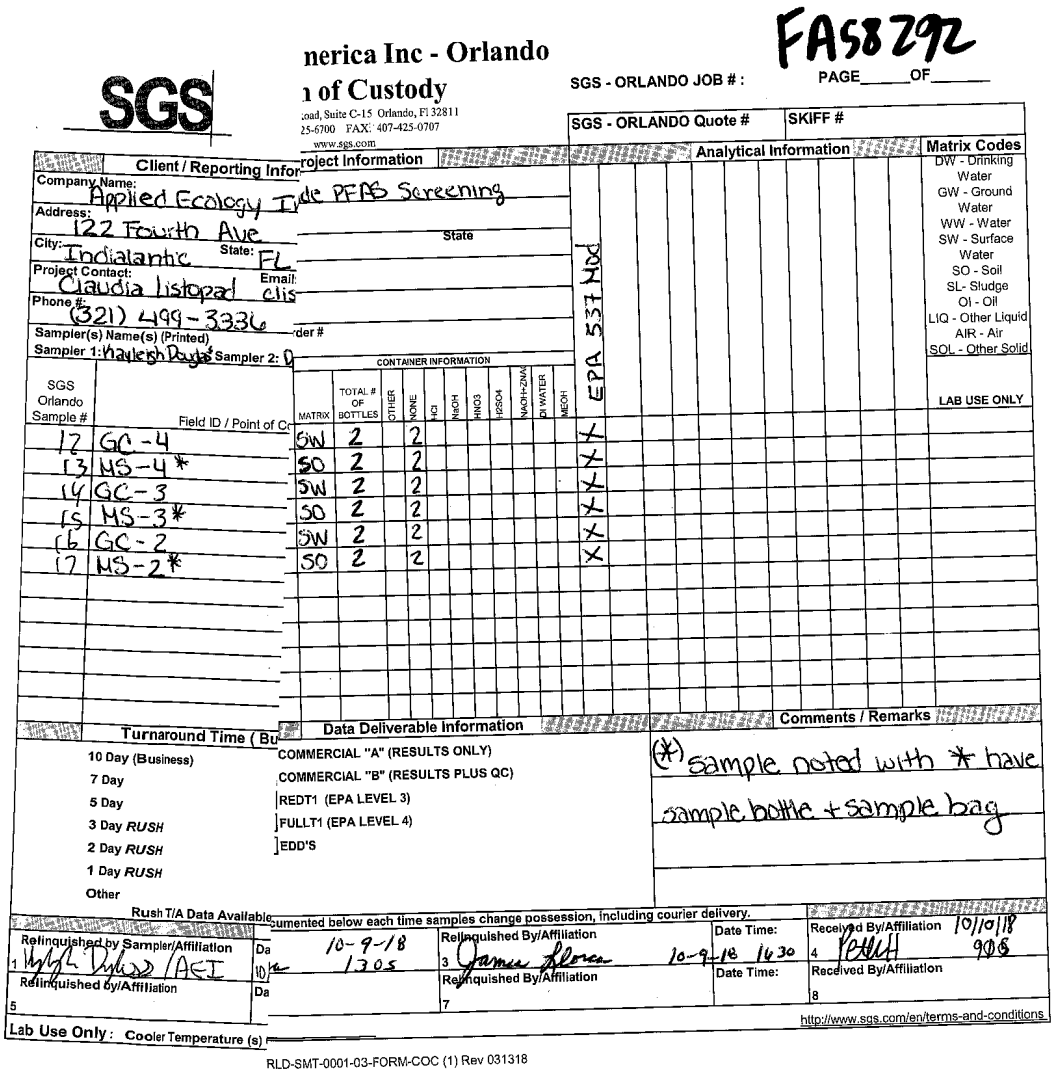
Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Date Time:
1	[illegible] /AEI	10/9/18 13:03	2 James Flores	10-9-18 1305
3	James Flores	10-9-18 1630	4 [illegible]	10/10/18 915
5	Relinquished By/Affiliation	Date Time:	6 Received By/Affiliation	
7	Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation	

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318



nerica Inc - Orlando

1 of Custody

oad, Suite C-15 Orlando, Fl 32811

25-6700 FAX: 407-425-0707

www.sgs.com

FA58292

SGS - ORLANDO JOB # :

PAGE_____OF_____

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Infor

Company Name: Applied Ecology I

Address: 122 Fourth Ave

City: Indialantic State: FL

Project Contact: Claudia Listopad Email: clis

Phone #: (321) 499-3336

Sampler(s) Name(s) (Printed)

Sampler 1: Hayleigh Davis Sampler 2:

roject Information

de PFAS Screening

State

der #

Analytical Information

EPA 537 Mod

Matrix Codes

DW - Drinking Water

GW - Ground Water

WW - Water

SW - Surface Water

SO - Soil

SL- Sludge

OI - Oil

LIQ - Other Liquid

AIR - Air

SOL - Other Solid

LAB USE ONLY

CONTAINER INFORMATION

SGS Orlando Sample #	Field ID / Point of C	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	EPA 537 Mod
12	GC-4	SW	2		2								X
13	MS-4*	SO	2		2								X
14	GC-3	SW	2		2								X
15	MS-3*	SO	2		2								X
16	GC-2	SW	2		2								X
17	MS-2*	SO	2		2								X

Turnaround Time (Bu

10 Day (Business)

7 Day

5 Day

3 Day *RUSH*

2 Day *RUSH*

1 Day *RUSH*

Other

Rush T/A Data Available

Data Deliverable Information

COMMERCIAL "A" (RESULTS ONLY)

COMMERCIAL "B" (RESULTS PLUS QC)

REDT1 (EPA LEVEL 3)

FULLT1 (EPA LEVEL 4)

EDD'S

Comments / Remarks

(*) sample noted with * have sample bottle + sample bag

cumented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Da	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	[illegible] /AEI	10-9-18 1305	3 James Flores	10-9-18 1430	4 [illegible] 10/10/18 905
5	Relinquished by/Affiliation	Da	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only: Cooler Temperature (s)

http://www.sgs.com/en/terms-and-conditions

RLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS Sample Receipt Summary

Job Number: FA58292 **Client:** APPLIED ECOLOGY INC. **Project:** COUNTYWIDE PFAS SAMPLING

Date / Time Received: 10/10/2018 9:15:00 AM **Delivery Method:** ALSE **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 3

Cooler Temps (Raw Measured) °C: Cooler 1: (4.6); Cooler 2: (4.2); Cooler 3: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.4); Cooler 2: (4.0); Cooler 3: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE ID "EB" WAS NOT RECEIVED.
UPDATE: 10/10/18 16:40 'EB' WAS LOCATED AND ADDED TO JOB, (FA58292-18)

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 10/10/2018 9:15:00 A Reviewer: _____ Date: _____

Responded to by: Andrea Colby

Response Date: 10/10/18

Response:

The EB sample was located and logged in as FA58292-18. The ID was written on the top of the container lids.

FA58292: Chain of Custody
Page 5 of 5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72146-MB	Q54086.D	1	10/13/18	NAF	10/11/18	OP72146	SQ1252

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-2, FA58292-4, FA58292-7, FA58292-9, FA58292-11, FA58292-13, FA58292-15, FA58292-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.25	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.20	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.20	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.25	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	2.5	1.0	ug/kg	
2991-50-6	EtFOSAA	ND	2.5	1.0	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	2.5	1.0	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.5	1.0	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.5	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	93%	60-124%
	13C2-PFDA	101%	61-134%
	d5-EtFOSAA	101%	59-140%

Method Blank Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72186-MB	Q54236.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-5, FA58292-10, FA58292-14, FA58292-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0083	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
754-91-6	PFOSA	ND	0.017	0.0083	ug/l	
2355-31-9	MeFOSAA	ND	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	ND	0.042	0.017	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	104%	61-134%
	13C2-PFDA	66%	62-128%
	d5-EtFOSAA	58%	57-135%

Method Blank Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72243-MB	Q54774.D	1	10/26/18	NAF	10/18/18	OP72243	SQ1263

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-1, FA58292-3, FA58292-6, FA58292-8, FA58292-12, FA58292-18

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	100%	61-134%
	13C2-PFDA	92%	62-128%
	d5-EtFOSAA	73%	57-135%

Blank Spike Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72146-BS	Q54085.D	1	10/13/18	NAF	10/11/18	OP72146	SQ1252

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-2, FA58292-4, FA58292-7, FA58292-9, FA58292-11, FA58292-13, FA58292-15, FA58292-17

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.68	97	50-144
2706-90-3	Perfluoropentanoic acid	10	9.51	95	57-139
307-24-4	Perfluorohexanoic acid	10	8.27	83	63-130
375-85-9	Perfluoroheptanoic acid	10	9.87	99	63-122
335-67-1	Perfluorooctanoic acid	10	9.63	96	71-128
375-95-1	Perfluorononanoic acid	10	8.87	89	66-124
335-76-2	Perfluorodecanoic acid	10	9.22	92	68-127
2058-94-8	Perfluoroundecanoic acid	10	10.2	102	61-137
307-55-1	Perfluorododecanoic acid	10	10.2	102	71-126
72629-94-8	Perfluorotridecanoic acid	10	10.7	107	55-137
376-06-7	Perfluorotetradecanoic acid	10	8.72	87	51-131
375-73-5	Perfluorobutanesulfonic acid	8.85	7.72	87	70-135
2706-91-4	Perfluoropentanesulfonic acid	9.4	8.02	85	70-130
355-46-4	Perfluorohexanesulfonic acid	9.1	8.30	91	72-129
375-92-8	Perfluoroheptanesulfonic acid	9.5	9.69	102	62-129
1763-23-1	Perfluorooctanesulfonic acid	9.25	9.90	107	69-125
68259-12-1	Perfluorononanesulfonic acid	9.6	9.17	96	70-130
335-77-3	Perfluorodecanesulfonic acid	9.65	8.48	88	63-141
754-91-6	PFOSA	10	9.16	92	60-140
2355-31-9	MeFOSAA	10	10.4	104	71-124
2991-50-6	EtFOSAA	10	9.86	99	63-129
757124-72-4	4:2 Fluorotelomer sulfonate	9.35	9.32	100	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	9.86	104	76-131
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	10.1	105	60-138

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	87%	60-124%
	13C2-PFDA	96%	61-134%
	d5-EtFOSAA	97%	59-140%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72186-BS	Q54254.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-5, FA58292-10, FA58292-14, FA58292-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.167	0.172	103	20-120
2706-90-3	Perfluoropentanoic acid	0.167	0.173	104	40-131
307-24-4	Perfluorohexanoic acid	0.167	0.151	91	63-146
375-85-9	Perfluoroheptanoic acid	0.167	0.179	107	71-138
335-67-1	Perfluorooctanoic acid	0.167	0.158	95	74-137
375-95-1	Perfluorononanoic acid	0.167	0.118	71*	76-140
335-76-2	Perfluorodecanoic acid	0.167	0.108	65	65-148
2058-94-8	Perfluoroundecanoic acid	0.167	0.115	69	57-138
307-55-1	Perfluorododecanoic acid	0.167	0.123	74	58-118
72629-94-8	Perfluorotridecanoic acid	0.167	0.143	86	52-120
376-06-7	Perfluorotetradecanoic acid	0.167	0.126	76	49-122
375-73-5	Perfluorobutanesulfonic acid	0.147	0.140	95	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.157	0.138	88	70-130
355-46-4	Perfluorohexanesulfonic acid	0.152	0.123	81	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.158	0.0995	63*	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.0932	60*	70-134
68259-12-1	Perfluorononanesulfonic acid	0.16	0.0939	59*	70-130
335-77-3	Perfluorodecanesulfonic acid	0.161	0.100	62	56-127
754-91-6	PFOSA	0.167	0.115	69	40-142
2355-31-9	MeFOSAA	0.167	0.112	67	57-128
2991-50-6	EtFOSAA	0.167	0.111	67	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.156	0.165	106	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.158	0.150	95	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.121	76	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	106%	61-134%
	13C2-PFDA	74%	62-128%
	d5-EtFOSAA	67%	57-135%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72243-BS	Q54773.D	1	10/26/18	NAF	10/18/18	OP72243	SQ1263

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-1, FA58292-3, FA58292-6, FA58292-8, FA58292-12, FA58292-18

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.147	96	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.150	97	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.134	87	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.148	96	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.151	98	74-137
375-95-1	Perfluorononanoic acid	0.154	0.128	83	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.129	84	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.131	85	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.125	81	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.126	82	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.110	71	49-122
375-73-5	Perfluorobutanesulfonic acid	0.136	0.134	98	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.145	0.141	97	70-130
355-46-4	Perfluorohexanesulfonic acid	0.14	0.131	94	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.146	0.144	99	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.142	0.147	103	70-134
68259-12-1	Perfluorononanesulfonic acid	0.148	0.119	81	70-130
335-77-3	Perfluorodecanesulfonic acid	0.148	0.0938	63	56-127
754-91-6	PFOSA	0.154	0.100	65	40-142
2355-31-9	MeFOSAA	0.154	0.133	86	57-128
2991-50-6	EtFOSAA	0.154	0.124	81	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.144	0.141	98	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.146	0.141	96	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.148	0.151	102	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	96%	61-134%
	13C2-PFDA	91%	62-128%
	d5-EtFOSAA	75%	57-135%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72186-MS	Q54245.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254
FA58292-5 [a]	Q54258.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-5, FA58292-10, FA58292-14, FA58292-16

CAS No.	Compound	FA58292-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0107	I	0.167	0.178	100	20-120
2706-90-3	Perfluoropentanoic acid	0.017 U		0.167	0.187	112	40-131
307-24-4	Perfluorohexanoic acid	0.00862	I	0.167	0.143	81	63-146
375-85-9	Perfluoroheptanoic acid	0.017 U		0.167	0.180	108	71-138
335-67-1	Perfluorooctanoic acid	0.00843	I	0.167	0.193	111	74-137
375-95-1	Perfluorononanoic acid	0.017 U		0.167	0.158	95	76-140
335-76-2	Perfluorodecanoic acid	0.017 U		0.167	0.173	104	65-148
2058-94-8	Perfluoroundecanoic acid	0.017 U		0.167	0.172	103	57-138
307-55-1	Perfluorododecanoic acid	0.017 U		0.167	0.168	101	58-118
72629-94-8	Perfluorotridecanoic acid	0.017 U		0.167	0.157	94	52-120
376-06-7	Perfluorotetradecanoic acid	0.017 U		0.167	0.116	70	49-122
375-73-5	Perfluorobutanesulfonic acid	0.017 U		0.147	0.136	92	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.017 U		0.157	0.132	84	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0164	I	0.152	0.168	100	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.017 U		0.158	0.171	108	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.0275		0.154	0.205	115	70-134
68259-12-1	Perfluorononanesulfonic acid	0.017 U		0.16	0.153	96	70-130
335-77-3	Perfluorodecanesulfonic acid	0.017 U		0.161	0.143	89	56-127
754-91-6	PFOSA	0.017 U		0.167	0.131	79	40-142
2355-31-9	MeFOSAA	0.042 U		0.167	0.172	103	57-128
2991-50-6	EtFOSAA	0.042 U		0.167	0.179	107	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U		0.156	0.153	98	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.042 U		0.158	0.180	114	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.042 U		0.16	0.196	123	61-154

CAS No.	Surrogate Recoveries	MS	FA58292-5	Limits
	13C2-PFHxA	89%	100%	61-134%
	13C2-PFDA	110%	116%	62-128%
	d5-EtFOSAA	100%	108%	57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72146-MS	Q54124.D	1	10/15/18	NAF	10/11/18	OP72146	SQ1253
OP72146-MSD	Q54125.D	1	10/15/18	NAF	10/11/18	OP72146	SQ1253
FA58290-1	Q54123.D	1	10/15/18	NAF	10/11/18	OP72146	SQ1253

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-2, FA58292-4, FA58292-7, FA58292-9, FA58292-11, FA58292-13, FA58292-15, FA58292-17

CAS No.	Compound	FA58290-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.1 U		10.5	11.1	106	10.7	10.6	99	5	50-144/30
2706-90-3	Perfluoropentanoic acid	1.1 U		10.5	10.6	101	10.7	10.3	97	3	57-139/30
307-24-4	Perfluorohexanoic acid	1.1 U		10.5	10.0	96	10.7	9.47	89	5	63-130/30
375-85-9	Perfluoroheptanoic acid	1.1 U		10.5	11.7	112	10.7	11.0	103	6	63-122/30
335-67-1	Perfluorooctanoic acid	1.1 U		10.5	11.3	108	10.7	10.7	100	5	71-128/30
375-95-1	Perfluorononanoic acid	1.1 U		10.5	11.5	110	10.7	10.9	102	5	66-124/30
335-76-2	Perfluorodecanoic acid	1.1 U		10.5	12.7	121	10.7	12.0	112	6	68-127/30
2058-94-8	Perfluoroundecanoic acid	1.1 U		10.5	11.5	110	10.7	11.1	104	4	61-137/30
307-55-1	Perfluorododecanoic acid	1.1 U		10.5	11.7	112	10.7	11.3	106	3	71-126/30
72629-94-8	Perfluorotridecanoic acid	1.1 U		10.5	12.3	118	10.7	11.9	112	3	55-137/30
376-06-7	Perfluorotetradecanoic acid	1.1 U		10.5	10.6	101	10.7	10.2	96	4	51-131/30
375-73-5	Perfluorobutanesulfonic acid	1.1 U		9.26	8.81	95	9.44	8.36	89	5	70-135/30
2706-91-4	Perfluoropentanesulfonic acid	1.1 U		9.83	8.86	90	10	8.96	89	1	70-130/30
355-46-4	Perfluorohexanesulfonic acid	1.1 U		9.52	9.65	101	9.71	9.16	94	5	72-129/30
375-92-8	Perfluoroheptanesulfonic acid	1.1 U		9.94	11.1	112	10.1	10.8	107	3	62-129/30
1763-23-1	Perfluorooctanesulfonic acid	1.14		9.67	12.1	113	9.87	11.9	109	2	69-125/30
68259-12-1	Perfluorononanesulfonic acid	1.1 U		10	11.6	116	10.2	10.8	105	7	70-130/30
335-77-3	Perfluorodecanesulfonic acid	1.1 U		10.1	9.77	97	10.3	9.24	90	6	63-141/30
754-91-6	PFOSA	1.1 U		10.5	9.26	89	10.7	9.18	86	1	65-140/30
2355-31-9	MeFOSAA	2.7 U		10.5	11.6	111	10.7	11.3	106	3	71-124/30
2991-50-6	EtFOSAA	2.7 U		10.5	11.6	111	10.7	11.5	108	1	63-129/30
757124-72-4	4:2 Fluorotelomer sulfonate	2.7 U		9.78	9.34	96	9.98	9.03	91	3	70-130/30
27619-97-2	6:2 Fluorotelomer sulfonate	2.7 U		9.94	11.1	112	10.1	10.7	106	4	76-131/30
39108-34-4	8:2 Fluorotelomer sulfonate	2.7 U		10	13.9	138	10.2	12.8	125	8	60-138/30

CAS No.	Surrogate Recoveries	MS	MSD	FA58290-1	Limits
	13C2-PFHxA	108%	106%	100%	60-124%
	13C2-PFDA	126%	122%	116%	61-134%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72243-MS	Q54790.D	1	10/26/18	NAF	10/18/18	OP72243	SQ1263
OP72243-MSD	Q54791.D	1	10/26/18	NAF	10/18/18	OP72243	SQ1263
FA58416-24	Q54789.D	1	10/26/18	NAF	10/18/18	OP72243	SQ1263

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-1, FA58292-3, FA58292-6, FA58292-8, FA58292-12, FA58292-18

CAS No.	Compound	FA58416-24 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0452		0.154	0.198	99	0.154	0.193	96	3	20-120/30
2706-90-3	Perfluoropentanoic acid	0.0194		0.154	0.175	101	0.154	0.175	101	0	40-131/30
307-24-4	Perfluorohexanoic acid	0.0133	J	0.154	0.142	84	0.154	0.137	80	4	63-146/30
375-85-9	Perfluoroheptanoic acid	0.015 U		0.154	0.155	101	0.154	0.148	96	5	71-138/30
335-67-1	Perfluorooctanoic acid	0.00392	J	0.154	0.153	97	0.154	0.150	95	2	74-137/30
375-95-1	Perfluorononanoic acid	0.015 U		0.154	0.131	85	0.154	0.121	79	8	76-140/30
335-76-2	Perfluorodecanoic acid	0.015 U		0.154	0.128	83	0.154	0.118	77	8	65-148/30
2058-94-8	Perfluoroundecanoic acid	0.015 U		0.154	0.118	77	0.154	0.116	75	2	57-138/30
307-55-1	Perfluorododecanoic acid	0.015 U		0.154	0.128	83	0.154	0.126	82	2	58-118/30
72629-94-8	Perfluorotridecanoic acid	0.015 U		0.154	0.141	92	0.154	0.139	90	1	52-120/30
376-06-7	Perfluorotetradecanoic acid	0.015 U		0.154	0.121	79	0.154	0.122	79	1	49-122/30
375-73-5	Perfluorobutanesulfonic acid	0.0205		0.136	0.146	92	0.136	0.141	89	3	73-148/30
2706-91-4	Perfluoropentanesulfonic acid	0.0128	J	0.145	0.141	89	0.145	0.136	85	4	70-130/30
355-46-4	Perfluorohexanesulfonic acid	0.0259		0.14	0.152	90	0.14	0.144	84	5	74-142/30
375-92-8	Perfluoroheptanesulfonic acid	0.015 U		0.146	0.128	88	0.146	0.116	79	10	74-123/30
1763-23-1	Perfluorooctanesulfonic acid	0.015 U		0.142	0.126	89	0.142	0.115	81	9	70-134/30
68259-12-1	Perfluorononanesulfonic acid	0.015 U		0.148	0.113	77	0.148	0.111	75	2	70-130/30
335-77-3	Perfluorodecanesulfonic acid	0.015 U		0.148	0.116	78	0.148	0.115	77	1	56-127/30
754-91-6	PFOSA	0.015 U		0.154	0.127	83	0.154	0.128	83	1	40-142/30
2355-31-9	MeFOSAA	0.038 U		0.154	0.123	80	0.154	0.110	71	11	57-128/30
2991-50-6	EtFOSAA	0.038 U		0.154	0.116	75	0.154	0.114	74	2	55-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.038 U		0.144	0.141	98	0.144	0.133	92	6	70-130/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.038 U		0.146	0.149	102	0.146	0.141	96	6	70-153/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.038 U		0.148	0.136	92	0.148	0.117	79	15	61-154/30

CAS No.	Surrogate Recoveries	MS	MSD	FA58416-24	Limits
	13C2-PFHxA	92%	84%	89%	61-134%
	13C2-PFDA	90%	77%	83%	62-128%
	d5-EtFOSAA	75%	68%	68%	57-135%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA58292
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72186-DUP	Q54249.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254
FA58292-10 [a]	Q54248.D	1	10/17/18	NAF	10/13/18	OP72186	SQ1254

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58292-5, FA58292-10, FA58292-14, FA58292-16

CAS No.	Compound	FA58292-10 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.017 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.017 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.017 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.017 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.017 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.017 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.017 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.017 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.017 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.017 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.017 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.017 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.017 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.017 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.017 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.00496	I	0.00498	J	0	30
68259-12-1	Perfluorononanesulfonic acid	0.017 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.017 U		ND		nc	30
754-91-6	PFOSA	0.017 U		ND		nc	30
2355-31-9	MeFOSAA	0.042 U		ND		nc	30
2991-50-6	EtFOSAA	0.042 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.042 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.042 U		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	FA58292-10	Limits
	13C2-PFHxA	100%	104%	61-134%
	13C2-PFDA	105%	109%	62-128%
	d5-EtFOSAA	100%	108%	57-135%

(a) Associated BS recovery outside control limits. Insufficient sample for re-extraction.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Applied Ecology Inc.

Countywide PFAS Screening

SGS Job Number: FA58490

Sampling Date: 10/16/18

Report to:

Applied Ecology Inc.

kayleighdouglass@appliedecologyinc.com

ATTN: Kayleigh Douglass

Total number of pages in report: 17

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **6**
4.1: FA58490-1: IRL-1 7
4.2: FA58490-2: IRL-2 9
4.3: FA58490-3: IRL-4 11
4.4: FA58490-4: BR-3 13
Section 5: Misc. Forms **15**
5.1: Chain of Custody 16

Sample Summary

Applied Ecology Inc.

Job No: FA58490

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA58490-1	10/16/18	14:24	KDDH	10/17/18	AQ	Surface Water	IRL-1
FA58490-2	10/16/18	13:40	KDDH	10/17/18	AQ	Surface Water	IRL-2
FA58490-3	10/16/18	11:16	KDDH	10/17/18	AQ	Surface Water	IRL-4
FA58490-4	10/16/18	12:34	KDDH	10/17/18	AQ	Surface Water	BR-3

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Applied Ecology Inc. **Job No:** FA58490

Site: Countywide PFAS Screening **Report Date** 11/7/2018 5:44:01 PM

4 Sample(s) were collected on 10/16/2018 and were received at SGS North America Inc - Orlando on 10/17/2018 properly preserved, at 4 Deg. C and intact. These Samples received an SGS Orlando job number of FA58490. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP72328

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58490-4MS, FA58568-3DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluorohexanesulfonic acid, Perfluorotetradecanoic acid are outside control limits. Probable cause is due to matrix interference.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA58490
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/16/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA58490-1	**IRL-1**					
Perfluorooctanoic acid		0.00545 I	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorononanoic acid		0.0231	0.016	0.0040	ug/l	EPA 537 MOD
Perfluoroundecanoic acid		0.0115 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.00801 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0319	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0978	0.016	0.0040	ug/l	EPA 537 MOD
FA58490-2	**IRL-2**					
Perfluoroheptanoic acid		0.00958 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00796 I	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorononanoic acid		0.0181	0.016	0.0040	ug/l	EPA 537 MOD
Perfluoroundecanoic acid		0.00871 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.00808 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0274	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0987	0.016	0.0040	ug/l	EPA 537 MOD
FA58490-3	**IRL-4**					
Perfluorobutanoic acid		0.00895 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00614 I	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0110 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0261	0.016	0.0040	ug/l	EPA 537 MOD
FA58490-4	**BR-3**					
Perfluorobutanoic acid		0.0116 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluoropentanoic acid		0.0123 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.00852 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.0119 I	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorononanoic acid		0.0239	0.016	0.0040	ug/l	EPA 537 MOD
Perfluoroundecanoic acid		0.0123 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorotridecanoic acid		0.00874 I	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.0316	0.016	0.0080	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.115	0.016	0.0040	ug/l	EPA 537 MOD

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	IRL-1		
Lab Sample ID:	FA58490-1	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55401.D	1	11/07/18 03:35	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.00545	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0231	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0115	0.016	0.0080	ug/l	I
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.00801	0.016	0.0080	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0319	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0978	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-1		
Lab Sample ID:	FA58490-1	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	108%		61-134%
	13C2-PFDA	121%		62-128%
	d5-EtFOSAA	105%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IRL-2
Lab Sample ID: FA58490-2
Matrix: AQ - Surface Water
Method: EPA 537 MOD EPA 537 MOD
Project: Countywide PFAS Screening

Date Sampled: 10/16/18
Date Received: 10/17/18
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55402.D	1	11/07/18 03:56	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.00958	0.016	0.0080	ug/l	I
335-67-1	Perfluorooctanoic acid	0.00796	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0181	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.00871	0.016	0.0080	ug/l	I
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.00808	0.016	0.0080	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0274	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0987	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-2		
Lab Sample ID:	FA58490-2	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	89%		61-134%
	13C2-PFDA	114%		62-128%
	d5-EtFOSAA	92%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-4		
Lab Sample ID:	FA58490-3	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55403.D	1	11/07/18 04:17	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.00895	0.016	0.0080	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.00614	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0110	0.016	0.0080	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0261	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IRL-4		
Lab Sample ID:	FA58490-3	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	88%		61-134%
	13C2-PFDA	110%		62-128%
	d5-EtFOSAA	96%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	FA58490-4	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55404.D	1	11/07/18 04:37	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0116	0.016	0.0080	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0123	0.016	0.0080	ug/l	I
307-24-4	Perfluorohexanoic acid	0.00852	0.016	0.0080	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0119	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0239	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0123	0.016	0.0080	ug/l	I
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.00874	0.016	0.0080	ug/l	I
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0316	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.115	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	FA58490-4	**Date Sampled:**	10/16/18
Matrix:	AQ - Surface Water	**Date Received:**	10/17/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%		61-134%
	13C2-PFDA	110%		62-128%
	d5-EtFOSAA	91%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

FA58490

SGS - ORLANDO JOB # : PAGE_____OF_____

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology, Inc.
Address: 122 Fourth Ave suite 104
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecology.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: Danielle Huffner Sampler 2: Kayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

EPA 537 Mod.

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	EPA 537 Mod.	LAB USE ONLY
1	IRL-1	10/16/18	14:24	KD	SW	2		2								X	
2	IRL-2	10/16/18	13:40	KD	SW	2		2								X	
3	IRL-4	10/16/18	11:16	DH	SW	2		2								X	
4	BR-3	10/16/18	12:34	DH	SW	2		2								X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Danielle Huffner/AEI	10/17/18 1342	James Flores	3 James Flores	10-17-18 1600	4 10/17/18 1600
5	Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 4.0°C

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

FA58490: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA58490 **Client:** APPLIED ECOLOGY, INC **Project:** COUNTYWIDE PFAS SCREENING

Date / Time Received: 10/17/2018 4:00:00 PM **Delivery Method:** SGS **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 10/17/2018 4:00:00 P Reviewer: _____ Date: _____

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Applied Ecology Inc.

Countywide PFAS Screening

SGS Job Number: FA58568

Sampling Date: 10/17/18

Report to:

Applied Ecology Inc
122 Fourth Ave Suite 104
Indialantic, FL 32903
clistopad@appliedecologyinc.com

ATTN: Claudia Listopad

Total number of pages in report: 33

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **7**
4.1: FA58568-1: GW-SAT1 8
4.2: FA58568-2: GW-SAT2 10
4.3: FA58568-3: GW-SAT3 12
4.4: FA58568-4: GW-SUN2 14
4.5: FA58568-5: GW-SUN3 16
4.6: FA58568-6: GW-SUN1 18
4.7: FA58568-7: GW-TC3 20
4.8: FA58568-8: GW-TC2 22
4.9: FA58568-9: GW-TC1 24
Section 5: Misc. Forms **26**
5.1: Chain of Custody 27
Section 6: MS Semi-volatiles - QC Data Summaries **29**
6.1: Method Blank Summary 30
6.2: Blank Spike Summary 31
6.3: Matrix Spike Summary 32
6.4: Duplicate Summary 33

SGS North America Inc.

Sample Summary

Applied Ecology Inc.

Job No: FA58568

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA58568-1	10/17/18	08:57	KDJR	10/19/18	AQ	Ground Water	GW-SAT1
FA58568-2	10/17/18	09:32	KDJR	10/19/18	AQ	Ground Water	GW-SAT2
FA58568-3	10/17/18	10:03	KDJR	10/19/18	AQ	Ground Water	GW-SAT3
FA58568-4	10/17/18	11:06	KDJR	10/19/18	AQ	Ground Water	GW-SUN2
FA58568-5	10/17/18	11:48	KDJR	10/19/18	AQ	Ground Water	GW-SUN3
FA58568-6	10/17/18	12:27	KDJR	10/19/18	AQ	Ground Water	GW-SUN1
FA58568-7	10/17/18	13:55	KDJR	10/19/18	AQ	Ground Water	GW-TC3
FA58568-8	10/17/18	14:34	KDJR	10/19/18	AQ	Ground Water	GW-TC2
FA58568-9	10/17/18	15:02	KDJR	10/19/18	AQ	Ground Water	GW-TC1

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Applied Ecology Inc.	**Job No**	FA58568
Site:	Countywide PFAS Screening	**Report Date**	11/8/2018 5:35:35

9 Samples were collected on 10/17/2018 and were received at SGS North America Inc - Orlando on 10/19/2018 properly preserved, at 0 Deg. C and intact. These Samples received an SGS Orlando job number of FA58568. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-Volatiles By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP72328

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA58490-4MS, FA58568-3DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike Recovery(s) for Perfluorohexanesulfonic acid, Perfluorotetradecanoic acid are outside control limits. Probable cause is due to matrix interference.

FA58568-4: Dilution required due to matrix interference.

FA58568-9: Dilution required due to matrix interference.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA58568
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/17/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA58568-1	**GW-SAT1**					
Perfluorobutanoic acid		0.0127 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.0133 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.00878 I	0.015	0.0038	ug/l	EPA 537 MOD
FA58568-2	**GW-SAT2**					
Perfluorooctanesulfonic acid		0.0246	0.016	0.0040	ug/l	EPA 537 MOD
FA58568-3	**GW-SAT3**					
Perfluorooctanoic acid		0.00532 I	0.016	0.0040	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.00835 I	0.016	0.0040	ug/l	EPA 537 MOD
FA58568-4	**GW-SUN2**					
Perfluorooctanoic acid [a]		0.00821 I	0.031	0.0077	ug/l	EPA 537 MOD
Perfluorononanoic acid [a]		0.0117 I	0.031	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.0472	0.031	0.0077	ug/l	EPA 537 MOD
FA58568-5	**GW-SUN3**					
Perfluorooctanoic acid		0.00382 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.00806 I	0.015	0.0038	ug/l	EPA 537 MOD
FA58568-6	**GW-SUN1**					
Perfluorooctanesulfonic acid		0.00434 I	0.015	0.0038	ug/l	EPA 537 MOD
FA58568-7	**GW-TC3**					
No hits reported in this sample.						
FA58568-8	**GW-TC2**					
Perfluorobutanesulfonic acid		0.0137 I	0.015	0.0077	ug/l	EPA 537 MOD
FA58568-9	**GW-TC1**					
Perfluorooctanoic acid [a]		0.0228 I	0.031	0.0077	ug/l	EPA 537 MOD
Perfluorononanoic acid [a]		0.209	0.031	0.0077	ug/l	EPA 537 MOD
Perfluoroundecanoic acid [a]		0.0775	0.031	0.015	ug/l	EPA 537 MOD
Perfluorotridecanoic acid [a]		0.0402	0.031	0.015	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid [a]		0.0179 I	0.031	0.015	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA58568
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/17/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluoropentanesulfonic acid [a]		0.0194 I	0.031	0.015	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid [a]		0.134	0.031	0.015	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid [a]		0.471	0.031	0.0077	ug/l	EPA 537 MOD

(a) Dilution required due to matrix interference.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-SAT1		
Lab Sample ID:	FA58568-1	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55406.D	1	11/07/18 05:19	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0127	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0133	0.015	0.0077	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00878	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SAT1		
Lab Sample ID:	FA58568-1	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	86%		61-134%
	13C2-PFDA	101%		62-128%
	d5-EtFOSAA	85%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SAT2		
Lab Sample ID:	FA58568-2	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55407.D	1	11/07/18 05:40	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0246	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SAT2		
Lab Sample ID:	FA58568-2	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	90%		61-134%
	13C2-PFDA	107%		62-128%
	d5-EtFOSAA	89%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SAT3		
Lab Sample ID:	FA58568-3	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55408.D	1	11/07/18 06:01	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.00532	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00835	0.016	0.0040	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SAT3		
Lab Sample ID:	FA58568-3	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	95%		61-134%
	13C2-PFDA	112%		62-128%
	d5-EtFOSAA	93%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN2		
Lab Sample ID:	FA58568-4	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q55434.D	2	11/07/18 15:07	NAF	10/24/18 08:00	OP72328	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.015 U	0.031	0.015	ug/l	
2706-90-3	Perfluoropentanoic acid	0.015 U	0.031	0.015	ug/l	
307-24-4	Perfluorohexanoic acid	0.015 U	0.031	0.015	ug/l	
375-85-9	Perfluoroheptanoic acid	0.015 U	0.031	0.015	ug/l	
335-67-1	Perfluorooctanoic acid	0.00821	0.031	0.0077	ug/l	I
375-95-1	Perfluorononanoic acid	0.0117	0.031	0.0077	ug/l	I
335-76-2	Perfluorodecanoic acid	0.015 U	0.031	0.015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.015 U	0.031	0.015	ug/l	
307-55-1	Perfluorododecanoic acid	0.015 U	0.031	0.015	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.015 U	0.031	0.015	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.015 U	0.031	0.015	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.015 U	0.031	0.015	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.015 U	0.031	0.015	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.015 U	0.031	0.015	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.015 U	0.031	0.015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0472	0.031	0.0077	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.015 U	0.031	0.015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.015 U	0.031	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.015 U	0.031	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.031 U	0.077	0.031	ug/l	
2991-50-6	EtFOSAA	0.031 U	0.077	0.031	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN2		
Lab Sample ID:	FA58568-4	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	98%		61-134%
	13C2-PFDA	113%		62-128%
	d5-EtFOSAA	98%		57-135%

(a) Dilution required due to matrix interference.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN3		
Lab Sample ID:	FA58568-5	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55413.D	1	11/07/18 07:45	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00382	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00806	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN3		
Lab Sample ID:	FA58568-5	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	77%		61-134%
	13C2-PFDA	125%		62-128%
	d5-EtFOSAA	90%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN1		
Lab Sample ID:	FA58568-6	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55414.D	1	11/07/18 08:06	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00434	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-SUN1		
Lab Sample ID:	FA58568-6	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	93%		61-134%
	13C2-PFDA	113%		62-128%
	d5-EtFOSAA	82%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC3		
Lab Sample ID:	FA58568-7	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55415.D	1	11/07/18 08:27	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC3		
Lab Sample ID:	FA58568-7	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	75%		61-134%
	13C2-PFDA	116%		62-128%
	d5-EtFOSAA	86%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC2		
Lab Sample ID:	FA58568-8	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55416.D	1	11/07/18 08:48	NAF	10/24/18 08:00	OP72328	SQ1271
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0137	0.015	0.0077	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC2		
Lab Sample ID:	FA58568-8	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	77%		61-134%
	13C2-PFDA	126%		62-128%
	d5-EtFOSAA	93%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC1		
Lab Sample ID:	FA58568-9	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q55433.D	2	11/07/18 14:47	NAF	10/24/18 08:00	OP72328	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.015 U	0.031	0.015	ug/l	
2706-90-3	Perfluoropentanoic acid	0.015 U	0.031	0.015	ug/l	
307-24-4	Perfluorohexanoic acid	0.015 U	0.031	0.015	ug/l	
375-85-9	Perfluoroheptanoic acid	0.015 U	0.031	0.015	ug/l	
335-67-1	Perfluorooctanoic acid	0.0228	0.031	0.0077	ug/l	I
375-95-1	Perfluorononanoic acid	0.209	0.031	0.0077	ug/l	
335-76-2	Perfluorodecanoic acid	0.015 U	0.031	0.015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0775	0.031	0.015	ug/l	
307-55-1	Perfluorododecanoic acid	0.015 U	0.031	0.015	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0402	0.031	0.015	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.015 U	0.031	0.015	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0179	0.031	0.015	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0194	0.031	0.015	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.134	0.031	0.015	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.015 U	0.031	0.015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.471	0.031	0.0077	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.015 U	0.031	0.015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.015 U	0.031	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.015 U	0.031	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.031 U	0.077	0.031	ug/l	
2991-50-6	EtFOSAA	0.031 U	0.077	0.031	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TC1		
Lab Sample ID:	FA58568-9	**Date Sampled:**	10/17/18
Matrix:	AQ - Ground Water	**Date Received:**	10/19/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.031 U	0.077	0.031	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	78%		61-134%
	13C2-PFDA	124%		62-128%
	d5-EtFOSAA	103%		57-135%

(a) Dilution required due to matrix interference.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

FA58568

SGS - ORLANDO JOB # : PAGE_____OF_____

SGS - ORLANDO Quote #	SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc
Address: 122 Fourth Ave suite 104
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: James Ramos Sampler 2: Hayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

EPA 537 Mod

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	EPA 537 Mod	LAB USE ONLY
1	GW-SAT1	10/17/18	8:57	KD	GW	2		2								X	
2	GW-SAT2	10/17/18	9:32	JR	GW	2		2								X	
3	GW-SAT3	10/17/18	10:03	KD	GW	2		2								X	
4	GW-SUN2	10/17/18	11:06	JR	GW	2		2								X	
5	GW-SUN3	10/17/18	11:48	KD	GW	2		2								X	
6	GW-SUN1	10/17/18	12:27	JR	GW	2		2								X	
7	GW-TC3	10/17/18	13:55	KD	GW	2		2								X	
8	GW-TC2	10/17/18	14:34	JR	GW	2		2								X	
9	GW-TC1	10/17/18	15:02	KD	GW	2		2								X	

Turnaround Time (Business days)

Approved By: / Date:

- 10 Day (Business)
- 7 Day
- 5 Day
- 3 Day *RUSH*
- 2 Day *RUSH*
- 1 Day *RUSH*
- Other

Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Hayleigh Douglass/AEI	10/19/18 13:40	2 James Flores 10-19-18 1340	3 James Flores 10-19-18	1530	4 [illegible] 10/19/18 900
5	Relinquished by/Affiliation	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only: Cooler Temperature (s) Celsius (corrected): 0.6°C

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

5.1 5

FA58568: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA58568 **Client:** APPLIED ECOLOGY INC. **Project:** COUNTYWIDE PFAS

Date / Time Received: 10/19/2018 9:00:00 AM **Delivery Method:** ALSE **Airbill #'s:**

Therm ID: ; **Therm CF:** 0; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C:

Cooler Temps (Corrected) °C:

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 10/19/2018 9:00:00 A Reviewer: _____ Date: _____

FA58568: Chain of Custody
Page 2 of 2

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA58568
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72328-MB	Q55222.D	1	11/04/18	NAF	10/24/18	OP72328	SQ1268

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58568-1, FA58568-2, FA58568-3, FA58568-4, FA58568-5, FA58568-6, FA58568-7, FA58568-8, FA58568-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	124%	62-128%
	d5-EtFOSAA	98%	57-135%

Blank Spike Summary

Job Number: FA58568
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72328-BS	Q55221.D	1	11/04/18	NAF	10/24/18	OP72328	SQ1268

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58568-1, FA58568-2, FA58568-3, FA58568-4, FA58568-5, FA58568-6, FA58568-7, FA58568-8, FA58568-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.144	94	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.137	89	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.117	76	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.135	88	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.143	93	74-137
375-95-1	Perfluorononanoic acid	0.154	0.124	81	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.140	91	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.140	91	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.140	91	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.143	93	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.125	81	49-122
375-73-5	Perfluorobutanesulfonic acid	0.136	0.125	92	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.145	0.128	89	70-130
355-46-4	Perfluorohexanesulfonic acid	0.14	0.129	92	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.146	0.141	96	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.142	0.147	103	70-134
68259-12-1	Perfluorononanesulfonic acid	0.148	0.121	82	70-130
335-77-3	Perfluorodecanesulfonic acid	0.148	0.119	80	56-127
754-91-6	PFOSA	0.154	0.155	101	40-142
2355-31-9	MeFOSAA	0.154	0.129	84	57-128
2991-50-6	EtFOSAA	0.154	0.130	84	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.144	0.132	92	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.146	0.142	97	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.148	0.169	114	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	99%	61-134%
	13C2-PFDA	122%	62-128%
	d5-EtFOSAA	100%	57-135%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA58568
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72328-MS	Q55405.D	1	11/07/18	NAF	10/24/18	OP72328	SQ1271
FA58490-4	Q55404.D	1	11/07/18	NAF	10/24/18	OP72328	SQ1271

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58568-1, FA58568-2, FA58568-3, FA58568-4, FA58568-5, FA58568-6, FA58568-7, FA58568-8, FA58568-9

CAS No.	Compound	FA58490-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0116	I	0.16	0.160	93	20-120
2706-90-3	Perfluoropentanoic acid	0.0123	I	0.16	0.169	98	40-131
307-24-4	Perfluorohexanoic acid	0.00852	I	0.16	0.122	71	63-146
375-85-9	Perfluoroheptanoic acid	0.016 U		0.16	0.150	94	71-138
335-67-1	Perfluorooctanoic acid	0.0119	I	0.16	0.167	97	74-137
375-95-1	Perfluorononanoic acid	0.0239		0.16	0.155	82	76-140
335-76-2	Perfluorodecanoic acid	0.016 U		0.16	0.156	98	65-148
2058-94-8	Perfluoroundecanoic acid	0.0123	I	0.16	0.155	89	57-138
307-55-1	Perfluorododecanoic acid	0.016 U		0.16	0.131	82	58-118
72629-94-8	Perfluorotridecanoic acid	0.00874	I	0.16	0.111	64	52-120
376-06-7	Perfluorotetradecanoic acid	0.016 U		0.16	0.0757	47*	49-122
375-73-5	Perfluorobutanesulfonic acid	0.016 U		0.142	0.119	84	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.016 U		0.15	0.126	84	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0316		0.146	0.135	71*	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.016 U		0.152	0.149	98	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.115		0.148	0.237	82	70-134
68259-12-1	Perfluorononanesulfonic acid	0.016 U		0.154	0.133	87	70-130
335-77-3	Perfluorodecanesulfonic acid	0.016 U		0.154	0.122	79	56-127
754-91-6	PFOSA	0.016 U		0.16	0.104	65	40-142
2355-31-9	MeFOSAA	0.040 U		0.16	0.149	93	57-128
2991-50-6	EtFOSAA	0.040 U		0.16	0.130	81	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U		0.15	0.131	88	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.040 U		0.152	0.153	101	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.040 U		0.154	0.169	110	61-154

CAS No.	Surrogate Recoveries	MS	FA58490-4	Limits
	13C2-PFHxA	91%	85%	61-134%
	13C2-PFDA	112%	110%	62-128%
	d5-EtFOSAA	98%	91%	57-135%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA58568
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72328-DUP	Q55409.D	1	11/07/18	NAF	10/24/18	OP72328	SQ1271
FA58568-3	Q55408.D	1	11/07/18	NAF	10/24/18	OP72328	SQ1271

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58568-1, FA58568-2, FA58568-3, FA58568-4, FA58568-5, FA58568-6, FA58568-7, FA58568-8, FA58568-9

CAS No.	Compound	FA58568-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.016 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.016 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.016 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.00532	I	0.00516	J	3	30
375-95-1	Perfluorononanoic acid	0.016 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.016 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.016 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.016 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.016 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.016 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.016 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.016 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.016 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.016 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.00835	I	0.00984	J	16	30
68259-12-1	Perfluorononanesulfonic acid	0.016 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.016 U		ND		nc	30
754-91-6	PFOSA	0.016 U		ND		nc	30
2355-31-9	MeFOSAA	0.040 U		ND		nc	30
2991-50-6	EtFOSAA	0.040 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.040 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.040 U		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	FA58568-3	Limits
	13C2-PFHxA	91%	95%	61-134%
	13C2-PFDA	111%	112%	62-128%
	d5-EtFOSAA	91%	93%	57-135%

* = Outside of Control Limits.

Florida Radiochemistry Services, Inc.

Contact: Michael J. Naumann
5456 Hoffner Ave., Suite 201 Orlando, FL 32812
Phone: (407) 382-7733 Fax: (407)382-7744
Certification I. D. # E83033

Work Order #: 1810235
Report Date: 11/08/18

Report to:

SGS Accutest
4405 Vineland Rd., Suite C-15
Orlando, FL 32811
Attention: Ariel Hartney

I do hereby affirm that this record contains no willful misrepresentations and that this information given by me is true to the best of my knowledge and belief. I further certify that the methods and quality control measures used to produce these laboratory results were implemented in accordance with the requirements of this laboratory's certification and NELAC Standards. The test results in this report relate only to the samples received.

Signed _____ Date 11-8-18
Michael J. Naumann - President
Shawn M. Naumann - Laboratory Director

Florida Radiochemistry Services, Inc.

Sample Login

Client:	**SGS North America Inc.**	**Date / Time Received**	**Work order #**
		10/30/18 09:12	**1810235**
Client Contact:	**Ariel Hartney**		
Client P.O.			
Project I.D.	**FA58677X**		

Lab Sample I.D.	Client Sample I.D.	Sample Date/Time	Analysis Requested
1810235-01	PS-1	10/22/18 09:08	Ga, Gb, Ra226, Ra228
1810235-02	PS-2	10/22/18 09:41	Ga, Gb, Ra226, Ra228
1810235-03	PS-4	10/22/18 10:05	Ga, Gb, Ra226, Ra228

Florida Radiochemistry Services, Inc.

Analysis Report

Lab Sample I.D.	1810235-01	1810235-02	1810235-03
Client I.D.	PS-1	PS-2	PS-4
Gross Alpha	5.4	6.8U	4.4U
Error +/-	3.4	4.6	2.6
MDL	4.8	6.8	4.4
EPA Method	900.0	900.0	900.0
Prep Date	10/31/18	10/31/18	10/31/18
Prep Time	08:20	08:20	08:20
Analysis Date	11/01/18	11/01/18	11/01/18
Analysis Time	13:38	13:38	15:57
Analyst	MJN	MJN	MJN
Gross Beta	7.6	17.3	5.4U
Error +/-	3.3	4.6	3.3
MDL	5.2	7.0	5.4
EPA Method	900.0	900.0	900.0
Prep Date	10/31/18	10/31/18	10/31/18
Prep Time	08:20	08:20	08:20
Analysis Date	11/01/18	11/01/18	11/01/18
Analysis Time	13:38	13:38	15:57
Analyst	MJN	MJN	MJN
Radium 226	0.5	3.1	1.2
Error +/-	0.2	0.5	0.3
MDL	0.2	0.2	0.1
EPA Method	903.1	903.1	903.1
Prep Date	10/31/18	10/31/18	10/31/18
Prep Time	08:00	08:00	08:00
Analysis Date	11/08/18	11/08/18	11/08/18
Analysis Time	10:48	10:48	10:48
Analyst	SN	SN	SN
Radium 228	0.8	0.7U	0.6U
Error +/-	0.5	0.5	0.4
MDL	0.7	0.7	0.6
EPA Method	Ra-05	Ra-05	Ra-05
Prep Date	10/31/18	10/31/18	10/31/18
Prep Time	08:00	08:00	08:00
Analysis Date	11/07/18	11/07/18	11/07/18
Analysis Time	09:07	10:09	10:09
Analyst	SN	SN	SN
Units	pCi/l	pCi/l	pCi/l

A U next to a result indicates analyte not detected at the MDL level

Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Gross Alpha	1810231-26	11/01/18	<0.9	10.0	10.2	9.9	102	3.0
Gross Beta	1810231-26	11/01/18	<2.0	10.1	11.2	10.8	111	3.6
Radium 226	1810231-27	11/08/18	1.3	22.1	23.5	23.0	100	2.2
Radium 228	1810231-27	11/07/18	1.1	5.0	5.6	6.0	90	6.9

	Quality Control Limits	
	% RPD	% Rec.
Gross Alpha	25.0	60-125
Gross Beta	17.8	82-125
Radium 226	23.4	78-125
Radium 228	23.9	67-125

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: FA58677X

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 4405 Vineland Rd, Suite C-15
City: Orlando State: FL Zip: 32811
Project Contact: ariel.hartney@sgs.com E-mail:
Phone #: 407-425-6700 Fax #:
Sampler(s) Name(s): DHKD Phone:

Project Information

Project Name: FA58677X
Street:
City: State: FL
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	GR-A,GR-B,RA-226,RA-228	LAB USE ONLY
1X	PS-1		10/22/18	9:08:00 AM	DHKD	AQ	2			2						X	
2X	PS-2		10/22/18	9:41:00 AM	DHKD	AQ	2			2						X	
3X	PS-4		10/22/18	10:05:00 AM	DHKD	AQ	2			2						X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMB+Narrative

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

FL RAD CHEM

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 10-31-18 1052	Received By: 1 Shal 10/30/18 9:12	Relinquished By: 2	Date Time:	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] Therm. ID:	On Ice [ ]	Cooler Temp.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Applied Ecology Inc.

Countywide PFAS Screening

SGS Job Number: FA58677

Sampling Date: 10/22/18

Report to:

Applied Ecology Inc
122 Fourth Ave Suite 104
Indialantic, FL 32903
clistopad@appliedecologyinc.com

ATTN: Claudia Listopad

Total number of pages in report: **102**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7 8 9 10

Table of Contents

Section 1: Sample Summary 3
Section 2: Case Narrative/Conformance Summary 4
Section 3: Summary of Hits 6
Section 4: Sample Results 8
4.1: FA58677-1: PS-1 9
4.2: FA58677-1A: PS-1 19
4.3: FA58677-2: PS-2 20
4.4: FA58677-2A: PS-2 30
4.5: FA58677-3: PS-4 31
4.6: FA58677-3A: PS-4 41
4.7: FA58677-4: PS-3 42
4.8: FA58677-5: PS-5 44
4.9: FA58677-6: PS-6 46
Section 5: Misc. Forms 48
5.1: Chain of Custody 49
Section 6: MS Volatiles - QC Data Summaries 51
6.1: Method Blank Summary 52
6.2: Blank Spike Summary 54
6.3: Matrix Spike/Matrix Spike Duplicate Summary 56
Section 7: MS Semi-volatiles - QC Data Summaries 58
7.1: Method Blank Summary 59
7.2: Blank Spike Summary 64
7.3: Matrix Spike Summary 69
7.4: Matrix Spike/Matrix Spike Duplicate Summary 70
7.5: Duplicate Summary 72
Section 8: GC/LC Semi-volatiles - QC Data Summaries 73
8.1: Method Blank Summary 74
8.2: Blank Spike Summary 76
8.3: Matrix Spike/Matrix Spike Duplicate Summary 79
Section 9: Metals Analysis - QC Data Summaries 81
9.1: Prep QC MP34570: Sr 82
9.2: Prep QC MP34575: Hg 88
9.3: Prep QC MP34583: Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn 93
Section 10: General Chemistry - QC Data Summaries 99
10.1: Method Blank and Spike Results Summary 100
10.2: Matrix Spike Results Summary 101
10.3: Matrix Spike Duplicate Results Summary 102

SGS North America Inc.

Sample Summary

Applied Ecology Inc.

Job No: FA58677

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA58677-1	10/22/18	09:08	DHKD	10/24/18	AQ	Ground Water	PS-1
FA58677-1A	10/22/18	09:08	DHKD	10/24/18	AQ	Ground Water	PS-1
FA58677-2	10/22/18	09:41	DHKD	10/24/18	AQ	Ground Water	PS-2
FA58677-2A	10/22/18	09:41	DHKD	10/24/18	AQ	Ground Water	PS-2
FA58677-3	10/22/18	10:05	DHKD	10/24/18	AQ	Ground Water	PS-4
FA58677-3A	10/22/18	10:05	DHKD	10/24/18	AQ	Ground Water	PS-4
FA58677-4	10/22/18	14:42	DHKD	10/24/18	AQ	Ground Water	PS-3
FA58677-5	10/22/18	14:53	DHKD	10/24/18	AQ	Ground Water	PS-5
FA58677-6	10/22/18	08:16	DHKD	10/24/18	AQ	Ground Water	PS-6

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Applied Ecology Inc. **Job No** FA58677

Site: Countywide PFAS Screening **Report Date** 11/8/2018 6:44:47

6 Samples were collected on 10/22/2018 and were received at SGS North America Inc - Orlando on 10/24/2018 properly preserved, at 4.4 Deg. C and intact. These Samples received an SGS Orlando job number of FA58677. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B

Matrix: AQ **Batch ID:** VB5252

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58657-3MS, FA58657-3MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for 2-Chloroethyl Vinyl Ether are outside control limits. Probable cause is due to matrix

Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl Vinyl Ether are outside control limits. Probable cause is due to matrix interference.

FA58677-1 for Acrolein: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-1 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-1 for Acrylonitrile: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-2 for Acrolein: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-2 for Acrylonitrile: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-2 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-3 for Acrolein: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-3 for Acrylonitrile: Result reported from HCl preserved sample and should be used for screening purposes only.

FA58677-3 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

MS Semi-Volatiles By Method EPA 537 MOD

Matrix: AQ **Batch ID:** OP72470

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA58677-1DUP, FA58677-1MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

RPD(s) for Duplicate for Perfluorobutanesulfonic acid, Perfluorobutanoic acid, Perfluoroheptanoic acid, Perfluorohexanesulfonic acid, Perfluorononanoic acid, Perfluorooctanoic acid are outside control limits for sample OP72470-DUP. Probable cause is due to sample non-homogeneity.

MS Semi-Volatiles By Method SW846 8270D

Matrix: AQ **Batch ID:** OP72391

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA58677-1MS, FA58677-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Blank Spike Recovery(s) for 4,6-Dinitro-o-cresol are outside control limits.

RPD(s) for MSD for 2,2'-Oxybis(1-chloropropane) are outside control limits for sample OP72391-MSD. Probable cause is due to sample non-homogeneity.

FA58677-1 for 4,6-Dinitro-o-cresol: Associated BS recovery outside control limits.

FA58677-1 for Benzidine: Associated ICV outside control limits high, however sample ND.

FA58677-2 for Benzidine: Associated ICV outside control limits high, however sample ND.

FA58677-3 for Benzidine: Associated ICV outside control limits high, however sample ND.

GC/LC Semi-Volatiles By Method SW846 8081B

Matrix: AQ **Batch ID:** OP72377

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA58635-2MS, FA58635-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

FA58677-1: All hits confirmed by dual column analysis.

GC/LC Semi-Volatiles By Method SW846 8082A

Matrix: AQ **Batch ID:** OP72378

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA58622-4MS, FA58622-4MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Metals Analysis By Method SW846 6010C

Matrix: AQ **Batch ID:** MP34583

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58671-10FDUP, FA58671-10FMS, FA58671-10FMSD, FA58671-10FPS, FA58671-10FSDL, were used as the QC samples for metals.

RPD(s) for Duplicate for Antimony, Copper, Lead are outside control limits for sample MP34583-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Antimony, Arsenic, Chromium, Copper, Nickel, Zinc are outside control limits for sample MP34583-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 6020A

Matrix: AQ **Batch ID:** MP34570

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP34575

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58669-1DUP, FA58669-1MS, FA58669-1MSD, FA58669-1SDL were used as the QC samples for metals.

General Chemistry By Method EPA 335.4/SW 9012B

Matrix: AQ **Batch ID:** GP32226

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA58784-1MS, FA58784-1MSD were used as the QC samples for Total Cyanide.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA58677
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/22/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA58677-1	**PS-1**					
Perfluorobutanoic acid		0.0129 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoropentanoic acid		0.0140 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.00821 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoroheptanoic acid		0.00869 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.0198	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorononanoic acid		0.00602 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0490	0.015	0.0038	ug/l	EPA 537 MOD
Dieldrin [a]		0.11	0.040	0.0095	ug/l	SW846 8081B
Antimony		3.2 I	6.0	1.0	ug/l	SW846 6010C
Arsenic		1.7 I	10	1.3	ug/l	SW846 6010C
Copper		2.5 I	25	1.0	ug/l	SW846 6010C
Lead		1.9 I	5.0	1.1	ug/l	SW846 6010C
Manganese		18.9	15	1.0	ug/l	SW846 6010C
Nickel		0.40 I	40	0.40	ug/l	SW846 6010C
Zinc		15.3 I	20	4.4	ug/l	SW846 6010C
Cyanide, Total		0.0056 I	0.010	0.0030	mg/l	EPA 335.4/SW 9012B
FA58677-1A	**PS-1**					
Strontium		6740	100	10	ug/l	SW846 6020A
FA58677-2	**PS-2**					
Perfluorooctanoic acid		0.00783 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0371	0.015	0.0038	ug/l	EPA 537 MOD
Antimony		3.4 I	6.0	1.0	ug/l	SW846 6010C
Copper		3.4 I	25	1.0	ug/l	SW846 6010C
Lead		2.8 I	5.0	1.1	ug/l	SW846 6010C
Manganese		65.5	15	1.0	ug/l	SW846 6010C
Zinc		7.3 I	20	4.4	ug/l	SW846 6010C
Cyanide, Total		0.0037 I	0.010	0.0030	mg/l	EPA 335.4/SW 9012B
FA58677-2A	**PS-2**					
Strontium		10400	100	10	ug/l	SW846 6020A
FA58677-3	**PS-4**					
Trichloroethylene		0.87 I	1.0	0.35	ug/l	SW846 8260B
Perfluorobutanoic acid		0.0122 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoropentanoic acid		0.0167	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.0120 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoroheptanoic acid		0.0123 I	0.015	0.0077	ug/l	EPA 537 MOD

Summary of Hits

Job Number: FA58677
Account: Applied Ecology Inc.
Project: Countywide PFAS Screening
Collected: 10/22/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorooctanoic acid		0.0348	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorononanoic acid		0.00464 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0656	0.015	0.0038	ug/l	EPA 537 MOD
Antimony		1.9 I	6.0	1.0	ug/l	SW846 6010C
Chromium		1.1 I	10	1.0	ug/l	SW846 6010C
Copper		1.9 I	25	1.0	ug/l	SW846 6010C
Lead		2.8 I	5.0	1.1	ug/l	SW846 6010C
Manganese		40.2	15	1.0	ug/l	SW846 6010C
Zinc		10.5 I	20	4.4	ug/l	SW846 6010C
Cyanide, Total		0.0039 I	0.010	0.0030	mg/l	EPA 335.4/SW 9012B
FA58677-3A	**PS-4**					
Strontium		4340	100	10	ug/l	SW846 6020A
FA58677-4	**PS-3**					
No hits reported in this sample.						
FA58677-5	**PS-5**					
No hits reported in this sample.						
FA58677-6	**PS-6**					
Perfluorobutanoic acid		0.00957 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluoropentanoic acid		0.0134 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanoic acid		0.00887 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanoic acid		0.00845 I	0.015	0.0038	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid		0.0786	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid		0.00773 I	0.015	0.0077	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid		0.0359	0.015	0.0038	ug/l	EPA 537 MOD

(a) All hits confirmed by dual column analysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B130441.D	1	10/30/18 18:09	AJ	n/a	n/a	VB5252
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
107-02-8	Acrolein [a]	6.1 U	20	6.1	ug/l	
107-13-1	Acrylonitrile [a]	2.1 U	10	2.1	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [a]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
74-83-9	Methyl Bromide	0.59 U	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		83-118%
17060-07-0	1,2-Dichloroethane-D4	124%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Result reported from HCl preserved sample and should be used for screening purposes only.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X063661.D	1	10/29/18 15:37	MV	10/29/18 08:40	OP72391	SX2630
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.56 U	4.8	0.56	ug/l	
95-57-8	2-Chlorophenol	0.60 U	4.8	0.60	ug/l	
120-83-2	2,4-Dichlorophenol	0.80 U	4.8	0.80	ug/l	
105-67-9	2,4-Dimethylphenol	0.70 U	4.8	0.70	ug/l	
51-28-5	2,4-Dinitrophenol	4.8 U	24	4.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	1.9 U	9.5	1.9	ug/l	
88-75-5	2-Nitrophenol	0.81 U	4.8	0.81	ug/l	
100-02-7	4-Nitrophenol	4.8 U	24	4.8	ug/l	
87-86-5	Pentachlorophenol	4.8 U	24	4.8	ug/l	
108-95-2	Phenol	0.48 U	4.8	0.48	ug/l	
88-06-2	2,4,6-Trichlorophenol	0.72 U	4.8	0.72	ug/l	
83-32-9	Acenaphthene	0.60 U	4.8	0.60	ug/l	
208-96-8	Acenaphthylene	0.61 U	4.8	0.61	ug/l	
120-12-7	Anthracene	0.76 U	4.8	0.76	ug/l	
92-87-5	Benzidine [b]	4.8 U	24	4.8	ug/l	
56-55-3	Benzo(a)anthracene	0.72 U	4.8	0.72	ug/l	
50-32-8	Benzo(a)pyrene	0.75 U	4.8	0.75	ug/l	
205-99-2	Benzo(b)fluoranthene	0.74 U	4.8	0.74	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.78 U	4.8	0.78	ug/l	
207-08-9	Benzo(k)fluoranthene	0.82 U	4.8	0.82	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	0.81 U	4.8	0.81	ug/l	
85-68-7	Butyl Benzyl Phthalate	0.95 U	4.8	0.95	ug/l	
106-47-8	4-Chloroaniline	0.60 U	4.8	0.60	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	0.77 U	4.8	0.77	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.70 U	4.8	0.70	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.72 U	4.8	0.72	ug/l	
91-58-7	2-Chloronaphthalene	0.48 U	4.8	0.48	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	0.51 U	4.8	0.51	ug/l	
218-01-9	Chrysene	0.81 U	4.8	0.81	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.77 U	4.8	0.77	ug/l	
95-50-1	1,2-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
541-73-1	1,3-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	0.61 U	4.8	0.61	ug/l	
84-66-2	Diethyl Phthalate	0.95 U	4.8	0.95	ug/l	
131-11-3	Dimethyl Phthalate	0.95 U	4.8	0.95	ug/l	
84-74-2	Di-n-butyl Phthalate	0.95 U	4.8	0.95	ug/l	
117-84-0	Di-n-octyl Phthalate	0.95 U	4.8	0.95	ug/l	
121-14-2	2,4-Dinitrotoluene	0.77 U	4.8	0.77	ug/l	
606-20-2	2,6-Dinitrotoluene	0.68 U	4.8	0.68	ug/l	
122-66-7	1,2-Diphenylhydrazine	0.72 U	4.8	0.72	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.95 U	4.8	0.95	ug/l	
206-44-0	Fluoranthene	0.53 U	4.8	0.53	ug/l	
86-73-7	Fluorene	0.67 U	4.8	0.67	ug/l	
118-74-1	Hexachlorobenzene	0.66 U	4.8	0.66	ug/l	
87-68-3	Hexachlorobutadiene	0.48 U	4.8	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	1.7 U	4.8	1.7	ug/l	
67-72-1	Hexachloroethane	1.6 U	4.8	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.68 U	4.8	0.68	ug/l	
78-59-1	Isophorone	0.74 U	4.8	0.74	ug/l	
90-12-0	1-Methylnaphthalene	0.50 U	4.8	0.50	ug/l	
91-57-6	2-Methylnaphthalene	0.57 U	4.8	0.57	ug/l	
91-20-3	Naphthalene	0.48 U	4.8	0.48	ug/l	
98-95-3	Nitrobenzene	0.89 U	4.8	0.89	ug/l	
62-75-9	N-Nitrosodimethylamine	0.48 U	4.8	0.48	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	0.64 U	4.8	0.64	ug/l	
86-30-6	N-Nitrosodiphenylamine	0.77 U	4.8	0.77	ug/l	
85-01-8	Phenanthrene	0.82 U	4.8	0.82	ug/l	
129-00-0	Pyrene	0.65 U	4.8	0.65	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	4.8	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	26%		14-67%
4165-62-2	Phenol-d5	17%		10-50%
118-79-6	2,4,6-Tribromophenol	76%		33-118%
4165-60-0	Nitrobenzene-d5	68%		42-108%
321-60-8	2-Fluorobiphenyl	70%		40-106%
1718-51-0	Terphenyl-d14	62%		39-121%

(a) Associated BS recovery outside control limits.
(b) Associated ICV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55479.D	1	11/08/18 06:46	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0129	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0140	0.015	0.0077	ug/l	I
307-24-4	Perfluorohexanoic acid	0.00821	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.00869	0.015	0.0077	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0198	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.00602	0.015	0.0038	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0490	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	88%		61-134%
	13C2-PFDA	100%		62-128%
	d5-EtFOSAA	84%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT390906.D	1	10/29/18 21:01	WH	10/26/18 13:30	OP72377	GTT2220
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	5.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	PQL	MDL	Units	Q
309-00-2	Aldrin	0.011 U	0.040	0.011	ug/l	
319-84-6	alpha-BHC	0.0087 U	0.040	0.0087	ug/l	
319-85-7	beta-BHC	0.010 U	0.040	0.010	ug/l	
319-86-8	delta-BHC	0.0095 U	0.040	0.0095	ug/l	
58-89-9	gamma-BHC (Lindane)	0.0089 U	0.040	0.0089	ug/l	
12789-03-6	Chlordane	0.15 U	0.40	0.15	ug/l	
60-57-1	Dieldrin	0.11	0.040	0.0095	ug/l	
72-54-8	4,4'-DDD	0.020 U	0.080	0.020	ug/l	
72-55-9	4,4'-DDE	0.020 U	0.080	0.020	ug/l	
50-29-3	4,4'-DDT	0.020 U	0.080	0.020	ug/l	
72-20-8	Endrin	0.0084 U	0.080	0.0084	ug/l	
1031-07-8	Endosulfan sulfate	0.0063 U	0.080	0.0063	ug/l	
7421-93-4	Endrin aldehyde	0.011 U	0.080	0.011	ug/l	
959-98-8	Endosulfan-I	0.0064 U	0.040	0.0064	ug/l	
33213-65-9	Endosulfan-II	0.0060 U	0.040	0.0060	ug/l	
76-44-8	Heptachlor	0.010 U	0.040	0.010	ug/l	
1024-57-3	Heptachlor epoxide	0.0081 U	0.040	0.0081	ug/l	
72-43-5	Methoxychlor	0.020 U	0.080	0.020	ug/l	
8001-35-2	Toxaphene	0.86 U	2.0	0.86	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		42-127%
2051-24-3	Decachlorobiphenyl	81%		27-127%

(a) All hits confirmed by dual column analysis.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MM52722.D	1	10/29/18 23:40	NM	10/26/18 13:30	OP72378	GMM1023
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	5.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	PQL	MDL	Units	Q
12674-11-2	Aroclor 1016	0.16 U	0.40	0.16	ug/l	
11104-28-2	Aroclor 1221	0.20 U	0.40	0.20	ug/l	
11141-16-5	Aroclor 1232	0.20 U	0.40	0.20	ug/l	
53469-21-9	Aroclor 1242	0.16 U	0.40	0.16	ug/l	
12672-29-6	Aroclor 1248	0.16 U	0.40	0.16	ug/l	
11097-69-1	Aroclor 1254	0.16 U	0.40	0.16	ug/l	
11096-82-5	Aroclor 1260	0.16 U	0.40	0.16	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	93%		38-127%
2051-24-3	Decachlorobiphenyl	87%		25-137%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PS-1
Lab Sample ID: FA58677-1
Matrix: AQ - Ground Water
Project: Countywide PFAS Screening

Date Sampled: 10/22/18
Date Received: 10/24/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	3.2 I	6.0	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Arsenic	1.7 I	10	1.3	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Beryllium	0.20 U	4.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.0 U	10	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	2.5 I	25	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	1.9 I	5.0	1.1	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	18.9	15	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	10/30/18	10/30/18	LM	SW846 7470A [1]	SW846 7470A [3]
Nickel	0.40 I	40	0.40	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	15.3 I	20	4.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA15338
(2) Instrument QC Batch: MA15347
(3) Prep QC Batch: MP34575
(4) Prep QC Batch: MP34583

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Cyanide, Total	0.0056 I	0.010	0.0030	mg/l	1	10/30/18 16:45	JK	EPA 335.4/SW 9012B

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-1		
Lab Sample ID:	FA58677-1A	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Strontium	6740	100	10	ug/l	100	10/29/18	11/05/18	DM	SW846 6020A [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA15349
(2) Prep QC Batch: MP34570

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B130442.D	1	10/30/18 18:36	AJ	n/a	n/a	VB5252
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
107-02-8	Acrolein [a]	6.1 U	20	6.1	ug/l	
107-13-1	Acrylonitrile [a]	2.1 U	10	2.1	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [a]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
74-83-9	Methyl Bromide	0.59 U	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		83-118%
17060-07-0	1,2-Dichloroethane-D4	120%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Result reported from HCl preserved sample and should be used for screening purposes only.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	9I002715.D	1	10/30/18 21:20	MV	10/29/18 08:40	OP72391	S9I98
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.56 U	4.8	0.56	ug/l	
95-57-8	2-Chlorophenol	0.60 U	4.8	0.60	ug/l	
120-83-2	2,4-Dichlorophenol	0.80 U	4.8	0.80	ug/l	
105-67-9	2,4-Dimethylphenol	0.70 U	4.8	0.70	ug/l	
51-28-5	2,4-Dinitrophenol	4.8 U	24	4.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	1.9 U	9.5	1.9	ug/l	
88-75-5	2-Nitrophenol	0.81 U	4.8	0.81	ug/l	
100-02-7	4-Nitrophenol	4.8 U	24	4.8	ug/l	
87-86-5	Pentachlorophenol	4.8 U	24	4.8	ug/l	
108-95-2	Phenol	0.48 U	4.8	0.48	ug/l	
88-06-2	2,4,6-Trichlorophenol	0.72 U	4.8	0.72	ug/l	
83-32-9	Acenaphthene	0.60 U	4.8	0.60	ug/l	
208-96-8	Acenaphthylene	0.61 U	4.8	0.61	ug/l	
120-12-7	Anthracene	0.76 U	4.8	0.76	ug/l	
92-87-5	Benzidine [a]	4.8 U	24	4.8	ug/l	
56-55-3	Benzo(a)anthracene	0.72 U	4.8	0.72	ug/l	
50-32-8	Benzo(a)pyrene	0.75 U	4.8	0.75	ug/l	
205-99-2	Benzo(b)fluoranthene	0.74 U	4.8	0.74	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.78 U	4.8	0.78	ug/l	
207-08-9	Benzo(k)fluoranthene	0.82 U	4.8	0.82	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	0.81 U	4.8	0.81	ug/l	
85-68-7	Butyl Benzyl Phthalate	0.95 U	4.8	0.95	ug/l	
106-47-8	4-Chloroaniline	0.60 U	4.8	0.60	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	0.77 U	4.8	0.77	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.70 U	4.8	0.70	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.72 U	4.8	0.72	ug/l	
91-58-7	2-Chloronaphthalene	0.48 U	4.8	0.48	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	0.51 U	4.8	0.51	ug/l	
218-01-9	Chrysene	0.81 U	4.8	0.81	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.77 U	4.8	0.77	ug/l	
95-50-1	1,2-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
541-73-1	1,3-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	0.61 U	4.8	0.61	ug/l	
84-66-2	Diethyl Phthalate	0.95 U	4.8	0.95	ug/l	
131-11-3	Dimethyl Phthalate	0.95 U	4.8	0.95	ug/l	
84-74-2	Di-n-butyl Phthalate	0.95 U	4.8	0.95	ug/l	
117-84-0	Di-n-octyl Phthalate	0.95 U	4.8	0.95	ug/l	
121-14-2	2,4-Dinitrotoluene	0.77 U	4.8	0.77	ug/l	
606-20-2	2,6-Dinitrotoluene	0.68 U	4.8	0.68	ug/l	
122-66-7	1,2-Diphenylhydrazine	0.72 U	4.8	0.72	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.95 U	4.8	0.95	ug/l	
206-44-0	Fluoranthene	0.53 U	4.8	0.53	ug/l	
86-73-7	Fluorene	0.67 U	4.8	0.67	ug/l	
118-74-1	Hexachlorobenzene	0.66 U	4.8	0.66	ug/l	
87-68-3	Hexachlorobutadiene	0.48 U	4.8	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	1.7 U	4.8	1.7	ug/l	
67-72-1	Hexachloroethane	1.6 U	4.8	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.68 U	4.8	0.68	ug/l	
78-59-1	Isophorone	0.74 U	4.8	0.74	ug/l	
90-12-0	1-Methylnaphthalene	0.50 U	4.8	0.50	ug/l	
91-57-6	2-Methylnaphthalene	0.57 U	4.8	0.57	ug/l	
91-20-3	Naphthalene	0.48 U	4.8	0.48	ug/l	
98-95-3	Nitrobenzene	0.89 U	4.8	0.89	ug/l	
62-75-9	N-Nitrosodimethylamine	0.48 U	4.8	0.48	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	0.64 U	4.8	0.64	ug/l	
86-30-6	N-Nitrosodiphenylamine	0.77 U	4.8	0.77	ug/l	
85-01-8	Phenanthrene	0.82 U	4.8	0.82	ug/l	
129-00-0	Pyrene	0.65 U	4.8	0.65	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	4.8	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	25%		14-67%
4165-62-2	Phenol-d5	15%		10-50%
118-79-6	2,4,6-Tribromophenol	83%		33-118%
4165-60-0	Nitrobenzene-d5	78%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	82%		39-121%

(a) Associated ICV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55481.D	1	11/08/18 07:28	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00783	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0371	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	88%		61-134%
	13C2-PFDA	101%		62-128%
	d5-EtFOSAA	86%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT390909.D	1	10/29/18 21:44	WH	10/26/18 13:30	OP72377	GTT2220
Run #2							

	Initial Volume	Final Volume
Run #1	240 ml	5.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	PQL	MDL	Units	Q
309-00-2	Aldrin	0.011 U	0.042	0.011	ug/l	
319-84-6	alpha-BHC	0.0091 U	0.042	0.0091	ug/l	
319-85-7	beta-BHC	0.011 U	0.042	0.011	ug/l	
319-86-8	delta-BHC	0.0099 U	0.042	0.0099	ug/l	
58-89-9	gamma-BHC (Lindane)	0.0092 U	0.042	0.0092	ug/l	
12789-03-6	Chlordane	0.16 U	0.42	0.16	ug/l	
60-57-1	Dieldrin	0.0099 U	0.042	0.0099	ug/l	
72-54-8	4,4'-DDD	0.021 U	0.083	0.021	ug/l	
72-55-9	4,4'-DDE	0.021 U	0.083	0.021	ug/l	
50-29-3	4,4'-DDT	0.021 U	0.083	0.021	ug/l	
72-20-8	Endrin	0.0087 U	0.083	0.0087	ug/l	
1031-07-8	Endosulfan sulfate	0.0066 U	0.083	0.0066	ug/l	
7421-93-4	Endrin aldehyde	0.011 U	0.083	0.011	ug/l	
959-98-8	Endosulfan-I	0.0066 U	0.042	0.0066	ug/l	
33213-65-9	Endosulfan-II	0.0062 U	0.042	0.0062	ug/l	
76-44-8	Heptachlor	0.011 U	0.042	0.011	ug/l	
1024-57-3	Heptachlor epoxide	0.0085 U	0.042	0.0085	ug/l	
72-43-5	Methoxychlor	0.021 U	0.083	0.021	ug/l	
8001-35-2	Toxaphene	0.89 U	2.1	0.89	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		42-127%
2051-24-3	Decachlorobiphenyl	75%		27-127%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MM52723.D	1	10/29/18 23:51	NM	10/26/18 13:30	OP72378	GMM1023
Run #2							

	Initial Volume	Final Volume
Run #1	240 ml	5.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	PQL	MDL	Units	Q
12674-11-2	Aroclor 1016	0.17 U	0.42	0.17	ug/l	
11104-28-2	Aroclor 1221	0.21 U	0.42	0.21	ug/l	
11141-16-5	Aroclor 1232	0.21 U	0.42	0.21	ug/l	
53469-21-9	Aroclor 1242	0.17 U	0.42	0.17	ug/l	
12672-29-6	Aroclor 1248	0.17 U	0.42	0.17	ug/l	
11097-69-1	Aroclor 1254	0.17 U	0.42	0.17	ug/l	
11096-82-5	Aroclor 1260	0.17 U	0.42	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		38-127%
2051-24-3	Decachlorobiphenyl	81%		25-137%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PS-2
Lab Sample ID: FA58677-2
Matrix: AQ - Ground Water
Project: Countywide PFAS Screening

Date Sampled: 10/22/18
Date Received: 10/24/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	3.4 I	6.0	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Arsenic	1.3 U	10	1.3	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Beryllium	0.20 U	4.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.0 U	10	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	3.4 I	25	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	2.8 I	5.0	1.1	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	65.5	15	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	10/30/18	10/30/18	LM	SW846 7470A [1]	SW846 7470A [3]
Nickel	0.40 U	40	0.40	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	7.3 I	20	4.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA15338
(2) Instrument QC Batch: MA15347
(3) Prep QC Batch: MP34575
(4) Prep QC Batch: MP34583

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Cyanide, Total	0.0037 I	0.010	0.0030	mg/l	1	10/30/18 16:49	JK	EPA 335.4/SW 9012B

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-2		
Lab Sample ID:	FA58677-2A	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Strontium	10400	100	10	ug/l	100	10/29/18	11/05/18	DM	SW846 6020A [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA15349
(2) Prep QC Batch: MP34570

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B130443.D	1	10/30/18 19:02	AJ	n/a	n/a	VB5252
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
107-02-8	Acrolein [a]	6.1 U	20	6.1	ug/l	
107-13-1	Acrylonitrile [a]	2.1 U	10	2.1	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [a]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
74-83-9	Methyl Bromide	0.59 U	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

VOA PPL List + MTBE

CAS No.	Compound	Result	PQL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.87	1.0	0.35	ug/l	I
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		83-118%
17060-07-0	1,2-Dichloroethane-D4	117%		79-125%
2037-26-5	Toluene-D8	94%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Result reported from HCl preserved sample and should be used for screening purposes only.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	9I002718.D	1	10/30/18 22:36	MV	10/29/18 08:40	OP72391	S9I98
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.56 U	4.8	0.56	ug/l	
95-57-8	2-Chlorophenol	0.60 U	4.8	0.60	ug/l	
120-83-2	2,4-Dichlorophenol	0.80 U	4.8	0.80	ug/l	
105-67-9	2,4-Dimethylphenol	0.70 U	4.8	0.70	ug/l	
51-28-5	2,4-Dinitrophenol	4.8 U	24	4.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	1.9 U	9.5	1.9	ug/l	
88-75-5	2-Nitrophenol	0.81 U	4.8	0.81	ug/l	
100-02-7	4-Nitrophenol	4.8 U	24	4.8	ug/l	
87-86-5	Pentachlorophenol	4.8 U	24	4.8	ug/l	
108-95-2	Phenol	0.48 U	4.8	0.48	ug/l	
88-06-2	2,4,6-Trichlorophenol	0.72 U	4.8	0.72	ug/l	
83-32-9	Acenaphthene	0.60 U	4.8	0.60	ug/l	
208-96-8	Acenaphthylene	0.61 U	4.8	0.61	ug/l	
120-12-7	Anthracene	0.76 U	4.8	0.76	ug/l	
92-87-5	Benzidine [a]	4.8 U	24	4.8	ug/l	
56-55-3	Benzo(a)anthracene	0.72 U	4.8	0.72	ug/l	
50-32-8	Benzo(a)pyrene	0.75 U	4.8	0.75	ug/l	
205-99-2	Benzo(b)fluoranthene	0.74 U	4.8	0.74	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.78 U	4.8	0.78	ug/l	
207-08-9	Benzo(k)fluoranthene	0.82 U	4.8	0.82	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	0.81 U	4.8	0.81	ug/l	
85-68-7	Butyl Benzyl Phthalate	0.95 U	4.8	0.95	ug/l	
106-47-8	4-Chloroaniline	0.60 U	4.8	0.60	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	0.77 U	4.8	0.77	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.70 U	4.8	0.70	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.72 U	4.8	0.72	ug/l	
91-58-7	2-Chloronaphthalene	0.48 U	4.8	0.48	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	0.51 U	4.8	0.51	ug/l	
218-01-9	Chrysene	0.81 U	4.8	0.81	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.77 U	4.8	0.77	ug/l	
95-50-1	1,2-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
541-73-1	1,3-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

ABN PPL List + 1&2 Methyl Naphthalene

CAS No.	Compound	Result	PQL	MDL	Units	Q
106-46-7	1,4-Dichlorobenzene	0.48 U	4.8	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	0.61 U	4.8	0.61	ug/l	
84-66-2	Diethyl Phthalate	0.95 U	4.8	0.95	ug/l	
131-11-3	Dimethyl Phthalate	0.95 U	4.8	0.95	ug/l	
84-74-2	Di-n-butyl Phthalate	0.95 U	4.8	0.95	ug/l	
117-84-0	Di-n-octyl Phthalate	0.95 U	4.8	0.95	ug/l	
121-14-2	2,4-Dinitrotoluene	0.77 U	4.8	0.77	ug/l	
606-20-2	2,6-Dinitrotoluene	0.68 U	4.8	0.68	ug/l	
122-66-7	1,2-Diphenylhydrazine	0.72 U	4.8	0.72	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.95 U	4.8	0.95	ug/l	
206-44-0	Fluoranthene	0.53 U	4.8	0.53	ug/l	
86-73-7	Fluorene	0.67 U	4.8	0.67	ug/l	
118-74-1	Hexachlorobenzene	0.66 U	4.8	0.66	ug/l	
87-68-3	Hexachlorobutadiene	0.48 U	4.8	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	1.7 U	4.8	1.7	ug/l	
67-72-1	Hexachloroethane	1.6 U	4.8	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.68 U	4.8	0.68	ug/l	
78-59-1	Isophorone	0.74 U	4.8	0.74	ug/l	
90-12-0	1-Methylnaphthalene	0.50 U	4.8	0.50	ug/l	
91-57-6	2-Methylnaphthalene	0.57 U	4.8	0.57	ug/l	
91-20-3	Naphthalene	0.48 U	4.8	0.48	ug/l	
98-95-3	Nitrobenzene	0.89 U	4.8	0.89	ug/l	
62-75-9	N-Nitrosodimethylamine	0.48 U	4.8	0.48	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	0.64 U	4.8	0.64	ug/l	
86-30-6	N-Nitrosodiphenylamine	0.77 U	4.8	0.77	ug/l	
85-01-8	Phenanthrene	0.82 U	4.8	0.82	ug/l	
129-00-0	Pyrene	0.65 U	4.8	0.65	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	4.8	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	21%		14-67%
4165-62-2	Phenol-d5	14%		10-50%
118-79-6	2,4,6-Tribromophenol	75%		33-118%
4165-60-0	Nitrobenzene-d5	72%		42-108%
321-60-8	2-Fluorobiphenyl	75%		40-106%
1718-51-0	Terphenyl-d14	80%		39-121%

(a) Associated ICV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55482.D	1	11/08/18 07:49	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0122	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0167	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0120	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0123	0.015	0.0077	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0348	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.00464	0.015	0.0038	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0656	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	81%		61-134%
	13C2-PFDA	106%		62-128%
	d5-EtFOSAA	86%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT390910.D	1	10/29/18 21:59	WH	10/26/18 13:30	OP72377	GTT2220
Run #2							

	Initial Volume	Final Volume
Run #1	260 ml	5.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	PQL	MDL	Units	Q
309-00-2	Aldrin	0.010 U	0.038	0.010	ug/l	
319-84-6	alpha-BHC	0.0084 U	0.038	0.0084	ug/l	
319-85-7	beta-BHC	0.0099 U	0.038	0.0099	ug/l	
319-86-8	delta-BHC	0.0091 U	0.038	0.0091	ug/l	
58-89-9	gamma-BHC (Lindane)	0.0085 U	0.038	0.0085	ug/l	
12789-03-6	Chlordane	0.14 U	0.38	0.14	ug/l	
60-57-1	Dieldrin	0.0091 U	0.038	0.0091	ug/l	
72-54-8	4,4'-DDD	0.019 U	0.077	0.019	ug/l	
72-55-9	4,4'-DDE	0.019 U	0.077	0.019	ug/l	
50-29-3	4,4'-DDT	0.019 U	0.077	0.019	ug/l	
72-20-8	Endrin	0.0081 U	0.077	0.0081	ug/l	
1031-07-8	Endosulfan sulfate	0.0061 U	0.077	0.0061	ug/l	
7421-93-4	Endrin aldehyde	0.011 U	0.077	0.011	ug/l	
959-98-8	Endosulfan-I	0.0061 U	0.038	0.0061	ug/l	
33213-65-9	Endosulfan-II	0.0058 U	0.038	0.0058	ug/l	
76-44-8	Heptachlor	0.010 U	0.038	0.010	ug/l	
1024-57-3	Heptachlor epoxide	0.0078 U	0.038	0.0078	ug/l	
72-43-5	Methoxychlor	0.019 U	0.077	0.019	ug/l	
8001-35-2	Toxaphene	0.83 U	1.9	0.83	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		42-127%
2051-24-3	Decachlorobiphenyl	50%		27-127%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MM52724.D	1	10/30/18 00:03	NM	10/26/18 13:30	OP72378	GMM1023
Run #2							

	Initial Volume	Final Volume
Run #1	260 ml	5.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	PQL	MDL	Units	Q
12674-11-2	Aroclor 1016	0.15 U	0.38	0.15	ug/l	
11104-28-2	Aroclor 1221	0.19 U	0.38	0.19	ug/l	
11141-16-5	Aroclor 1232	0.19 U	0.38	0.19	ug/l	
53469-21-9	Aroclor 1242	0.15 U	0.38	0.15	ug/l	
12672-29-6	Aroclor 1248	0.15 U	0.38	0.15	ug/l	
11097-69-1	Aroclor 1254	0.15 U	0.38	0.15	ug/l	
11096-82-5	Aroclor 1260	0.15 U	0.38	0.15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	98%		38-127%
2051-24-3	Decachlorobiphenyl	52%		25-137%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PS-4
Lab Sample ID: FA58677-3
Matrix: AQ - Ground Water
Project: Countywide PFAS Screening

Date Sampled: 10/22/18
Date Received: 10/24/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	1.9 I	6.0	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Arsenic	1.3 U	10	1.3	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Beryllium	0.20 U	4.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.1 I	10	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.9 I	25	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	2.8 I	5.0	1.1	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	40.2	15	1.0	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	10/30/18	10/30/18	LM	SW846 7470A [1]	SW846 7470A [3]
Nickel	0.40 U	40	0.40	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	10.5 I	20	4.4	ug/l	1	10/31/18	11/01/18	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA15338
(2) Instrument QC Batch: MA15347
(3) Prep QC Batch: MP34575
(4) Prep QC Batch: MP34583

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Cyanide, Total	0.0039 I	0.010	0.0030	mg/l	1	10/30/18 16:50	JK	EPA 335.4/SW 9012B

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-4		
Lab Sample ID:	FA58677-3A	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
		Percent Solids:	n/a
Project:	Countywide PFAS Screening		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Strontium	4340	100	10	ug/l	100	10/29/18	11/05/18	DM	SW846 6020A [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA15349
(2) Prep QC Batch: MP34570

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PS-3		
Lab Sample ID:	FA58677-4	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55483.D	1	11/08/18 08:10	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-3		
Lab Sample ID:	FA58677-4	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	108%		62-128%
	d5-EtFOSAA	92%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-5		
Lab Sample ID:	FA58677-5	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55484.D	1	11/08/18 08:31	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-5		
Lab Sample ID:	FA58677-5	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	100%		62-128%
	d5-EtFOSAA	90%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-6		
Lab Sample ID:	FA58677-6	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55485.D	1	11/08/18 08:52	NAF	11/02/18 08:20	OP72470	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.00957	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0134	0.015	0.0077	ug/l	I
307-24-4	Perfluorohexanoic acid	0.00887	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00845	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0786	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00773	0.015	0.0077	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0359	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-6		
Lab Sample ID:	FA58677-6	**Date Sampled:**	10/22/18
Matrix:	AQ - Ground Water	**Date Received:**	10/24/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	104%		62-128%
	d5-EtFOSAA	91%		57-135%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range

I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS

FA58677

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

~~FA58676~~ ①

SGS - ORLANDO JOB # : PAGE_____OF_____

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc.
Address: 122 Fourth Ave. suite 104
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: Danielle Huffner Sampler 2: Kayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNA	DI WATER	MEOH	LC537DODFL	V8260PPL	AB8270PPL	P8081PESTPPL	P8082PCB	CN	PNA3, MN	P8290TODF	GR-A, GR-B, RA-226, RA-228	Sr-90	Sr-6020	LAB USE ONLY
1	PS-1 (1 of 4)	10/22/18	9:08	DH	GW	21		10	3	1	7					X	X	X	X	X	X	X	X	X	X	X	
2	PS-2 (2 of 4)	10/22/18	9:41	KD	GW	21		10	3	1	7					X	X	X	X	X	X	X	X	X	X	X	
3	PS-4 (3 of 4)	10/22/18	10:05	DH	GW	21		10	3	1	7					X	X	X	X	X	X	X	X	X	X	X	
4	PS-3 (4 of 4)	10/22/18	14:42	KD	GW	2		2								X											
5	PS-5 (4 of 4)	10/22/18	14:53	DH	GW	2		2								X											
6	PS-6 (4 of 4)	10/22/18	8:16	KD	GW	2		2								X											

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 Kayleigh Douglass / AEI	10/23/18 17:50	2 James Llorca 10-23-18 1250	3 James Llorca 10-23-18 1445		4 [illegible] 10/24/18 900
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 4.0, 4.2, 3.6, 3.2, 3.0, 4.0, 4.4

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

5.1

5

FA58677: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA58677 **Client:** APPLIED ECOLOGY INC. **Project:** COUNTYWIDE PFAS

Date / Time Received: 10/24/2018 9:00:00 AM **Delivery Method:** ALSE **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 7

Cooler Temps (Raw Measured) °C: Cooler 1: (4.2); Cooler 2: (4.4); Cooler 3: (3.8); Cooler 4: (3.4); Cooler 5: (3.2); Cooler 6: (4.2); Cooler 7: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (4.0); Cooler 2: (4.2); Cooler 3: (3.6); Cooler 4: (3.2); Cooler 5: (3.0); Cooler 6: (4.0); Cooler 7: (4.4);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 10/24/2018 9:00:00 A Reviewer: _____ Date: _____

FA58677: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB5252-MB	B130422.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
107-02-8	Acrolein	ND	20	6.1	ug/l	
107-13-1	Acrylonitrile	ND	10	2.1	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether	ND	5.0	2.1	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
74-83-9	Methyl Bromide	ND	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB5252-MB	B130422.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	83-118%
17060-07-0	1,2-Dichloroethane-D4	110%	79-125%
2037-26-5	Toluene-D8	94%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB5252-BS	B130421.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
107-02-8	Acrolein	125	43.3	35	31-154
107-13-1	Acrylonitrile	125	111	89	58-126
71-43-2	Benzene	25	26.2	105	81-122
75-27-4	Bromodichloromethane	25	28.9	116	79-123
75-25-2	Bromoform	25	25.0	100	66-123
56-23-5	Carbon Tetrachloride	25	32.5	130	76-136
108-90-7	Chlorobenzene	25	24.7	99	82-124
75-00-3	Chloroethane	25	24.0	96	62-144
110-75-8	2-Chloroethyl Vinyl Ether	125	134	107	56-122
67-66-3	Chloroform	25	27.6	110	80-124
124-48-1	Dibromochloromethane	25	25.1	100	78-122
75-71-8	Dichlorodifluoromethane	25	23.8	95	42-167
95-50-1	1,2-Dichlorobenzene	25	24.9	100	82-124
541-73-1	1,3-Dichlorobenzene	25	25.5	102	84-125
106-46-7	1,4-Dichlorobenzene	25	24.8	99	78-120
75-34-3	1,1-Dichloroethane	25	28.1	112	81-122
107-06-2	1,2-Dichloroethane	25	26.3	105	75-125
75-35-4	1,1-Dichloroethylene	25	29.3	117	78-137
156-59-2	cis-1,2-Dichloroethylene	25	27.1	108	78-120
156-60-5	trans-1,2-Dichloroethylene	25	28.1	112	76-127
78-87-5	1,2-Dichloropropane	25	26.1	104	76-124
10061-01-5	cis-1,3-Dichloropropene	25	26.6	106	75-118
10061-02-6	trans-1,3-Dichloropropene	25	25.6	102	80-120
100-41-4	Ethylbenzene	25	26.2	105	81-121
74-83-9	Methyl Bromide	25	23.2	93	59-143
74-87-3	Methyl Chloride	25	23.3	93	50-159
75-09-2	Methylene Chloride	25	25.5	102	69-135
1634-04-4	Methyl Tert Butyl Ether	25	23.9	96	72-117
79-34-5	1,1,2,2-Tetrachloroethane	25	23.1	92	72-120
127-18-4	Tetrachloroethylene	25	26.3	105	76-135
108-88-3	Toluene	25	24.0	96	80-120
71-55-6	1,1,1-Trichloroethane	25	29.9	120	75-130
79-00-5	1,1,2-Trichloroethane	25	22.5	90	76-119
79-01-6	Trichloroethylene	25	27.8	111	81-126
75-69-4	Trichlorofluoromethane	25	28.1	112	71-156
75-01-4	Vinyl Chloride	25	26.5	106	69-159

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB5252-BS	B130421.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1330-20-7	Xylene (total)	75	79.1	105	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	79-125%
2037-26-5	Toluene-D8	90%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA58657-3MS	B130432.D	1	10/30/18	AJ	n/a	n/a	VB5252
FA58657-3MSD	B130433.D	1	10/30/18	AJ	n/a	n/a	VB5252
FA58657-3	B130425.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58657-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
107-02-8	Acrolein	20 U		125	50.0	40	125	52.2	42	4	31-154/29
107-13-1	Acrylonitrile	10 U		125	96.9	78	125	98.9	79	2	58-126/16
71-43-2	Benzene	1.0 U		25	26.7	107	25	27.1	108	1	81-122/14
75-27-4	Bromodichloromethane	1.0 U		25	28.1	112	25	27.5	110	2	79-123/19
75-25-2	Bromoform	1.0 U		25	18.3	73	25	17.6	70	4	66-123/21
56-23-5	Carbon Tetrachloride	1.0 U		25	33.3	133	25	33.2	133	0	76-136/23
108-90-7	Chlorobenzene	1.0 U		25	24.4	98	25	24.5	98	0	82-124/14
75-00-3	Chloroethane	2.0 U		25	24.6	98	25	25.7	103	4	62-144/20
110-75-8	2-Chloroethyl Vinyl Ether	5.0 U		125	ND	0*	125	ND	0*	nc	56-122/23
67-66-3	Chloroform	1.0 U		25	29.0	116	25	29.2	117	1	80-124/15
124-48-1	Dibromochloromethane	1.0 U		25	21.9	88	25	21.5	86	2	78-122/19
75-71-8	Dichlorodifluoromethane	2.0 U		25	23.6	94	25	24.8	99	5	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0 U		25	24.4	98	25	24.6	98	1	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0 U		25	25.0	100	25	25.8	103	3	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0 U		25	24.6	98	25	24.9	100	1	78-120/15
75-34-3	1,1-Dichloroethane	1.0 U		25	29.0	116	25	28.9	116	0	81-122/15
107-06-2	1,2-Dichloroethane	1.0 U		25	28.2	113	25	28.2	113	0	75-125/14
75-35-4	1,1-Dichloroethylene	1.0 U		25	29.5	118	25	30.0	120	2	78-137/18
156-59-2	cis-1,2-Dichloroethylene	6.5		25	34.5	112	25	34.2	111	1	78-120/15
156-60-5	trans-1,2-Dichloroethylene	0.30	J	25	29.1	115	25	29.9	118	3	76-127/17
78-87-5	1,2-Dichloropropane	1.0 U		25	26.1	104	25	25.8	103	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0 U		25	23.8	95	25	24.4	98	2	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0 U		25	24.3	97	25	24.3	97	0	80-120/22
100-41-4	Ethylbenzene	1.0 U		25	26.3	105	25	26.5	106	1	81-121/14
74-83-9	Methyl Bromide	2.0 U		25	23.3	93	25	23.7	95	2	59-143/19
74-87-3	Methyl Chloride	2.0 U		25	23.3	93	25	24.5	98	5	50-159/19
75-09-2	Methylene Chloride	5.0 U		25	26.2	105	25	26.5	106	1	69-135/16
1634-04-4	Methyl Tert Butyl Ether	1.0 U		25	23.4	94	25	24.5	98	5	72-117/14
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		25	22.0	88	25	22.8	91	4	72-120/14
127-18-4	Tetrachloroethylene	0.33	J	25	26.6	105	25	28.2	111	6	76-135/16
108-88-3	Toluene	1.0 U		25	24.9	100	25	25.4	102	2	80-120/14
71-55-6	1,1,1-Trichloroethane	1.0 U		25	31.4	126	25	31.6	126	1	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		25	23.1	92	25	24.1	96	4	76-119/14
79-01-6	Trichloroethylene	13.7		25	41.8	112	25	42.3	114	1	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		25	29.6	118	25	29.8	119	1	71-156/21
75-01-4	Vinyl Chloride	1.0 U		25	25.8	103	25	27.3	109	6	69-159/18

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA58657-3MS	B130432.D	1	10/30/18	AJ	n/a	n/a	VB5252
FA58657-3MSD	B130433.D	1	10/30/18	AJ	n/a	n/a	VB5252
FA58657-3	B130425.D	1	10/30/18	AJ	n/a	n/a	VB5252

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58657-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1330-20-7	Xylene (total)	3.0 U		75	81.6	109	75	81.1	108	1	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FA58657-3	Limits
1868-53-7	Dibromofluoromethane	107%	106%	106%	83-118%
17060-07-0	1,2-Dichloroethane-D4	114%	112%	113%	79-125%
2037-26-5	Toluene-D8	93%	93%	92%	85-112%
460-00-4	4-Bromofluorobenzene	97%	97%	100%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MB	X063660.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
83-32-9	Acenaphthene	ND	5.0	0.63	ug/l	
208-96-8	Acenaphthylene	ND	5.0	0.64	ug/l	
120-12-7	Anthracene	ND	5.0	0.80	ug/l	
92-87-5	Benzidine	ND	25	5.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	0.76	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	0.78	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.78	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	0.82	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	0.86	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	ND	5.0	0.54	ug/l	
218-01-9	Chrysene	ND	5.0	0.85	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	0.80	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MB	X063660.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.76	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.55	ug/l	
86-73-7	Fluorene	ND	5.0	0.70	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	0.71	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
90-12-0	1-Methylnaphthalene	ND	5.0	0.53	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	0.60	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	0.50	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.81	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.86	ug/l	
129-00-0	Pyrene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.1	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	45%	14-67%
4165-62-2	Phenol-d5	33%	10-50%
118-79-6	2,4,6-Tribromophenol	77%	33-118%
4165-60-0	Nitrobenzene-d5	71%	42-108%
321-60-8	2-Fluorobiphenyl	70%	40-106%
1718-51-0	Terphenyl-d14	68%	39-121%

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MB	9I002710.D	1	10/30/18	MV	10/29/18	OP72391	S9I98

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
83-32-9	Acenaphthene	ND	5.0	0.63	ug/l	
208-96-8	Acenaphthylene	ND	5.0	0.64	ug/l	
120-12-7	Anthracene	ND	5.0	0.80	ug/l	
92-87-5	Benzidine	ND	25	5.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	0.76	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	0.78	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.78	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	0.82	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	0.86	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	ND	5.0	0.54	ug/l	
218-01-9	Chrysene	ND	5.0	0.85	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	0.80	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MB	9I002710.D	1	10/30/18	MV	10/29/18	OP72391	S9I98

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.76	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.55	ug/l	
86-73-7	Fluorene	ND	5.0	0.70	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	0.71	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
90-12-0	1-Methylnaphthalene	ND	5.0	0.53	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	0.60	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	0.50	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.81	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.86	ug/l	
129-00-0	Pyrene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.1	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	37%	14-67%
4165-62-2	Phenol-d5	30%	10-50%
118-79-6	2,4,6-Tribromophenol	77%	33-118%
4165-60-0	Nitrobenzene-d5	79%	42-108%
321-60-8	2-Fluorobiphenyl	77%	40-106%
1718-51-0	Terphenyl-d14	88%	39-121%

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72470-MB	Q55469.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58677-1, FA58677-2, FA58677-3, FA58677-4, FA58677-5, FA58677-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.015	0.0077	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.015	0.0077	ug/l	
754-91-6	PFOSA	ND	0.015	0.0077	ug/l	
2355-31-9	MeFOSAA	ND	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	ND	0.038	0.015	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries		Limits
	13C2-PFHxA	95%	61-134%
	13C2-PFDA	110%	62-128%
	d5-EtFOSAA	90%	57-135%

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-BS	X063659.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
59-50-7	4-Chloro-3-methyl Phenol	50	45.3	91	54-103
95-57-8	2-Chlorophenol	50	41.4	83	52-98
120-83-2	2,4-Dichlorophenol	50	43.8	88	53-103
105-67-9	2,4-Dimethylphenol	50	42.1	84	43-90
51-28-5	2,4-Dinitrophenol	100	54.1	54	44-112
534-52-1	4,6-Dinitro-o-cresol	100	63.3	63*	66-121
88-75-5	2-Nitrophenol	50	43.0	86	53-102
100-02-7	4-Nitrophenol	100	51.1	51	18-62
87-86-5	Pentachlorophenol	100	89.2	89	61-115
108-95-2	Phenol	50	19.5	39	19-56
88-06-2	2,4,6-Trichlorophenol	50	43.9	88	59-107
83-32-9	Acenaphthene	50	41.9	84	61-107
208-96-8	Acenaphthylene	50	44.2	88	60-104
120-12-7	Anthracene	50	41.2	82	65-108
92-87-5	Benzidine	50	34.6	69	25-99
56-55-3	Benzo(a)anthracene	50	43.8	88	66-111
50-32-8	Benzo(a)pyrene	50	44.3	89	62-107
205-99-2	Benzo(b)fluoranthene	50	47.6	95	65-114
191-24-2	Benzo(g,h,i)perylene	50	43.7	87	66-116
207-08-9	Benzo(k)fluoranthene	50	43.8	88	65-114
101-55-3	4-Bromophenyl Phenyl Ether	50	41.1	82	65-109
85-68-7	Butyl Benzyl Phthalate	50	43.6	87	65-112
106-47-8	4-Chloroaniline	50	41.4	83	49-105
111-91-1	bis(2-Chloroethoxy)methane	50	39.8	80	51-102
111-44-4	bis(2-Chloroethyl)ether	50	40.6	81	53-100
108-60-1	2,2'-Oxybis(1-chloropropane)	50	41.1	82	45-106
91-58-7	2-Chloronaphthalene	50	40.4	81	57-103
7005-72-3	4-Chlorophenyl Phenyl Ether	50	42.9	86	62-105
218-01-9	Chrysene	50	43.3	87	66-111
53-70-3	Dibenzo(a,h)anthracene	50	46.3	93	66-119
95-50-1	1,2-Dichlorobenzene	50	38.8	78	48-97
541-73-1	1,3-Dichlorobenzene	50	37.3	75	45-95
106-46-7	1,4-Dichlorobenzene	50	37.4	75	45-98
91-94-1	3,3'-Dichlorobenzidine	50	47.6	95	46-117
84-66-2	Diethyl Phthalate	50	45.4	91	64-108
131-11-3	Dimethyl Phthalate	50	44.2	88	63-106

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-BS	X063659.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
84-74-2	Di-n-butyl Phthalate	50	46.9	94	65-107
117-84-0	Di-n-octyl Phthalate	50	48.8	98	62-118
121-14-2	2,4-Dinitrotoluene	50	44.7	89	61-110
606-20-2	2,6-Dinitrotoluene	50	41.9	84	63-108
122-66-7	1,2-Diphenylhydrazine	50	42.8	86	61-110
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.2	92	61-117
206-44-0	Fluoranthene	50	48.6	97	63-106
86-73-7	Fluorene	50	45.4	91	62-108
118-74-1	Hexachlorobenzene	50	41.6	83	63-108
87-68-3	Hexachlorobutadiene	50	38.1	76	42-102
77-47-4	Hexachlorocyclopentadiene	50	20.5	41	39-102
67-72-1	Hexachloroethane	50	34.0	68	42-100
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.4	93	64-119
78-59-1	Isophorone	50	40.2	80	43-87
90-12-0	1-Methylnaphthalene	50	40.8	82	53-102
91-57-6	2-Methylnaphthalene	50	44.0	88	51-102
91-20-3	Naphthalene	50	40.3	81	47-100
98-95-3	Nitrobenzene	50	40.6	81	50-104
62-75-9	N-Nitrosodimethylamine	50	26.3	53	28-78
621-64-7	N-Nitrosodi-n-propylamine	50	42.4	85	52-104
86-30-6	N-Nitrosodiphenylamine	50	40.0	80	64-108
85-01-8	Phenanthrene	50	43.6	87	66-110
129-00-0	Pyrene	50	41.4	83	64-113
120-82-1	1,2,4-Trichlorobenzene	50	38.7	77	45-97

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	50%	14-67%
4165-62-2	Phenol-d5	37%	10-50%
118-79-6	2,4,6-Tribromophenol	80%	33-118%
4165-60-0	Nitrobenzene-d5	76%	42-108%
321-60-8	2-Fluorobiphenyl	76%	40-106%
1718-51-0	Terphenyl-d14	71%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-BS	9I002709.D	1	10/30/18	MV	10/29/18	OP72391	S9I98

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
59-50-7	4-Chloro-3-methyl Phenol	50	41.4	83	54-103
95-57-8	2-Chlorophenol	50	41.0	82	52-98
120-83-2	2,4-Dichlorophenol	50	43.2	86	53-103
105-67-9	2,4-Dimethylphenol	50	40.2	80	43-90
51-28-5	2,4-Dinitrophenol	100	62.6	63	44-112
534-52-1	4,6-Dinitro-o-cresol	100	96.2	96	66-121
88-75-5	2-Nitrophenol	50	43.0	86	53-102
100-02-7	4-Nitrophenol	100	42.5	43	18-62
87-86-5	Pentachlorophenol	100	87.5	88	61-115
108-95-2	Phenol	50	19.7	39	19-56
88-06-2	2,4,6-Trichlorophenol	50	46.6	93	59-107
83-32-9	Acenaphthene	50	44.6	89	61-107
208-96-8	Acenaphthylene	50	46.8	94	60-104
120-12-7	Anthracene	50	44.5	89	65-108
92-87-5	Benzidine	50	37.8	76	25-99
56-55-3	Benzo(a)anthracene	50	44.5	89	66-111
50-32-8	Benzo(a)pyrene	50	45.2	90	62-107
205-99-2	Benzo(b)fluoranthene	50	47.7	95	65-114
191-24-2	Benzo(g,h,i)perylene	50	43.3	87	66-116
207-08-9	Benzo(k)fluoranthene	50	47.5	95	65-114
101-55-3	4-Bromophenyl Phenyl Ether	50	44.8	90	65-109
85-68-7	Butyl Benzyl Phthalate	50	48.1	96	65-112
106-47-8	4-Chloroaniline	50	40.2	80	49-105
111-91-1	bis(2-Chloroethoxy)methane	50	41.2	82	51-102
111-44-4	bis(2-Chloroethyl)ether	50	43.0	86	53-100
108-60-1	2,2'-Oxybis(1-chloropropane)	50	47.7	95	45-106
91-58-7	2-Chloronaphthalene	50	43.0	86	57-103
7005-72-3	4-Chlorophenyl Phenyl Ether	50	43.3	87	62-105
218-01-9	Chrysene	50	45.4	91	66-111
53-70-3	Dibenzo(a,h)anthracene	50	43.1	86	66-119
95-50-1	1,2-Dichlorobenzene	50	38.8	78	48-97
541-73-1	1,3-Dichlorobenzene	50	37.8	76	45-95
106-46-7	1,4-Dichlorobenzene	50	37.1	74	45-98
91-94-1	3,3'-Dichlorobenzidine	50	43.9	88	46-117
84-66-2	Diethyl Phthalate	50	43.9	88	64-108
131-11-3	Dimethyl Phthalate	50	43.7	87	63-106

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-BS	9I002709.D	1	10/30/18	MV	10/29/18	OP72391	S9I98

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
84-74-2	Di-n-butyl Phthalate	50	46.3	93	65-107
117-84-0	Di-n-octyl Phthalate	50	52.9	106	62-118
121-14-2	2,4-Dinitrotoluene	50	41.7	83	61-110
606-20-2	2,6-Dinitrotoluene	50	42.6	85	63-108
122-66-7	1,2-Diphenylhydrazine	50	49.0	98	61-110
117-81-7	bis(2-Ethylhexyl)phthalate	50	49.0	98	61-117
206-44-0	Fluoranthene	50	44.4	89	63-106
86-73-7	Fluorene	50	45.9	92	62-108
118-74-1	Hexachlorobenzene	50	42.3	85	63-108
87-68-3	Hexachlorobutadiene	50	38.1	76	42-102
77-47-4	Hexachlorocyclopentadiene	50	34.0	68	39-102
67-72-1	Hexachloroethane	50	37.9	76	42-100
193-39-5	Indeno(1,2,3-cd)pyrene	50	42.2	84	64-119
78-59-1	Isophorone	50	41.6	83	43-87
90-12-0	1-Methylnaphthalene	50	39.1	78	53-102
91-57-6	2-Methylnaphthalene	50	42.9	86	51-102
91-20-3	Naphthalene	50	40.6	81	47-100
98-95-3	Nitrobenzene	50	42.6	85	50-104
62-75-9	N-Nitrosodimethylamine	50	24.1	48	28-78
621-64-7	N-Nitrosodi-n-propylamine	50	44.7	89	52-104
86-30-6	N-Nitrosodiphenylamine	50	47.2	94	64-108
85-01-8	Phenanthrene	50	45.7	91	66-110
129-00-0	Pyrene	50	48.8	98	64-113
120-82-1	1,2,4-Trichlorobenzene	50	38.7	77	45-97

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	52%	14-67%
4165-62-2	Phenol-d5	36%	10-50%
118-79-6	2,4,6-Tribromophenol	82%	33-118%
4165-60-0	Nitrobenzene-d5	87%	42-108%
321-60-8	2-Fluorobiphenyl	86%	40-106%
1718-51-0	Terphenyl-d14	93%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72470-BS	Q55468.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58677-1, FA58677-2, FA58677-3, FA58677-4, FA58677-5, FA58677-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.154	0.151	98	20-120
2706-90-3	Perfluoropentanoic acid	0.154	0.154	100	40-131
307-24-4	Perfluorohexanoic acid	0.154	0.130	84	63-146
375-85-9	Perfluoroheptanoic acid	0.154	0.146	95	71-138
335-67-1	Perfluorooctanoic acid	0.154	0.151	98	74-137
375-95-1	Perfluorononanoic acid	0.154	0.133	86	76-140
335-76-2	Perfluorodecanoic acid	0.154	0.155	101	65-148
2058-94-8	Perfluoroundecanoic acid	0.154	0.140	91	57-138
307-55-1	Perfluorododecanoic acid	0.154	0.137	89	58-118
72629-94-8	Perfluorotridecanoic acid	0.154	0.142	92	52-120
376-06-7	Perfluorotetradecanoic acid	0.154	0.120	78	49-122
375-73-5	Perfluorobutanesulfonic acid	0.136	0.131	96	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.145	0.140	97	70-130
355-46-4	Perfluorohexanesulfonic acid	0.14	0.134	96	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.146	0.146	100	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.142	0.156	110	70-134
68259-12-1	Perfluorononanesulfonic acid	0.148	0.137	93	70-130
335-77-3	Perfluorodecanesulfonic acid	0.148	0.118	79	56-127
754-91-6	PFOSA	0.154	0.135	88	40-142
2355-31-9	MeFOSAA	0.154	0.135	88	57-128
2991-50-6	EtFOSAA	0.154	0.136	88	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.144	0.136	95	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.146	0.146	100	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.148	0.167	113	61-154

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	101%	61-134%
	13C2-PFDA	120%	62-128%
	d5-EtFOSAA	93%	57-135%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72470-MS	Q55480.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272
FA58677-1	Q55479.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58677-1, FA58677-2, FA58677-3, FA58677-4, FA58677-5, FA58677-6

CAS No.	Compound	FA58677-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0129	I	0.154	0.164	98	20-120
2706-90-3	Perfluoropentanoic acid	0.0140	I	0.154	0.168	100	40-131
307-24-4	Perfluorohexanoic acid	0.00821	I	0.154	0.128	78	63-146
375-85-9	Perfluoroheptanoic acid	0.00869	I	0.154	0.152	93	71-138
335-67-1	Perfluorooctanoic acid	0.0198		0.154	0.174	100	74-137
375-95-1	Perfluorononanoic acid	0.00602	I	0.154	0.141	88	76-140
335-76-2	Perfluorodecanoic acid	0.015 U		0.154	0.158	103	65-148
2058-94-8	Perfluoroundecanoic acid	0.015 U		0.154	0.142	92	57-138
307-55-1	Perfluorododecanoic acid	0.015 U		0.154	0.147	96	58-118
72629-94-8	Perfluorotridecanoic acid	0.015 U		0.154	0.154	100	52-120
376-06-7	Perfluorotetradecanoic acid	0.015 U		0.154	0.131	85	49-122
375-73-5	Perfluorobutanesulfonic acid	0.015 U		0.136	0.120	88	73-148
2706-91-4	Perfluoropentanesulfonic acid	0.015 U		0.145	0.130	90	70-130
355-46-4	Perfluorohexanesulfonic acid	0.015 U		0.14	0.135	96	74-142
375-92-8	Perfluoroheptanesulfonic acid	0.015 U		0.146	0.147	101	74-123
1763-23-1	Perfluorooctanesulfonic acid	0.0490		0.142	0.202	108	70-134
68259-12-1	Perfluorononanesulfonic acid	0.015 U		0.148	0.137	93	70-130
335-77-3	Perfluorodecanesulfonic acid	0.015 U		0.148	0.136	92	56-127
754-91-6	PFOSA	0.015 U		0.154	0.137	89	40-142
2355-31-9	MeFOSAA	0.038 U		0.154	0.147	96	57-128
2991-50-6	EtFOSAA	0.038 U		0.154	0.151	98	55-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.038 U		0.144	0.134	93	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.038 U		0.146	0.146	100	70-153
39108-34-4	8:2 Fluorotelomer sulfonate	0.038 U		0.148	0.163	110	61-154

CAS No.	Surrogate Recoveries	MS	FA58677-1	Limits
	13C2-PFHxA	88%	88%	61-134%
	13C2-PFDA	104%	100%	62-128%
	d5-EtFOSAA	88%	84%	57-135%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MS	9I002716.D	1	10/30/18	MV	10/29/18	OP72391	S9I98
OP72391-MSD	9I002717.D	1	10/30/18	MV	10/29/18	OP72391	S9I98
FA58677-1	X063661.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58677-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
59-50-7	4-Chloro-3-methyl Phenol	4.8	U	96.2	79.8	83	96.2	77.7	81	3	54-103/23
95-57-8	2-Chlorophenol	4.8	U	96.2	71.5	74	96.2	75.9	79	6	52-98/25
120-83-2	2,4-Dichlorophenol	4.8	U	96.2	79.8	83	96.2	80.9	84	1	53-103/26
105-67-9	2,4-Dimethylphenol	4.8	U	96.2	69.0	72	96.2	73.9	77	7	43-90/27
51-28-5	2,4-Dinitrophenol	24	U	192	121	63	192	130	68	7	44-112/25
534-52-1	4,6-Dinitro-o-cresol	9.5	U	192	181	94	192	188	98	4	66-121/23
88-75-5	2-Nitrophenol	4.8	U	96.2	76.2	79	96.2	81.2	84	6	53-102/29
100-02-7	4-Nitrophenol	24	U	192	81.9	43	192	80.8	42	1	18-62/33
87-86-5	Pentachlorophenol	24	U	192	165	86	192	171	89	4	61-115/26
108-95-2	Phenol	4.8	U	96.2	34.4	36	96.2	37.2	39	8	19-56/35
88-06-2	2,4,6-Trichlorophenol	4.8	U	96.2	80.0	83	96.2	87.3	91	9	59-107/23
83-32-9	Acenaphthene	4.8	U	96.2	81.4	85	96.2	85.2	89	5	61-107/22
208-96-8	Acenaphthylene	4.8	U	96.2	81.6	85	96.2	88.6	92	8	60-104/22
120-12-7	Anthracene	4.8	U	96.2	81.1	84	96.2	84.8	88	4	65-108/20
92-87-5	Benzidine	24	U	96.2	53.4	56	96.2	40.3	42	28	25-99/31
56-55-3	Benzo(a)anthracene	4.8	U	96.2	82.4	86	96.2	84.8	88	3	66-111/22
50-32-8	Benzo(a)pyrene	4.8	U	96.2	83.5	87	96.2	86.4	90	3	62-107/23
205-99-2	Benzo(b)fluoranthene	4.8	U	96.2	84.9	88	96.2	89.0	93	5	65-114/23
191-24-2	Benzo(g,h,i)perylene	4.8	U	96.2	81.9	85	96.2	84.3	88	3	66-116/23
207-08-9	Benzo(k)fluoranthene	4.8	U	96.2	91.7	95	96.2	95.8	100	4	65-114/24
101-55-3	4-Bromophenyl Phenyl Ether	4.8	U	96.2	86.2	90	96.2	88.5	92	3	65-109/23
85-68-7	Butyl Benzyl Phthalate	4.8	U	96.2	83.6	87	96.2	87.8	91	5	65-112/24
106-47-8	4-Chloroaniline	4.8	U	96.2	69.5	72	96.2	73.3	76	5	49-105/27
111-91-1	bis(2-Chloroethoxy)methane	4.8	U	96.2	66.9	70	96.2	75.6	79	12	51-102/28
111-44-4	bis(2-Chloroethyl)ether	4.8	U	96.2	69.3	72	96.2	78.7	82	13	53-100/27
108-60-1	2,2'-Oxybis(1-chloropropane)	4.8	U	96.2	56.6	59	96.2	81.5	85	36*	45-106/26
91-58-7	2-Chloronaphthalene	4.8	U	96.2	73.4	76	96.2	81.2	84	10	57-103/23
7005-72-3	4-Chlorophenyl Phenyl Ether	4.8	U	96.2	79.6	83	96.2	81.9	85	3	62-105/20
218-01-9	Chrysene	4.8	U	96.2	83.0	86	96.2	86.6	90	4	66-111/22
53-70-3	Dibenzo(a,h)anthracene	4.8	U	96.2	81.1	84	96.2	84.9	88	5	66-119/24
95-50-1	1,2-Dichlorobenzene	4.8	U	96.2	71.9	75	96.2	74.4	77	3	48-97/24
541-73-1	1,3-Dichlorobenzene	4.8	U	96.2	72.1	75	96.2	74.3	77	3	45-95/25
106-46-7	1,4-Dichlorobenzene	4.8	U	96.2	72.0	75	96.2	72.6	76	1	45-98/25
91-94-1	3,3'-Dichlorobenzidine	4.8	U	96.2	78.1	81	96.2	80.2	83	3	46-117/29
84-66-2	Diethyl Phthalate	4.8	U	96.2	80.0	83	96.2	82.9	86	4	64-108/21
131-11-3	Dimethyl Phthalate	4.8	U	96.2	75.4	78	96.2	82.2	85	9	63-106/22

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72391-MS	9I002716.D	1	10/30/18	MV	10/29/18	OP72391	S9I98
OP72391-MSD	9I002717.D	1	10/30/18	MV	10/29/18	OP72391	S9I98
FA58677-1	X063661.D	1	10/29/18	MV	10/29/18	OP72391	SX2630

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58677-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
84-74-2	Di-n-butyl Phthalate	4.8 U		96.2	84.5	88	96.2	83.1	86	2	65-107/21
117-84-0	Di-n-octyl Phthalate	4.8 U		96.2	92.1	96	96.2	96.4	100	5	62-118/24
121-14-2	2,4-Dinitrotoluene	4.8 U		96.2	76.7	80	96.2	79.7	83	4	61-110/21
606-20-2	2,6-Dinitrotoluene	4.8 U		96.2	75.2	78	96.2	81.2	84	8	63-108/21
122-66-7	1,2-Diphenylhydrazine	4.8 U		96.2	88.4	92	96.2	91.4	95	3	61-110/24
117-81-7	bis(2-Ethylhexyl)phthalate	4.8 U		96.2	85.5	89	96.2	88.8	92	4	61-117/23
206-44-0	Fluoranthene	4.8 U		96.2	81.9	85	96.2	81.7	85	0	63-106/21
86-73-7	Fluorene	4.8 U		96.2	83.7	87	96.2	87.1	91	4	62-108/20
118-74-1	Hexachlorobenzene	4.8 U		96.2	80.7	84	96.2	83.0	86	3	63-108/22
87-68-3	Hexachlorobutadiene	4.8 U		96.2	82.6	86	96.2	76.5	80	8	42-102/28
77-47-4	Hexachlorocyclopentadiene	4.8 U		96.2	65.8	68	96.2	71.6	74	8	39-102/29
67-72-1	Hexachloroethane	4.8 U		96.2	69.4	72	96.2	74.5	77	7	42-100/29
193-39-5	Indeno(1,2,3-cd)pyrene	4.8 U		96.2	81.0	84	96.2	84.3	88	4	64-119/24
78-59-1	Isophorone	4.8 U		96.2	67.6	70	96.2	76.5	80	12	43-87/25
90-12-0	1-Methylnaphthalene	4.8 U		96.2	77.4	80	96.2	74.5	77	4	53-102/27
91-57-6	2-Methylnaphthalene	4.8 U		96.2	84.1	87	96.2	80.7	84	4	51-102/26
91-20-3	Naphthalene	4.8 U		96.2	73.0	76	96.2	77.1	80	5	47-100/29
98-95-3	Nitrobenzene	4.8 U		96.2	69.8	73	96.2	79.3	82	13	50-104/28
62-75-9	N-Nitrosodimethylamine	4.8 U		96.2	50.5	53	96.2	38.0	40	28	28-78/30
621-64-7	N-Nitrosodi-n-propylamine	4.8 U		96.2	68.0	71	96.2	79.6	83	16	52-104/25
86-30-6	N-Nitrosodiphenylamine	4.8 U		96.2	87.2	91	96.2	91.3	95	5	64-108/23
85-01-8	Phenanthrene	4.8 U		96.2	85.2	89	96.2	87.6	91	3	66-110/21
129-00-0	Pyrene	4.8 U		96.2	88.0	92	96.2	83.4	87	5	64-113/23
120-82-1	1,2,4-Trichlorobenzene	4.8 U		96.2	77.0	80	96.2	76.5	80	1	45-97/28

CAS No.	Surrogate Recoveries	MS	MSD	FA58677-1	Limits
367-12-4	2-Fluorophenol	47%	50%	26%	14-67%
4165-62-2	Phenol-d5	33%	36%	17%	10-50%
118-79-6	2,4,6-Tribromophenol	81%	84%	76%	33-118%
4165-60-0	Nitrobenzene-d5	73%	83%	68%	42-108%
321-60-8	2-Fluorobiphenyl	76%	85%	70%	40-106%
1718-51-0	Terphenyl-d14	85%	85%	62%	39-121%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72470-DUP	Q55486.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272
FA58677-1	Q55479.D	1	11/08/18	NAF	11/02/18	OP72470	SQ1272

The QC reported here applies to the following samples: **Method:** EPA 537 MOD

FA58677-1, FA58677-2, FA58677-3, FA58677-4, FA58677-5, FA58677-6

CAS No.	Compound	FA58677-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0129	I	0.00912	J	34*	30
2706-90-3	Perfluoropentanoic acid	0.0140	I	0.0125	J	11	30
307-24-4	Perfluorohexanoic acid	0.00821	I	0.00938	J	13	30
375-85-9	Perfluoroheptanoic acid	0.00869	I	ND		200*	30
335-67-1	Perfluorooctanoic acid	0.0198		0.00741	J	91*	30
375-95-1	Perfluorononanoic acid	0.00602	I	ND		200*	30
335-76-2	Perfluorodecanoic acid	0.015 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.015 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.015 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.015 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.015 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.015 U		0.0742		200*	30
2706-91-4	Perfluoropentanesulfonic acid	0.015 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.015 U		0.00783	J	200*	30
375-92-8	Perfluoroheptanesulfonic acid	0.015 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0490		0.0382		25	30
68259-12-1	Perfluorononanesulfonic acid	0.015 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.015 U		ND		nc	30
754-91-6	PFOSA	0.015 U		ND		nc	30
2355-31-9	MeFOSAA	0.038 U		ND		nc	30
2991-50-6	EtFOSAA	0.038 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.038 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.038 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.038 U		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	FA58677-1	Limits
	13C2-PFHxA	90%	88%	61-134%
	13C2-PFDA	106%	100%	62-128%
	d5-EtFOSAA	88%	84%	57-135%

* = Outside of Control Limits.

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72377-MB	TT390887.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220

The QC reported here applies to the following samples: **Method:** SW846 8081B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.040	0.011	ug/l	
319-84-6	alpha-BHC	ND	0.040	0.0087	ug/l	
319-85-7	beta-BHC	ND	0.040	0.010	ug/l	
319-86-8	delta-BHC	ND	0.040	0.0095	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.040	0.0089	ug/l	
12789-03-6	Chlordane	ND	0.40	0.15	ug/l	
60-57-1	Dieldrin	ND	0.040	0.0095	ug/l	
72-54-8	4,4'-DDD	ND	0.080	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.080	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.080	0.020	ug/l	
72-20-8	Endrin	ND	0.080	0.0084	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.080	0.0063	ug/l	
7421-93-4	Endrin aldehyde	ND	0.080	0.011	ug/l	
959-98-8	Endosulfan-I	ND	0.040	0.0064	ug/l	
33213-65-9	Endosulfan-II	ND	0.040	0.0060	ug/l	
76-44-8	Heptachlor	ND	0.040	0.010	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.040	0.0081	ug/l	
72-43-5	Methoxychlor	ND	0.080	0.020	ug/l	
8001-35-2	Toxaphene	ND	2.0	0.86	ug/l	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	101%	42-127%
2051-24-3	Decachlorobiphenyl	64%	27-127%

Method Blank Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72378-MB	MM52709.D	1	10/29/18	NM	10/26/18	OP72378	GMM1023

The QC reported here applies to the following samples: **Method:** SW846 8082A

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.40	0.16	ug/l	
11104-28-2	Aroclor 1221	ND	0.40	0.20	ug/l	
11141-16-5	Aroclor 1232	ND	0.40	0.20	ug/l	
53469-21-9	Aroclor 1242	ND	0.40	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.40	0.16	ug/l	
11097-69-1	Aroclor 1254	ND	0.40	0.16	ug/l	
11096-82-5	Aroclor 1260	ND	0.40	0.16	ug/l	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	96%	38-127%
2051-24-3	Decachlorobiphenyl	94%	25-137%

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72377-BS	TT390885.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220

The QC reported here applies to the following samples: **Method:** SW846 8081B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
309-00-2	Aldrin	1	1.1	110	61-126
319-84-6	alpha-BHC	1	1.2	120	66-129
319-85-7	beta-BHC	1	1.2	120	66-132
319-86-8	delta-BHC	1	1.1	110	41-142
58-89-9	gamma-BHC (Lindane)	1	1.2	120	68-132
60-57-1	Dieldrin	1	1.0	100	66-138
72-54-8	4,4'-DDD	1	1.0	100	63-138
72-55-9	4,4'-DDE	1	1.1	110	59-133
50-29-3	4,4'-DDT	1	0.99	99	55-145
72-20-8	Endrin	1	1.0	100	71-147
1031-07-8	Endosulfan sulfate	1	0.97	97	64-128
7421-93-4	Endrin aldehyde	1	0.88	88	60-130
959-98-8	Endosulfan-I	1	0.98	98	66-133
33213-65-9	Endosulfan-II	1	0.95	95	65-133
76-44-8	Heptachlor	1	1.1	110	63-130
1024-57-3	Heptachlor epoxide	1	1.1	110	67-129
72-43-5	Methoxychlor	1	0.97	97	60-136

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	105%	42-127%
2051-24-3	Decachlorobiphenyl	89%	27-127%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72377-BS2	TT390886.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220

The QC reported here applies to the following samples: **Method:** SW846 8081B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
12789-03-6	Chlordane	5	5.6	112	62-141
8001-35-2	Toxaphene	10	11.9	119	57-151

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	100%	42-127%
2051-24-3	Decachlorobiphenyl	92%	27-127%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72378-BS	MM52708.D	1	10/29/18	NM	10/26/18	OP72378	GMM1023

The QC reported here applies to the following samples: **Method:** SW846 8082A

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
12674-11-2	Aroclor 1016	8	8.1	101	57-122
11096-82-5	Aroclor 1260	8	7.7	96	45-130

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	95%	38-127%
2051-24-3	Decachlorobiphenyl	92%	25-137%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72377-MS	TT390897.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220
OP72377-MSD	TT390898.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220
FA58635-2	TT390894.D	1	10/29/18	WH	10/26/18	OP72377	GTT2220

The QC reported here applies to the following samples: **Method:** SW846 8081B

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58635-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
309-00-2	Aldrin	ND		2.08	1.8	86	2.08	1.8	86	0	61-126/21
319-84-6	alpha-BHC	ND		2.08	2.0	96	2.08	2.0	96	0	66-129/23
319-85-7	beta-BHC	ND		2.08	2.0	96	2.08	1.9	91	5	66-132/23
319-86-8	delta-BHC	ND		2.08	2.0	96	2.08	1.9	91	5	41-142/27
58-89-9	gamma-BHC (Lindane)	ND		2.08	2.0	96	2.08	2.0	96	0	68-132/22
60-57-1	Dieldrin	ND		2.08	2.0	96	2.08	1.8	86	11	66-138/22
72-54-8	4,4'-DDD	ND		2.08	2.1	101	2.08	2.0	96	5	63-138/24
72-55-9	4,4'-DDE	ND		2.08	2.0	96	2.08	1.9	91	5	59-133/23
50-29-3	4,4'-DDT	ND		2.08	2.1	101	2.08	1.9	91	10	55-145/27
72-20-8	Endrin	ND		2.08	1.9	91	2.08	1.8	86	5	71-147/23
1031-07-8	Endosulfan sulfate	ND		2.08	2.0	96	2.08	1.9	91	5	64-128/26
7421-93-4	Endrin aldehyde	ND		2.08	1.9	91	2.08	1.8	86	5	60-130/22
959-98-8	Endosulfan-I	ND		2.08	1.7	82	2.08	1.7	82	0	66-133/21
33213-65-9	Endosulfan-II	ND		2.08	1.8	86	2.08	1.8	86	0	65-133/22
76-44-8	Heptachlor	ND		2.08	1.9	91	2.08	1.8	86	5	63-130/23
1024-57-3	Heptachlor epoxide	ND		2.08	1.9	91	2.08	1.8	86	5	67-129/23
72-43-5	Methoxychlor	ND		2.08	2.0	96	2.08	1.9	91	5	60-136/25

CAS No.	Surrogate Recoveries	MS	MSD	FA58635-2	Limits
877-09-8	Tetrachloro-m-xylene	80%	80%	74%	42-127%
2051-24-3	Decachlorobiphenyl	92%	88%	83%	27-127%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA58677
Account: APEFLI Applied Ecology Inc.
Project: Countywide PFAS Screening

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72378-MS	MM52711.D	1	10/29/18	NM	10/26/18	OP72378	GMM1023
OP72378-MSD	MM52712.D	1	10/29/18	NM	10/26/18	OP72378	GMM1023
FA58622-4	MM52710.D	1	10/29/18	NM	10/26/18	OP72378	GMM1023

The QC reported here applies to the following samples: **Method:** SW846 8082A

FA58677-1, FA58677-2, FA58677-3

CAS No.	Compound	FA58622-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	0.42	U	16.7	17.6	106	16.7	17.5	105	1	57-122/18
11096-82-5	Aroclor 1260	0.42	U	16.7	17.8	107	16.7	17.4	104	2	45-130/24

CAS No.	Surrogate Recoveries	MS	MSD	FA58622-4	Limits
877-09-8	Tetrachloro-m-xylene	99%	99%	101%	38-127%
2051-24-3	Decachlorobiphenyl	100%	98%	96%	25-137%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.7	22		
Antimony	2.0	.2	.2		
Arsenic	2.0	.2	.21		
Barium	2.0	.2	.2		
Beryllium	2.0	.2	.2		
Cadmium	2.0	.2	.2		
Calcium	200	14	36		
Chromium	2.0	.2	.2		
Cobalt	2.0	.2	.2		
Copper	2.0	.2	.2		
Iron	200	16	23		
Lead	2.0	.2	.2		
Magnesium	200	10	19		
Manganese	2.0	.2	.2		
Molybdenum	2.0	.2	.39		
Nickel	2.0	.2	.2		
Potassium	200	13	75		
Selenium	2.0	.22	.22		
Silver	2.0	.2	.2		
Sodium	200	9.6	24		
Strontium	2.0	.2	.2	0.47	<2.0
Thallium	2.0	.2	.2		
Tin	2.0	.2	.2		
Titanium	2.0	.61	.88		
Vanadium	2.0	.2	.24		
Zinc	4.0	.58	1.7		

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date:		10/29/18				10/29/18	
Metal	FA58628-1 Original DUP	RPD	QC Limits	FA58628-1 Original MS	Spikelot MPICPMS1 % Rec		QC Limits
Aluminum	anr						
Antimony	anr						
Arsenic							
Barium	anr						
Beryllium	anr						
Cadmium	anr						
Calcium							
Chromium	anr						
Cobalt	anr						
Copper	anr						
Iron	anr						
Lead	anr						
Magnesium	anr						
Manganese	anr						
Molybdenum							
Nickel	anr						
Potassium	anr						
Selenium	anr						
Silver	anr						
Sodium							
Strontium							
Thallium	anr						
Tin							
Titanium							
Vanadium	anr						
Zinc	anr						

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570 Methods: SW846 6020A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/29/18

Metal	FA58628-1 Original MSD	Spikelot MPICPMS1 % Rec	MSD RPD	QC Limit
Aluminum	anr			
Antimony	anr			
Arsenic				
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/18

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	anr			
Silver	anr			
Sodium	anr			
Strontium	211	200	105.5	80-120
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/18

Metal	FA58628-1 Original	SDL 2:10	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic				
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

POST DIGESTATE SPIKE SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34570
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/18

Metal	Sample ml	Final ml	FA58628-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP34570: FA58677-1A, FA58677-2A, FA58677-3A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34575
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 10/30/18

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.50	.03	.03	-0.031	<0.50

Associated samples MP34575: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34575
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date:			10/30/18					10/30/18	
Metal	FA58669-1 Original	DUP	RPD	QC Limits	FA58669-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	2.4	3	80.0	80-120

Associated samples MP34575: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34575 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/30/18

Metal	FA58669-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.4	3	80.0	0.0	20

Associated samples MP34575: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34575
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 10/30/18

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	3.2	3	106.7	80-120

Associated samples MP34575: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34575
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 10/30/18

Metal	FA58669-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP34575: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	14		
Antimony	6.0	1	1	0.40	<6.0
Arsenic	10	1.3	1.3	-1.8	<10
Barium	200	1	1		
Beryllium	4.0	.2	.2	-0.10	<4.0
Cadmium	5.0	.2	.2	0.0	<5.0
Calcium	1000	50	50		
Chromium	10	1	1	-0.20	<10
Cobalt	50	.2	.2		
Copper	25	1	1	1.3	<25
Iron	300	17	17		
Lead	5.0	1	1.1	0.20	<5.0
Magnesium	5000	35	35		
Manganese	15	.5	1	0.0	<15
Molybdenum	50	.3	.3		
Nickel	40	.4	.4	-0.10	<40
Potassium	10000	200	200		
Selenium	10	2.4	2.9	2.2	<10
Silver	10	.7	.7	-0.10	<10
Sodium	10000	500	500		
Strontium	10	.5	.5		
Thallium	10	1.1	1.4	-1.1	<10
Tin	50	.9	1		
Titanium	10	.5	1		
Vanadium	50	.5	.6		
Zinc	20	3	4.4	3.4	<20

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:			10/31/18					10/31/18	
Metal	FA58671-10F Original	DUP	RPD	QC Limits	FA58671-10F Original	MS	Spikelot MPFLICP2 % Rec		QC Limits
Aluminum									
Antimony	1.8	1.2	40.0 (a)	0-20	1.8	533	500	106.2	80-120
Arsenic	2.8	3.2	13.3	0-20	2.8	1980	2000	98.9	80-120
Barium									
Beryllium	0.0	0.0	NC	0-20	0.0	51.2	50	102.4	80-120
Cadmium	0.0	0.0	NC	0-20	0.0	49.5	50	99.0	80-120
Calcium									
Chromium	1.1	1.0	9.5	0-20	1.1	211	200	105.0	80-120
Cobalt									
Copper	2.2	1.7	25.6 (a)	0-20	2.2	266	250	105.5	80-120
Iron	anr								
Lead	5.7	3.6	45.2 (a)	0-20	5.7	501	500	99.1	80-120
Magnesium									
Manganese	255	250	2.0	0-20	255	773	500	103.6	80-120
Molybdenum									
Nickel	2.7	2.6	3.8	0-20	2.7	502	500	99.9	80-120
Potassium									
Selenium	0.0	0.0	NC	0-20	0.0	1970	2000	98.5	80-120
Silver	0.0	0.0	NC	0-20	0.0	52.1	50	104.2	80-120
Sodium									
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	1950	2000	97.5	80-120
Tin									
Titanium									
Vanadium									
Zinc	7.3	6.1	17.9	0-20	7.3	492	500	96.9	80-120

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/18

Metal	FA58671-10F Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	1.8	535	500	106.6	0.4	20
Arsenic	2.8	1980	2000	98.9	0.0	20
Barium						
Beryllium	0.0	51.3	50	102.6	0.2	20
Cadmium	0.0	49.3	50	98.6	0.4	20
Calcium						
Chromium	1.1	210	200	104.5	0.5	20
Cobalt						
Copper	2.2	266	250	105.5	0.0	20
Iron	anr					
Lead	5.7	496	500	98.1	1.0	20
Magnesium						
Manganese	255	779	500	104.8	0.8	20
Molybdenum						
Nickel	2.7	498	500	99.1	0.8	20
Potassium						
Selenium	0.0	1960	2000	98.0	0.5	20
Silver	0.0	51.9	50	103.8	0.4	20
Sodium						
Strontium						
Thallium	0.0	1940	2000	97.0	0.5	20
Tin						
Titanium						
Vanadium						
Zinc	7.3	489	500	96.3	0.6	20

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/18

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony	519	500	103.8	80-120
Arsenic	1920	2000	96.0	80-120
Barium				
Beryllium	50.5	50	101.0	80-120
Cadmium	49.8	50	99.6	80-120
Calcium				
Chromium	210	200	105.0	80-120
Cobalt				
Copper	260	250	104.0	80-120
Iron	anr			
Lead	482	500	96.4	80-120
Magnesium				
Manganese	520	500	104.0	80-120
Molybdenum				
Nickel	510	500	102.0	80-120
Potassium				
Selenium	1910	2000	95.5	80-120
Silver	50.7	50	101.4	80-120
Sodium				
Strontium				
Thallium	1930	2000	96.5	80-120
Tin				
Titanium				
Vanadium				
Zinc	497	500	99.4	80-120

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/18

Metal	FA58671-10F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	1.80	8.50	372.2(a)	0-10
Arsenic	2.80	0.00	100.0(a)	0-10
Barium				
Beryllium	0.00	0.00	NC	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	1.10	0.00	100.0(a)	0-10
Cobalt				
Copper	2.20	0.00	100.0(a)	0-10
Iron	anr			
Lead	5.70	5.30	7.0	0-10
Magnesium				
Manganese	255	270	6.1	0-10
Molybdenum				
Nickel	2.70	0.00	100.0(a)	0-10
Potassium				
Selenium	0.00	12.3	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium				
Zinc	7.30	0.00	100.0(a)	0-10

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

QC Batch ID: MP34583
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/18

Metal	Sample ml	Final ml	FA58671-10F Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	9.8	10	1.8	1.764	104.4	0.2	5	100	102.6	80-120
Arsenic	9.8	10	2.8	2.744	104.9	0.2	5	100	102.2	80-120
Barium										
Beryllium	9.8	10			51.6	0.2	2.5	50	103.2	80-120
Cadmium	9.8	10			47.9	0.2	2.5	50	95.8	80-120
Calcium										
Chromium	9.8	10	1.1	1.078	50.8	0.2	2.5	50	99.4	80-120
Cobalt										
Copper	9.8	10	2.2	2.156	103.6	0.2	5	100	101.4	80-120
Iron										
Lead	9.8	10	5.7	5.586	52	0.2	2.5	50	92.8	80-120
Magnesium										
Manganese	9.8	10	254.5	249.41	301.4	0.2	2.5	50	104.0	80-120
Molybdenum										
Nickel	9.8	10	2.7	2.646	99.4	0.2	5	100	96.8	80-120
Potassium										
Selenium	9.8	10			92	0.2	5	100	92.0	80-120
Silver	9.8	10			49.2	0.2	2.5	50	98.4	80-120
Sodium										
Strontium										
Thallium	9.8	10			92.8	0.2	5	100	92.8	80-120
Tin										
Titanium										
Vanadium										
Zinc	9.8	10	7.3	7.154	245.6	0.2	12.5	250	95.4	80-120

Associated samples MP34583: FA58677-1, FA58677-2, FA58677-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Cyanide, Total	GP32226/GN80213	0.010	0.0044	mg/l	0.1	0.109	109.0	90-110%

Associated Samples:
Batch GP32226: FA58677-1, FA58677-2, FA58677-3
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Cyanide, Total	GP32226/GN80213	FA58784-1	mg/l	0.0	0.1	0.10	100.0	90-110%

Associated Samples:
Batch GP32226: FA58677-1, FA58677-2, FA58677-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA58677
Account: APEFLI - Applied Ecology Inc.
Project: Countywide PFAS Screening

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Cyanide, Total	GP32226/GN80213	FA58784-1	mg/l	0.0	0.1	0.10	0.0	20%

Associated Samples:
Batch GP32226: FA58677-1, FA58677-2, FA58677-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

FINAL LAB REPORT

FA58677X

B2759

13-Nov-2018

Prepared by

SGS NORTH AMERICA

Prepared for

SGS North America Inc.

Ariel Hartney

4405 Vineland Road; Suite C-15
Orlando, FL 32811
Phone: 407-425-6700
Email: ariel.hartney@sgs.com

This report is approved by

Digitally signed by Amy J. Boehm
DN: CN=Amy J. Boehm, O="", OU=SGS, E=amy.boehm@sgs.com, C=US
Reason: I am approving this document
Location:
Date: 2018-11-13 10:21:48

Amy Boehm

Senior Project Manager

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/en/terms_and_conditions.htm. Attention is drawn to the limitation of liability,indemnification and jurisdiction issues defined therein.

SGS remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please do not hesitate to contact us.

The management and staff of SGS welcomes customer feedback, both positive and negative, as we continually improve our services. Please visit our web site at www.sgs.com/ultratrace and click on the 'Email Us' link or go to our survey here. Thank you for choosing SGS.

Any holder of this document is advised that it is a final submission and supersedes and voids all prior reports with the same report or identification number. The information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility in conducting the work herein is to its Client and does not exonerate parties to a transaction from exercising all of their rights and obligations under such applicable transaction documents. This report may be reproduced in full only. The Company expressly disclaims any and all liability for the Client's use of or reliance upon the data contained herein. Any alteration, forgery or falsification of the content or appearance of this document which is not expressly authorized by the Company is unlawful and offenders may be prosecuted to the fullest extent of the law.
Results reported relate only to the items tested.

PROJECT INFORMATION SUMMARY *(When applicable, see QC Annotations for details)*

Client Project	FA58677X
SGS Project #	B2759
Analytical Protocol(s)	8290A
No. Samples Submitted	3
Additional QC Sample(s)	0
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
Date Received	27-Oct-18
Condition Received	Good
Temperature upon Receipt (ºC)	1.1
Extraction within Holding Time	Yes
Analysis within Holding Time	Yes

QC ANNOTATIONS:

1. Please see Appendices attached for data qualifier/attribute and lab identifier descriptions which may be contained in the project.

APPENDIX A: GENERAL DATA QUALIFIERS / DATA ATTRIBUTES

B	The analyte was found in the method blank, at a concentration that was at least 10% of the concentration in the sample.
C	Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group are shown with the number of the lowest IUPAC co-eluter.
E	The reported concentration exceeds the calibration range (upper point of the calibration curve) and is an estimated value.
EMPC	Represents an Estimated Maximum Possible Concentration. EMPCs arise in cases where the signal/noise ratio is not sufficient for peak identification (the determined ion-abundance ratio is outside the allowed theoretical range), or where there is a co-eluting interference.
H/h	If the standard recovery is below the method or SOP specified value “H” is assigned. If the obtained value is less than half the specified value “h” is assigned.
J	Indicates that an analyte has a concentration below the reporting limit (lowest point of the calibration curve) and is an estimated value.
ND	Indicates a non-detect.
NR or R	Indicates a value that is not reportable.
PR	Due to interference, the associated congener is poorly resolved.
QI	Indicates the presence of a quantitative interference.
SI	Denotes “Single Ion Mode” and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.
U	The analyte was not detected. The estimated detection limit (EDL) may be reported for this analyte.
V	The labeled standard recovery was found to be outside of the method control limits.

APPENDIX B: DRBC/TMDL SPECIFIC DATA QUALIFIERS / DATA ATTRIBUTES

J	The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL).
U	The analyte was not detected in the sample at the estimated detection limit (EDL).
E	The reported concentration is an estimate. The value exceeds the upper calibration range (upper point of the calibration curve).
D	Dilution Data. Result was obtained from the analysis of a dilution.
B	Analyte found in the sample and associated method blank.
C	Co-eluting congener
Cxx	Co-elutes with the indicated congener, data is reported under the lowest IUPAC congener. 'Xx' denotes the IUPAC number with the lowest numerical designated congener.
NR	Analyte is not reportable because of problems in sample preparation or analysis.
V	Labeled standard recovery is not within method control limits.
X	Results from re-injection/repeat/second-column analysis.
EMPC	Estimated maximum possible concentration. Indicates that a peak is identified but did not meet the method specified ion-abundance ratio.

APPENDIX C: LAB IDENTIFIERS

AR	Indicates use of the archived portion of the sample extract.
CU	Indicates a sample that required additional clean-up prior to MS injection/processing.
D	Indicates a dilution of the sample extract. The number that follows the "D" indicates the dilution factor.
DE	Indicates a dilution performed with the addition of ES (extraction standard) solution.
DUP	Designation for a duplicate sample.
MS	Designation for a matrix spike.
MSD	Designation for a matrix spike duplicate.
RJ	Indicates a reinjection of the sample extract.
S	Indicates a sample split. The number that follows the "S" indicates the split factor.

SGS CERTIFICATIONS

Arkansas	88-0682
California (ELAP)	ELAP Cert #2914
CLIA	34D1013708
Connecticut	PH-0258
USDA Soil Permit	P330-17-00055
American Association for Laboratory Accreditation (A2LA)	2726.01 (ISO 17025:2005, 2009 TNI, DoD ELAP QSM 5.0)
Florida DOH	E87634
Louisiana DEQ	4115
Louisiana DOH	LA180027
Maine	2016028
Massachusetts	M-NC919
Minnesota (Primary NELAP For Method 23)	1179213
Mississippi	Reciprocity
Nebraska	NE-OS-33-17
New Hampshire	208317 & 208517
New Jersey	NC100
New York	11685
North Carolina DEQ	481
North Dakota	R-197
Oregon	NC200002
Pennsylvania	68-03675
South Carolina	99029002
Texas	T104704260
US Coast Guard	16714/159.317/SGS
Virginia	9502
Washington	C913
West Virginia	293

Rev. 13-Mar-2018

Sample ID: PS-1

Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS North America Inc.	Matrix:	Aqueous	Lab Project ID:	B2759	Date Received:	27-Oct-2018
Project ID:	FA58677X	Weight/Volume:	1.06 L	Lab Sample ID	B2759_16280_DF_001-R1	Date Extracted:	05-Nov-2018
Date Collected:	22-Oct-2018	pH:	6	QC Batch No:	16280	Date Analyzed:	08-Nov-2018
		Split:	-	Dilution:	-	Time Analyzed:	13:04:12

Analyte	Conc. (pg/L)	DL (pg/L)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.27			ES 2378-TCDD	106	
12378-PeCDD	ND	0.955			ES 12378-PeCDD	108	
123478-HxCDD	ND	1.2			ES 123478-HxCDD	101	
123678-HxCDD	ND	1.21			ES 123678-HxCDD	96.7	
123789-HxCDD	ND	1.11			ES 123789-HxCDD	97.6	
1234678-HpCDD	EMPC		0.509	J B	ES 1234678-HpCDD	103	
OCDD	ND	1.6			ES OCDD	91.8	
2378-TCDF	ND	0.93			ES 2378-TCDF	105	
12378-PeCDF	ND	0.429			ES 12378-PeCDF	102	
23478-PeCDF	ND	0.434			ES 23478-PeCDF	109	
123478-HxCDF	ND	0.909			ES 123478-HxCDF	105	
123678-HxCDF	ND	0.88			ES 123678-HxCDF	98.7	
234678-HxCDF	ND	0.847			ES 234678-HxCDF	105	
123789-HxCDF	ND	0.875			ES 123789-HxCDF	106	
1234678-HpCDF	ND	0.263			ES 1234678-HpCDF	104	
1234789-HpCDF	ND	0.355			ES 1234789-HpCDF	104	
OCDF	ND	0.979			ES OCDF	103	
Totals					**Standard**	**CS Recoveries**	
					CS 37Cl-2378-TCDD	94.4	
Total TCDD	ND	1.27	ND		CS 12347-PeCDD	104	
Total PeCDD	ND	0.955	ND		CS 12346-PeCDF	104	
Total HxCDD	ND	1.17	ND		CS 123469-HxCDF	96.8	
Total HpCDD	1.02		1.53		CS 1234689-HpCDF	110	
Total TCDF	ND	0.93	ND				
Total PeCDF	ND	0.431	ND				
Total HxCDF	ND	0.877	ND				
Total HpCDF	ND	0.305	ND				
Total PCDD/Fs	**1.02**		**1.53**				
ITEF TEQs							
TEQ: ND=0	0		0.00509				
TEQ: ND=DL/2	1.4	1.4	1.4				
TEQ: ND=DL	2.79	2.79	2.8				

SGS
5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com
Tel: +1 910 794-1613; Toll-Free 866 846-8290

Sample ID: PS-2

Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS North America Inc.	Matrix:	Aqueous	Lab Project ID:	B2759	Date Received:	27-Oct-2018
Project ID:	FA58677X	Weight/Volume:	1.03 L	Lab Sample ID	B2759_16280_DF_002-R1	Date Extracted:	05-Nov-2018
Date Collected:	22-Oct-2018	pH:	6	QC Batch No:	16280	Date Analyzed:	08-Nov-2018
		Split:	-	Dilution:	-	Time Analyzed:	13:51:07

Analyte	Conc. (pg/L)	DL (pg/L)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.35			ES 2378-TCDD	106	
12378-PeCDD	ND	0.926			ES 12378-PeCDD	110	
123478-HxCDD	ND	1.28			ES 123478-HxCDD	104	
123678-HxCDD	ND	1.29			ES 123678-HxCDD	100	
123789-HxCDD	ND	1.21			ES 123789-HxCDD	102	
1234678-HpCDD	EMPC		0.708	J B	ES 1234678-HpCDD	105	
OCDD	EMPC		2.13	J	ES OCDD	95.7	
2378-TCDF	ND	0.918			ES 2378-TCDF	108	
12378-PeCDF	ND	0.47			ES 12378-PeCDF	102	
23478-PeCDF	ND	0.451			ES 23478-PeCDF	112	
123478-HxCDF	ND	1.16			ES 123478-HxCDF	107	
123678-HxCDF	ND	1.17			ES 123678-HxCDF	99	
234678-HxCDF	ND	1.07			ES 234678-HxCDF	108	
123789-HxCDF	ND	1.12			ES 123789-HxCDF	112	
1234678-HpCDF	ND	0.273			ES 1234678-HpCDF	108	
1234789-HpCDF	ND	0.345			ES 1234789-HpCDF	111	
OCDF	ND	0.929			ES OCDF	108	
Totals					**Standard**	**CS Recoveries**	
					CS 37Cl-2378-TCDD	97	
Total TCDD	ND	1.35	ND		CS 12347-PeCDD	106	
Total PeCDD	ND	0.926	ND		CS 12346-PeCDF	106	
Total HxCDD	ND	1.26	ND		CS 123469-HxCDF	98.8	
Total HpCDD	0.987		1.7		CS 1234689-HpCDF	113	
Total TCDF	ND	0.918	ND				
Total PeCDF	ND	0.46	ND				
Total HxCDF	ND	1.13	ND				
Total HpCDF	ND	0.307	ND				
Total PCDD/Fs	**0.987**		**3.83**				
ITEF TEQs							
TEQ: ND=0	0		0.00921				
TEQ: ND=DL/2	1.5	1.5	1.51				
TEQ: ND=DL	3	3	3.01				

SGS
5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com
Tel: +1 910 794-1613; Toll-Free 866 846-8290

Sample ID: PS-4

Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS North America Inc.	Matrix:	Aqueous	Lab Project ID:	B2759	Date Received:	27-Oct-2018
Project ID:	FA58677X	Weight/Volume:	1.05 L	Lab Sample ID	B2759_16280_DF_003-R1	Date Extracted:	05-Nov-2018
Date Collected:	22-Oct-2018	pH:	6	QC Batch No:	16280	Date Analyzed:	08-Nov-2018
		Split:	-	Dilution:	-	Time Analyzed:	14:39:43

Analyte	Conc. (pg/L)	DL (pg/L)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.26			ES 2378-TCDD	99.7	
12378-PeCDD	ND	1.23			ES 12378-PeCDD	103	
123478-HxCDD	ND	1.08			ES 123478-HxCDD	92.7	
123678-HxCDD	ND	1.07			ES 123678-HxCDD	87.7	
123789-HxCDD	ND	0.958			ES 123789-HxCDD	90.3	
1234678-HpCDD	0.978			J B	ES 1234678-HpCDD	95.1	
OCDD	EMPC		1.95	J	ES OCDD	86.6	
2378-TCDF	ND	0.923			ES 2378-TCDF	100	
12378-PeCDF	ND	0.574			ES 12378-PeCDF	94.8	
23478-PeCDF	ND	0.575			ES 23478-PeCDF	102	
123478-HxCDF	ND	0.675			ES 123478-HxCDF	96.5	
123678-HxCDF	ND	0.672			ES 123678-HxCDF	89.5	
234678-HxCDF	ND	0.639			ES 234678-HxCDF	95.6	
123789-HxCDF	ND	0.598			ES 123789-HxCDF	102	
1234678-HpCDF	ND	0.34			ES 1234678-HpCDF	98.4	
1234789-HpCDF	ND	0.447			ES 1234789-HpCDF	98.9	
OCDF	ND	0.872			ES OCDF	95.5	
Totals					**Standard**	**CS Recoveries**	
					CS 37Cl-2378-TCDD	93.6	
Total TCDD	ND	1.26	ND		CS 12347-PeCDD	103	
Total PeCDD	ND	1.23	ND		CS 12346-PeCDF	103	
Total HxCDD	ND	1.03	ND		CS 123469-HxCDF	94.4	
Total HpCDD	0.978		1.93		CS 1234689-HpCDF	106	
Total TCDF	ND	0.923	ND				
Total PeCDF	ND	0.574	ND				
Total HxCDF	ND	0.646	ND				
Total HpCDF	ND	0.389	ND				
Total PCDD/Fs	**0.978**		**3.88**				
ITEF TEQs							
TEQ: ND=0	0.00978		0.0117				
TEQ: ND=DL/2	1.44	1.43	1.44				
TEQ: ND=DL	2.87	2.86	2.87				

SGS
5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com
Tel: +1 910 794-1613; Toll-Free 866 846-8290

Sample ID: Method Blank B2759_16280 — Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS North America Inc.	Matrix:	Aqueous	Lab Project ID:	B2759	Date Received:	n/a
Project ID:	FA58677X	Weight/Volume:	1.00 L	Lab Sample ID	MB1_16280_DF_TLX	Date Extracted:	05-Nov-2018
Date Collected:	n/a	pH:	n/a	QC Batch No:	16280	Date Analyzed:	08-Nov-2018
		Split:	-	Dilution:	-	Time Analyzed:	12:07:55

Analyte	Conc. (pg/L)	DL (pg/L)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	1.3			ES 2378-TCDD	99.2	
12378-PeCDD	ND	1.06			ES 12378-PeCDD	103	
123478-HxCDD	ND	0.973			ES 123478-HxCDD	93	
123678-HxCDD	ND	0.982			ES 123678-HxCDD	91.7	
123789-HxCDD	ND	0.889			ES 123789-HxCDD	94	
1234678-HpCDD	EMPC		0.936	J	ES 1234678-HpCDD	93.6	
OCDD	ND	1.42			ES OCDD	81.9	
2378-TCDF	ND	0.948			ES 2378-TCDF	99	
12378-PeCDF	ND	0.479			ES 12378-PeCDF	96.5	
23478-PeCDF	ND	0.456			ES 23478-PeCDF	106	
123478-HxCDF	ND	0.947			ES 123478-HxCDF	98.1	
123678-HxCDF	ND	0.934			ES 123678-HxCDF	91.9	
234678-HxCDF	ND	0.841			ES 234678-HxCDF	98.2	
123789-HxCDF	ND	0.844			ES 123789-HxCDF	102	
1234678-HpCDF	ND	0.326			ES 1234678-HpCDF	96.7	
1234789-HpCDF	ND	0.423			ES 1234789-HpCDF	96.4	
OCDF	ND	1.04			ES OCDF	92.9	
Totals					**Standard**	**CS Recoveries**	
					CS 37Cl-2378-TCDD	97.2	
Total TCDD	ND	1.3	ND		CS 12347-PeCDD	107	
Total PeCDD	ND	1.06	ND		CS 12346-PeCDF	106	
Total HxCDD	ND	0.944	ND		CS 123469-HxCDF	97	
Total HpCDD	ND		0.936		CS 1234689-HpCDF	108	
Total TCDF	ND	0.948	ND				
Total PeCDF	ND	0.467	ND				
Total HxCDF	ND	0.892	ND				
Total HpCDF	ND	0.371	ND				
Total PCDD/Fs	**ND**		**0.936**				
ITEF TEQs							
TEQ: ND=0	0		0.00936				
TEQ: ND=DL/2	1.41	1.42	1.42				
TEQ: ND=DL	2.83	2.83	2.84				

SGS
5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com
Tel: +1 910 794-1613; Toll-Free 866 846-8290

METHOD 8290A **PCDD/F ONGOING PRECISION AND RECOVERY (OPR)** **FORM 8A**

Lab Name:	SGS North America		
Initial Calibration:	ICAL: HRMS2_DF_09062018_22NOV2017		
Instrument ID:	HRMS2	GC Column ID:	ZB-5ms
VER Data Filename:	181108B02	Analysis Date:	08-NOV-2018 10:00:53
Lab ID:	OPR1_16280_DF		

NATIVE ANALYTES	SPIKE CONC.	CONC. FOUND	RANGE (ng/mL)			OK
2,3,7,8-TCDD	10	10.1	6.7	-	15.8	Y
1,2,3,7,8-PeCDD	50	51.5	35	-	71	Y
1,2,3,4,7,8-HxCDD	50	55	35	-	82	Y
1,2,3,6,7,8-HxCDD	50	56.4	38	-	67	Y
1,2,3,7,8,9-HxCDD	50	52.2	32	-	81	Y
1,2,3,4,6,7,8-HpCDD	50	54.9	35	-	70	Y
OCDD	100	115	78	-	144	Y
2,3,7,8-TCDF	10	10.8	7.5	-	15.8	Y
1,2,3,7,8-PeCDF	50	50.3	40	-	67	Y
2,3,4,7,8-PeCDF	50	56	34	-	80	Y
1,2,3,4,7,8-HxCDF	50	52.3	36	-	67	Y
1,2,3,6,7,8-HxCDF	50	51.8	42	-	65	Y
2,3,4,6,7,8-HxCDF	50	53.1	35	-	78	Y
1,2,3,7,8,9-HxCDF	50	51.3	39	-	65	Y
1,2,3,4,6,7,8-HpCDF	50	54	41	-	61	Y
1,2,3,4,7,8,9-HpCDF	50	52.9	39	-	69	Y
OCDF	100	104	63	-	170	Y

Contract-required concentration limits for OPR as specified in Table 6,
Method 1613. 10/94

Processed: 09 Nov 2018 09:50 Analyst: TF

METHOD 8290A **PCDD/F ONGOING PRECISION AND RECOVERY (OPR)** **FORM 8B**

Lab Name: SGS North America

Initial Calibration: ICAL: HRMS2_DF_09062018_22NOV2017

Instrument ID: HRMS2 GC Column ID: ZB-5ms

VER Data Filename: 181108B02 Analysis Date: 08-NOV-2018 10:00:53

Lab ID: OPR1_16280_DF

LABELED ANALYTES	SPIKE CONC.	CONC. FOUND	RANGE (ng/mL)			OK
13C-2,3,7,8-TCDD	100	99.9	20	-	175	Y
13C-1,2,3,7,8-PeCDD	100	101	21	-	227	Y
13C-1,2,3,4,7,8-HxCDD	100	96.5	21	-	193	Y
13C-1,2,3,6,7,8-HxCDD	100	95.6	25	-	163	Y
13C-1,2,3,7,8,9-HxCDD	100	98	26	-	166	Y
13C-1,2,3,4,6,7,8-HpCDD	100	99	26	-	166	Y
13C-OCDD	200	184	26	-	397	Y
13C-2,3,7,8-TCDF	100	101	22	-	152	Y
13C-1,2,3,7,8-PeCDF	100	95.1	21	-	192	Y
13C-2,3,4,7,8-PeCDF	100	104	13	-	328	Y
13C-1,2,3,4,7,8-HxCDF	100	100	19	-	202	Y
13C-1,2,3,6,7,8-HxCDF	100	93.9	21	-	159	Y
13C-2,3,4,6,7,8-HxCDF	100	100	22	-	176	Y
13C-1,2,3,7,8,9-HxCDF	100	101	17	-	205	Y
13C-1,2,3,4,6,7,8-HpCDF	100	101	21	-	158	Y
13C-1,2,3,4,7,8,9-HpCDF	100	99.6	20	-	186	Y
13C-OCDF	200	205	26	-	397	Y
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	40	38.1	12.4	-	76.4	Y

Contract-required concentration limits for OPR as specified in Table 6, Method 1613. 10/94

Processed: 09 Nov 2018 09:50 Analyst: TF

Sample Receipt Notification

5500 Business Drive
Wilmington, NC 28405 USA
Tel: 910 794-1613
Toll Free: 866 846-8290
Fax: 910 794-3919

Project Manager:	*Tamara Morgan*
Receipt Date & Time:	*27-Oct-18 at 10:08*
AP Project name:	*B2759*
Requested TAT:	*14 days*
Projected due date:	*12-Nov-18*
Matrix:	*Aqueous*
Phone#:	*910-794-1613*
Email Address:	*Tamara.Morgan@sgs.com*

Company Contact:	*Ariel Hartney*
Company:	*SGS North America Inc.*
Project Name & Site:	*FA58677X*
Project PO#:	*FA58677X*
QAAP/Contract #:	*n/a*
Requested Analysis:	*Method 8290A*
Phone#:	*407-425-6700*
Email Address:	*ariel.hartney@sgs.com*

Client Smp ID	AP Smp ID	Sample Condition & Notes	Quantity	Size	Sampling Date	Sampling Time	Received Temp	Container #	Shipping #
PS-1	B2759_001	AQ	2	1L Amber	22-Oct-18	09:08	1.1	1	437231335657
PS-2	B2759_002	AQ	2	1L Amber	22-Oct-18	09:41	1.1	1	437231335657
PS-4	B2759_003	AQ	2	1L Amber	22-Oct-18	10:05	1.1	1	437231335657

Preservation Type: **Sample Seals:** No

Notes/Comments:

Samples received intact

Any un-extracted sample will be stored for 90 days from reporting date. Additional storage fees may apply for any samples stored longer than 90 days.

Received by: Amber Nunalee *Logged in by: Jay Burkamper* *QC'ed by:* AK 29 Oct 18

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/terms_and_conditions.htm

B2759

SGS

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # FA58677X

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 4405 Vineland Rd, Suite C-15
City: Orlando State: FL Zip: 32811
Project Contact: ariel.hartney@sgs.com E-mail:
Phone #: 407-425-6700 Fax #:
Sampler(s) Name(s): DHKD Phone:

Project Information

Project Name: FA58677X
Street:
City: State: FL
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	8290	LAB USE ONLY
1X	PS-1		10/22/18	9:08:00 AM	DHKD	AQ	2			2						X	
2X	PS-2		10/22/18	9:41:00 AM	DHKD	AQ	2			2						X	
3X	PS-4		10/22/18	10:05:00 AM	DHKD	AQ	2			2						X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other 14

Emergency & Rush T/A data available via Lablink Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMB+Narrative

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS-WILM

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		1 [signature]	2 [signature]	10-27-18 10:08	2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[X] Intact [ ] Not intact	Preserved where applicable [X] Therm. ID: SIN 18149216208 On Ice [X] Cooler Temp. 1.1 °C

Sample Summary

Applied Ecology Inc.

Job No: FA58803

Countywide PFAS Screening

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA58803-1	10/24/18	10:40	KDJR	10/27/18	AQ	Ground Water	GW-N1
FA58803-2	10/24/18	11:28	KDJR	10/27/18	AQ	Ground Water	GW-TITUS1
FA58803-3	10/24/18	12:01	KDJR	10/27/18	AQ	Ground Water	GW-TITUS2
FA58803-4	10/24/18	12:32	KDJR	10/27/18	AQ	Ground Water	GW-TITUS3
FA58803-5	10/24/18	13:51	KDJR	10/27/18	AQ	Ground Water	SH-5
FA58803-6	10/24/18	14:27	KDJR	10/27/18	AQ	Ground Water	SH-6
FA58803-7	10/25/18	08:40	KDJR	10/27/18	AQ	Ground Water	SH-1
FA58803-8	10/25/18	08:57	KDJR	10/27/18	AQ	Ground Water	SH-2
FA58803-9	10/25/18	09:31	KDJR	10/27/18	AQ	Ground Water	SH-3
FA58803-10	10/25/18	09:13	KDJR	10/27/18	AQ	Ground Water	SH-4
FA58803-11	10/25/18	09:51	KDJR	10/27/18	AQ	Ground Water	PS-7
FA58803-12	10/25/18	14:25	KDJR	10/27/18	AQ	Ground Water	AQ-PP-1
FA58803-13	10/25/18	14:54	KDJR	10/27/18	AQ	Ground Water	AQ-PP-2

Report of Analysis

Client Sample ID:	GW-N1		
Lab Sample ID:	FA58803-1	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55495.D	1	11/08/18 12:21	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0083 U	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.017	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-N1		
Lab Sample ID:	FA58803-1	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	83%		61-134%
	13C2-PFDA	112%		62-128%
	d5-EtFOSAA	92%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS1		
Lab Sample ID:	FA58803-2	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55496.D	1	11/08/18 12:41	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.00840	0.016	0.0080	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.00626	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0355	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS1		
Lab Sample ID:	FA58803-2	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	103%		61-134%
	13C2-PFDA	123%		62-128%
	d5-EtFOSAA	106%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS2		
Lab Sample ID:	FA58803-3	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55497.D	1	11/08/18 13:02	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS2		
Lab Sample ID:	FA58803-3	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	97%		61-134%
	13C2-PFDA	117%		62-128%
	d5-EtFOSAA	98%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS3		
Lab Sample ID:	FA58803-4	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55498.D	1	11/08/18 13:23	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0156	0.017	0.0083	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0225	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0083 U	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.00425	0.017	0.0042	ug/l	I
375-95-1	Perfluorononanoic acid	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0103	0.017	0.0083	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00479	0.017	0.0042	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-TITUS3		
Lab Sample ID:	FA58803-4	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	98%		61-134%
	13C2-PFDA	107%		62-128%
	d5-EtFOSAA	91%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-5		
Lab Sample ID:	FA58803-5	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55501.D	1	11/08/18 14:26	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00883	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0543	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-5		
Lab Sample ID:	FA58803-5	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	101%		61-134%
	13C2-PFDA	118%		62-128%
	d5-EtFOSAA	104%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-6		
Lab Sample ID:	FA58803-6	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55669.D	1	11/13/18 09:53	NAF	11/03/18 08:00	OP72485	SQ1276
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0109	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0123	0.015	0.0077	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0603	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-6		
Lab Sample ID:	FA58803-6	**Date Sampled:**	10/24/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	95%		61-134%
	13C2-PFDA	105%		62-128%
	d5-EtFOSAA	87%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-1		
Lab Sample ID:	FA58803-7	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55503.D	1	11/08/18 15:08	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0083 U	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.017	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-1		
Lab Sample ID:	FA58803-7	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	100%		61-134%
	13C2-PFDA	119%		62-128%
	d5-EtFOSAA	109%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-2		
Lab Sample ID:	FA58803-8	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55504.D	1	11/08/18 15:28	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.0083 U	0.017	0.0083	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083 U	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.017	0.0042	ug/l	
335-76-2	Perfluorodecanoic acid	0.0083 U	0.017	0.0083	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0083 U	0.017	0.0083	ug/l	
307-55-1	Perfluorododecanoic acid	0.0083 U	0.017	0.0083	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0083 U	0.017	0.0083	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.017	0.0042	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0083 U	0.017	0.0083	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.017 U	0.042	0.017	ug/l	
2991-50-6	EtFOSAA	0.017 U	0.042	0.017	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-2		
Lab Sample ID:	FA58803-8	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U	0.042	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	101%		61-134%
	13C2-PFDA	113%		62-128%
	d5-EtFOSAA	102%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-3		
Lab Sample ID:	FA58803-9	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55505.D	1	11/08/18 15:49	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.016	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-3		
Lab Sample ID:	FA58803-9	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	102%		61-134%
	13C2-PFDA	117%		62-128%
	d5-EtFOSAA	102%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-4		
Lab Sample ID:	FA58803-10	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55506.D	1	11/08/18 16:10	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080 U	0.016	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.0156	0.016	0.0040	ug/l	I
375-95-1	Perfluorononanoic acid	0.0040 U	0.016	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	0.0080 U	0.016	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.016	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	0.0080 U	0.016	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.016	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0209	0.016	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0080 U	0.016	0.0080	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.016 U	0.040	0.016	ug/l	
2991-50-6	EtFOSAA	0.016 U	0.040	0.016	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SH-4		
Lab Sample ID:	FA58803-10	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.040	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	101%		61-134%
	13C2-PFDA	114%		62-128%
	d5-EtFOSAA	106%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-7		
Lab Sample ID:	FA58803-11	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55507.D	1	11/08/18 16:31	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0077 U	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038 U	0.015	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-7		
Lab Sample ID:	FA58803-11	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	104%		61-134%
	13C2-PFDA	122%		62-128%
	d5-EtFOSAA	103%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AQ-PP-1		
Lab Sample ID:	FA58803-12	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55509.D	1	11/08/18 17:16	NAF	11/03/18 08:00	OP72485	SQ1272
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0389	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0119	0.015	0.0077	ug/l	I
307-24-4	Perfluorohexanoic acid	0.00900	0.015	0.0077	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00845	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00419	0.015	0.0038	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AQ-PP-1		
Lab Sample ID:	FA58803-12	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	121%		62-128%
	d5-EtFOSAA	106%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AQ-PP-2		
Lab Sample ID:	FA58803-13	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q55670.D	1	11/13/18 10:12	NAF	11/03/18 08:00	OP72485	SQ1276
Run #2							

	Initial Volume	Final Volume
Run #1	130 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.00916	0.015	0.0077	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-24-4	Perfluorohexanoic acid	0.0077 U	0.015	0.0077	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077 U	0.015	0.0077	ug/l	
335-67-1	Perfluorooctanoic acid	0.00744	0.015	0.0038	ug/l	I
375-95-1	Perfluorononanoic acid	0.0038 U	0.015	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	ug/l	
307-55-1	Perfluorododecanoic acid	0.0077 U	0.015	0.0077	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0077 U	0.015	0.0077	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00935	0.015	0.0077	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0346	0.015	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0077 U	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.015 U	0.038	0.015	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.038	0.015	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AQ-PP-2		
Lab Sample ID:	FA58803-13	**Date Sampled:**	10/25/18
Matrix:	AQ - Ground Water	**Date Received:**	10/27/18
Method:	EPA 537 MOD EPA 537 MOD	**Percent Solids:**	n/a
Project:	Countywide PFAS Screening		

PFAS List

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.038	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	92%		61-134%
	13C2-PFDA	109%		62-128%
	d5-EtFOSAA	97%		57-135%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB #: FAS8803 PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc.
Address: 122 Fourth Ave suite 104
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: James Ramos Sampler 2: Rayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

LC537 DODFL

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNA	DI WATER	MEOH	LC537 DODFL	LAB USE ONLY
1	GW-N1	10/24/18	10:40	KD	GW	2		2								X	
2	GW-TITUS1	10/24/18	11:28	JR	GW	2		2								X	
3	GW-TITUS2	10/24/18	12:01	KD	GW	2		2								X	
4	GW-TITUS3	10/24/18	12:32	JR	GW	2		2								X	
5	SH-5	10/24/18	13:51	JR	GW	2		2								X	
6	SH-6	10/24/18	14:27	KD	GW	2		2								X	
7	SH-1	10/25/18	8:40	KD	GW	2		2								X	
8	SH-2	10/25/18	8:57	KD	GW	2		2								X	
9	SH-3	10/25/18	9:31	KD	GW	2		2								X	
10	SH-4	10/25/18	9:13	KD	GW	2		2								X	
11	PS-7	10/25/18	9:51	KD	GW	2		2								X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 [signature]/AEI	10/26/18 11:25	2 [signature] 10-26-18 1125	3 [signature] 10-26-18 1245		4 [signature] 10/27/18 900
5		6	7		8

Lab Use Only: Cooler Temperature (s) Celsius (corrected): 1.3

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

FA58803: Chain of Custody
Page 1 of 3

FA58803

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: Applied Ecology Inc.
Address: 122 Fourth Ave suite 104
City: Indialantic State: FL Zip: 32903
Project Contact: Claudia Listopad Email: clistopad@appliedecologyinc.com
Phone #: (321) 499-3336
Sampler(s) Name(s) (Printed)
Sampler 1: James Ramos Sampler 2: Kayleigh Douglass

Project Information

Project Name: Countywide PFAS Screening
Street
City State
Project #
Fax #
Client Purchase Order #

Analytical Information

L4537 DOD-71

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	LAB USE ONLY
12	AQ-PP-1	10/25/18	14:25	KD	GW	2		2						X	
13	AQ-PP-2	10/25/18	14:54	JR	GW	2		2						X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Kayleigh Douglass/AEI	10/26/18 11:25	2 James Llerena 10-26-18 1125	3 James Llerena	10-26-18 1345	4 [illegible] 10/27/18 900
5			6	7		8

Lab Use Only: Cooler Temperature (s) Celsius (corrected): 1.3

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (1) Rev 031318

SGS Sample Receipt Summary

Job Number: FA58803 **Client:** APPLIED ECOLOGY INC. **Project:** COUNTYWIDE PFAS

Date / Time Received: 10/27/2018 9:00:00 AM **Delivery Method:** FX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.5);

Cooler Temps (Corrected) °C: Cooler 1: (1.3);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 10/27/2018 9:00:00 A Reviewer: _____ Date: _____

Appendix B: Field and Calibration Logs

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** *11-10-05*

Project/Site: Brevard County PFAS Date: 10/5/18 Meter # AET

Temperature (Quarterly) *For Date of Last Temperature Verification see _____ in log book _____*

Dissolved Oxygen	**DEP SOP FT 1500**	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °C	% DO	Saturation mg/L (from chart)	Pass or Fail
										Acceptance Criteria:+/-0.3mg/l	
~~CAL~~ ICV CCV		DH	10/5/18	7:45			8.00	26.2	99.0	8.084 DH w/ 10/5/18	P F
~~CAL~~ ICV CCV		~~DH~~	~~10/5/18~~	~~7:47~~			8.08	26.3	100.1	~~8.08~~ 8.070	P F
CAL ~~ICV~~ CCV		DH	10/5/18	7:51			8.10	26.3	101.1	8.07	P F
CAL ICV CCV		~~DH~~	~~10/5/18~~	~~7:54~~ 7:54 PM			8.21	26.5	102.8	8.040	P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	**DEP SOP FT 1200**	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass or Fail
										Acceptance Criteria: +/- 5%	
~~CAL~~ ICV CCV		DH	10/5/18	7:58	1413	Apr 19	8GD864	10		1449	P F
~~CAL~~ ICV CCV		DH	10/5/18	8:01	1413	Apr 19	8GD864	10		1413	P F
CAL ~~ICV~~ CCV		KD	10/5/18	8:07	45000	Apr 19	8GD327	1		44481	P F
CAL ICV ~~CCV~~		DH	10/5/18	9:58	1413	Apr 19	8GD864	10		1404	P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	**DEP SOP FT 1100**	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
										Acceptance Criteria: +/- 0.2 SU	
~~CAL~~ ICV CCV		KD	10/5/18	8:11	10.0	Nov 19	7GK699	2		9.98	P F
~~CAL~~ ICV CCV		KD	10/5/18	8:14	7.0	Dec 19	7GL372	3		6.96	P F
~~CAL~~ ICV CCV		KD	10/5/18	8:15	7.0	Dec 19	7GL372	3		7.00	P F
CAL ~~ICV~~ CCV		KD	10/5/18	8:18	10.0	Nov 19	7GK699	2		9.96	P F
CAL ICV CCV		DH	10/5/18	8:01	4.0	Jan 20	8GA973	2		4.14	P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: _____ Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed: Yes No

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: _____ LOT #: _____

PURCHASE DATE: _____ EXPIRATION DATE: Nov 18

Brevard County PFAS

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
10/5/18	Hayleigh Douglass	AEI	10/3/18	10	10.3	P
10/5/18	↓	AEI	10/3/18	10	9.60	P

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Hayleigh Douglass

Site Information:

Site Name: GC-1 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 3.25 meters

Stream/Canal Flow (Circle One): No Flow Low Moderate High Flood (N/A)

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 25.0 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	7.52	10.7%, 10Hmg/L	28.2	29677	21.4

Depth at which samples were collected: 0.5 meters

Sample Time: 9:09

Comments: Blank = 8:45AM; Local kayaker commented water was much milkier than normal; boat was anchored for muck sample

QA/QC

Duplicate: _____

Blank: V

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: MS-1 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 3.25 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 25.0 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
3.25	7.25	3.9%, 0.28mg/L	28.9	32427

Depth at which samples were collected: 3.25 meters

Sample Time: 9:30

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Rayleigh Douglass, Danielle Huffaker

Site Information:

Site Name: GC-2 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): (Clear) Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 2.5 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.4 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.34	153.1% 10.55mg/L	29.6	28757	6.96

Depth at which samples were collected: 0.5 meters

Sample Time: 18:06

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Hayleigh Douglass, Danielle Huffner

Site Information:

Site Name: MS-2 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): (Clear) Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 2.5 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 26.4 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
2.5	7.36	2.6% 0.15mg/L	29.2	31800

Depth at which samples were collected: 2.5 meters

Sample Time: 18:11

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PTAS Screening

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: GC-3 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): (Clear) Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 5.67 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 25.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.73	181.9% 12.52mg/L	29.6	29088	9.29

Depth at which samples were collected: 0.5 meters

Sample Time: 17:30

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffiker
~~Kayleigh Douglass~~

Site Information:

Site Name: MS-3 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary ~~Canal~~ Other _____

Weather Conditions (Circle One): Clear Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): Shore ~~Boat~~

Sample Collection Device: Ekman Sampler

Water Quality Measurements:

Total Water Depth: 5.67 meters

Stream/Canal Flow (Circle One): No Flow Low Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 25.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
JR 4.42 (full length)	6.86	1.4%, 0.10 mg/L	26.0	35686

Depth at which samples were collected: 5.67 meters

Sample Time: 17:39

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: GC-4 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 4.75 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.1 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.66	209%, 14.2 mg/L	30.5	29275	5.17 ~~3170~~ KD

Depth at which samples were collected: 0.5 meters

Sample Time: 17:00

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Hayleigh Douglass

Site Information:

Site Name: MS-4 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 4.75 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 26.1 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
4.42 (full length)	7.18	1.3%, 0.09	28.8	31701

Depth at which samples were collected: 4.75 meters

Sample Time: 4.75

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: GC-5 **Sample Number:** 1 **Date:** 10/5/18

Latitude: _____ **Longitude:** _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 2.0 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	7.90	81.9%, 5.68	29.1	29940	11.4

Depth at which samples were collected: 0.5 meters

Sample Time: 4:24 (16:24)

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: MS-5 Sample Number: 1 Date: 10/15/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 2.0 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 26.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
2.0	7.23	1.1%, ~~0.8~~ LD 0.08mg/L	29.0	31140

Depth at which samples were collected: 2.0 meters

Sample Time: 16:32

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Hayleigh Douglass

Site Information:

Site Name: GC-6 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 2.25 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 25.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.15	122%, 8.47 mg/L	25.0	29751	8.56

Depth at which samples were collected: 0.5 meters

Sample Time: 15:35

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Khayleigh Douglass

Site Information:

Site Name: MS-6 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 2.25 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 25.6 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
2.25	7.39	~~9.9~~ KD 12.8%, 0.88	28.8	30693

Depth at which samples were collected: 2.25 meters

Sample Time: 15:40

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Danielle Huffner, Hayleigh Douglass

Site Information:

Site Name: BR-2 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 1.0 meters

Stream/Canal Flow (Circle One): (No Flow) Low Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.0 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.19	88%, 6.24	27.9	30167	6.37

Depth at which samples were collected: 0.5 meters

Sample Time: 12:44

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): ~~Kayleigh Douglass~~ Danielle Huffner

Site Information:

Site Name: MS-7 Sample Number: 1 Date: 10/15/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 1.5 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 25.8 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
1.5	8.03	81.7%, 5.82	27.6	29349

Depth at which samples were collected: bottom (1.5) meters

Sample Time: 12:02

Comments: PAFB

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Screening

Sampler Name(s): Kayleigh Douglass, Danielle Huffner

Site Information:

Site Name: BR-1 Sample Number: 1 Date: 10/5/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): Shore (Boat)

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 3 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 25.8 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.02	84.2%, 6.01 mg/L	27.6	29317	

Depth at which samples were collected: 0.5 meters

Sample Time: 11:55

Comments: PAFB

QA/QC

Duplicate: _____

Blank: _____

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** *11-10-05*

Project/Site: Brevard County PFAS Date: 10/8/18 Meter # AEI

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

Dissolved Oxygen	**DEP SOP FT 1500**	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °c	% DO	Saturation mg/L (from chart)	Pass *or* Fail
										Acceptance Criteria:+/-0.3mg/l	
(CAL) ICV CCV		JR	10/8/18	7:35			8.39	24.6	100.9	8.325	(P) F
(CAL) ICV CCV		JR	10/8/18	7:37			8.32	24.6	100.0	8.325	(P) F
CAL (ICV) CCV		JR	10/8/18	7:42			8.47	24.7	101.5	8.309	(P) F
CAL ICV (CCV)		JR	10/8/18	3:30			8.36	24.8	100.8	8.294	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	**DEP SOP FT 1200**	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass *or* Fail
										Acceptance Criteria: +/- 5%	
(CAL) ICV CCV		JR	10/8/18	7:45	4500	Jan19	BGA447	7		4423	(P) F
(CAL) ICV CCV		JR	10/8/18	7:47	4500	Jan19	BGA447	7		4500	(P) F
CAL (ICV) CCV		JR	10/8/18	7:49	1413	Apr19	BGD814	10		1442	(P) F
CAL ICV (CCV)		JR	10/8/18	3:24	45000	Apr19	BGD327	1		45678	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	**DEP SOP FT 1100**	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass *or* Fail
										Acceptance Criteria: +/- 0.2 SU	
(CAL) ICV CCV		JR	10/8/18	7:52	10.0	Nov19	7GK699	2		9.99	(P) F
(CAL) ICV CCV		JR	10/8/18	7:54	7.0	Dec19	7GL372	3		7.05	(P) F
(CAL) ICV CCV		JR	10/8/18	7:55	7.0	Dec19	7GL372	3		6.98	(P) F
CAL (ICV) CCV		JR	10/8/18	7:57	10.0	Nov19	7GK699	2		9.93	(P) F
CAL ICV (CCV)		JR	10/8/18	3:26	4.0	Jan20	BGA973	2		4.04	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: _____ Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed: Yes No

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: ______ LOT #: ______

PURCHASE DATE: ______ EXPIRATION DATE: Nov 18

Brevard County PFAS

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
	James Ramos	AEI	10/8/18	20	20.2	P
	↓	↓	↓	100	99.0	P
				800	799	P
				10	10.0	P
10/8/18	James Ramos	AEI	10/8/18	10	9.82	P

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Sampling

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: IRL-3 Sample Number: 1 Date: 10/8/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): (Shore) Boat

Sample Collection Device (Circle One): ~~Direct Grab with Pump~~ KD (Direct Grab with Bottle)

Water Quality Measurements:

Total Water Depth: 0.75 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 28.9 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	7.68	43.2%, 2.68 mg/L	28.5	4985	8.79

Depth at which samples were collected: 0.5 meters

Sample Time: 13:35

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Sediment/Muck Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Sampling

Sampler Name(s): Danielle Huffner, Kayleigh Douglass

Site Information:

Site Name: MS-8 Sample Number: 1 Date: 10/9/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): Estuary (Canal) Other _____

Weather Conditions (Circle One): Clear Partly Cloudy (Mostly Cloudy) Rain

Sampling Type (Circle One): (Shore) Boat

Sample Collection Device: (Ekman Sampler)

Water Quality Measurements:

Total Water Depth: 0.75 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI

Air Temperature: 28.9 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)
0.75	7.71	45.5%, 2.95 mg/L	28.4	~~505~~ 50525 KD

Depth at which samples were collected: 0.75 meters

Sample Time: 13:41

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** 11-10-05

Project/Site: Brevard County PFAS Screening Date: 10/16/18 Meter # AEI

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book*

Dissolved Oxygen	**DEP SOP FT 1500**	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °C	% DO	Saturation mg/L (from chart)	Pass or Fail
										Acceptance Criteria: +/-0.3mg/l	
(CAL) ICV CCV		KD	10/16/18	7:25			8.51	23.4	99.9	8.514	(P) F
(CAL) ICV CCV		KD	10/16/18	7:29			8.52	23.4	99.9	8.514	(P) F
CAL (ICV) CCV		KD	10/16/18	7:34			9.00	21.5	101.9	8.829	(P) F
CAL ICV (CCV)		KD	10/16/18	4:15			8.65	24.4	103.7	8.356	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	**DEP SOP FT 1200**	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass or Fail
										Acceptance Criteria: +/- 5%	
(CAL) ICV CCV		KD	10/16/18	7:38	4500	Jun19	8GF1018	8		4489	(P) F
(CAL) ICV CCV		KD	10/16/18	7:39	4500	Jun19	8GF1018	8		4500	(P) F
CAL (ICV) CCV		KD	10/16/18	7:41	1413	Apr19	8GD864	11		1428	(P) F
CAL ICV (CCV)		KD	10/16/18	4:27	45000	May19	8GE304	2		45237	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	**DEP SOP FT 1100**	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
										Acceptance Criteria: +/- 0.2 SU	
(CAL) ICV CCV		KD	10/16/18	7:43	4.0	Jan20	8GA973	2		4.04	(P) F
(CAL) ICV CCV		KD	10/16/18	7:47	7.0	Dec19	7GL372	3		6.88	(P) F
(CAL) ICV CCV		KD	10/16/18	7:48	7.0	Dec19	7GL372	3		7.00	(P) F
CAL (ICV) CCV		KD	10/16/18	7:50	4.0	Jan20	8GA973	2		3.98	(P) F
CAL ICV (CCV)		KD	10/16/18	4:30	10.0	Nov19	7GK699	2		10.2	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: _____ Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed: Yes No

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: ______ LOT #: ______

PURCHASE DATE: ______ EXPIRATION DATE: Nov 18

Brevard County PFAS Screening

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
10/16/18	Kayleigh Douglass	AEI	10/15/18	10	10.1	P
10/16/18	Kayleigh Douglass	AEI	10/15/18	10	9.99	P

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: BC PFAS Screening

Sampler Name(s): Danielle Huffner
Kayleigh Douglass

Site Information:

Site Name: IRL-1 Sample Number: 1 Date: 10/16/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): (Shore) Boat

Sample Collection Device (Circle One): Direct Grab with Pump (Direct Grab with Bottle)

Water Quality Measurements:

Total Water Depth: 0.75 meters

Stream/Canal Flow (Circle One): No Flow (Low) Moderate High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 28.5 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.41	128.9, 8.16	30.1	42820	9.09

Depth at which samples were collected: 0.5 meters

Sample Time: 14:24

Comments: Abandonned boat ~30 yards from ~~Fish school of fish~~ where sampling took place; suspected muck is on surface of sand

thin layer of

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: BC PFAS Sereening

Sampler Name(s): Danielle Huffner
Hayleigh Douglass

Site Information:

Site Name: IRL-2 **Sample Number:** 1 **Date:** 10/16/18

Latitude: _____ **Longitude:** _____

Waterbody Type (Circle One): (Estuary) Canal Other_____

Weather Conditions (Circle One): (Clear) Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): Shore Boat

Sample Collection Device (Circle One): Direct Grab with Pump (Direct Grab with Bottle)

Water Quality Measurements:

Total Water Depth: 0.75 meters

Stream/Canal Flow (Circle One): No Flow Low (Moderate) High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.5 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.39	119%, 7.96	30.8	31362	7.90

Depth at which samples were collected: 0.5 meters

Sample Time: 13:40

Comments: _____

QA/QC
Duplicate: _____
Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: Brevard County PFAS Testing

Sampler Name(s): Danielle Huffner, Khayleigh Dasgass

Site Information:

Site Name: ~~BR-3~~ IRL-4 Sample Number: 1 Date: 10/16/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): (Clear) Partly Cloudy Mostly Cloudy Rain

Sampling Type (Circle One): (Shore) Boat

Sample Collection Device (Circle One): Direct Grab with Pump (Direct Grab with Bottle)

Water Quality Measurements:

Total Water Depth: 0.75 meters

Stream/Canal Flow (Circle One): No Flow Low (Moderate) High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 21o.2 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	7.81	61.9%, 4.26	28.9	33131	8.13

Depth at which samples were collected: 0.5 meters

Sample Time: 11:16

Comments: Windy causing water to be choppy. There is a lot of trash on shore, could effect PFAS result.

QA/QC

Duplicate: _____

Blank: _____

Surface Water Field Data Sheet

Applied Ecology Inc.
122 4th Avenue., Suite 104
Indialantic, FL 32903

Project: BC PFAS Screening

Sampler Name(s): Danielle Huffner
Kayleigh Douglass

Site Information:

Site Name: ~~IRL-4BR-3~~ Sample Number: 1 Date: 10/16/18

Latitude: _____ Longitude: _____

Waterbody Type (Circle One): (Estuary) Canal Other _____

Weather Conditions (Circle One): Clear (Partly Cloudy) Mostly Cloudy Rain

Sampling Type (Circle One): (Shore) Boat

Sample Collection Device (Circle One): (Direct Grab with Pump) Direct Grab with Bottle

Water Quality Measurements:

Total Water Depth: 1.0 meters

Stream/Canal Flow (Circle One): No Flow Low (Moderate) High Flood N/A

Sample Meter Used: AEI YSI and AEI Turbidity Meter

Air Temperature: 26.4 °C

Field Measurements:

Depth Collected (Meters)	pH (SU)	D.O. (%, mg/L)	Temperature (°C)	Sp. Conductance (uS/cm)	Turbidity (NTUs)
0.5	8.40	92.3%, 6.32	29.1	33049	17.6

Depth at which samples were collected: 0.5 meters

Sample Time: 12:34

Comments: _____

QA/QC

Duplicate: _____

Blank: _____

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** 11-10-05

Project/Site: BC Countywide PFAS Screening Date: 10-17-18 Meter # AE1

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

Dissolved Oxygen	**DEP SOP FT 1500**	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °c	% DO	Saturation mg/L (from chart)	Pass or Fail
											Acceptance Criteria:+/-0.3mg/l
(CAL) ICV CCV		JR	10-17-18	7:32			9.16	23.1	107.0	8.562	(P) F
(CAL) ICV CCV		JR	10-17-18	7:34			8.55	23.1	99.9	8.562	(P) F
CAL (ICV) CCV		JR	10-17-18	7:36			8.61	23.0	100.1	8.578	(P) F
CAL ICV (CCV)		JR	10-17-18				8.79	22.6	101.7	8.644	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	**DEP SOP FT 1200**	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass or Fail
										Acceptance Criteria: +/- 5%	
(CAL) ICV CCV		JR	10-17-18	7:39	4500	Jun 19	8GF1018	8		4496	(P) F
(CAL) ICV CCV		JR	10-17-18	7:41	4500	~~Apr 19~~ Jun 19	8GF1018	8		4504	(P) F
CAL (ICV) CCV		JR	10-17-18	7:43	1413	Apr 19	8GD864	1		1423	(P) F
CAL ICV (CCV)		JR	10-17-18	3:49	4500	Jun 19	8GF1018	8		4525	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	**DEP SOP FT 1100**	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
										Acceptance Criteria: +/- 0.2 SU	
(CAL) ICV CCV		JR	10-17-18	7:46	10	Nov 19	7GK699	2		9.90	(P) F
(CAL) ICV CCV		JR	10-17-18	7:48	7	Dec 19	7GL372	3		6.86	(P) F
(CAL) ICV CCV		JR	10-17-18	7:53	7	Dec 19	7GL372	3		6.99	(P) F
CAL (ICV) CCV		JR	10-17-18	7:55	10	Nov 19	7GK699	2		10.01	(P) F
CAL ICV (CCV)		JR	10-17-18	JR ~~2553~~ 3:53	4	Jan 20	8GA973	2		3.81	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: _____ Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed: Yes No

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: _____ LOT #: _____

PURCHASE DATE: _____ EXPIRATION DATE: Nov 18

BC Countywide PFAS Screening

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
10-17-18	James Ramos	AE1	10-15-18	10	9.96	P
10-17-18	James Ramos	AE1	10-15-18	10	9.65	P

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-SAT1	SAMPLE ID: GW-SAT1-1
	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 3.93	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
8.07 = (12 feet – 3.93 feet) X 0.06 gallons/foot = 0.484 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 5.9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5.9	PURGING INITIATED AT: 8:40	PURGING ENDED AT: 8:55	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
8:45	0.5	0.5	0.10	3.95	7.39	27.6	2525	1.9%, 0.15	6.35	Clear	None
8:50	0.5	1.0	0.10	3.95	7.25	27.6	2483	1.8%, 0.14	4.10	↓	↓
8:55	0.5	1.5	0.10	3.95	7.19	27.6	2477	1.5%, 0.12	3.92	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kayleigh Douglass	SAMPLER(S) SIGNATURE(S): Kayleigh Douglass	SAMPLING INITIATED AT: 8:57	SAMPLING ENDED AT: 9:00
PUMP OR TUBING DEPTH IN WELL (feet): 5.9	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-SAT1	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-SAT2	SAMPLE ID: GW-SAT2-1
DATE: 10/17/18	

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.13	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 7.87 = (12 feet – 4.13 feet) X 0.06 gallons/foot = 0.472 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 6.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 6.1	PURGING INITIATED AT: 9.17	PURGING ENDED AT: 9.29	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
9:21	0.5	0.5	0.125	4.16	7.08	28.8	2837	3.17, 0.24	3.22	Clear	None
9:25	0.5	1.0	0.125	4.16	7.04	28.8	2835	2.81, 0.21	1.48	↓	↓
9:29	0.5	1.5	0.125	4.16	7.03	28.8	2843	2.47, 0.18	0.99	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos II	SAMPLING INITIATED AT: ~~10:32~~ 9:32 LW	SAMPLING ENDED AT: ~~10:35~~ 9:35 LD
PUMP OR TUBING DEPTH IN WELL (feet): 6.1	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
GW-SAT2	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:	
WELL NO: GW-SAT 3	SAMPLE ID: GW-SAT3-1	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.07	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 7.93 = (12 feet – 4.07 feet) X 0.06 gallons/foot = 0.476 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 6.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 6.1	PURGING INITIATED AT: 9:44	PURGING ENDED AT: 10:01	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
9:49	0.50	0.50	0.10	4.11	6.83	28.2	2997	20.8%, 1.61	27.0	Clear	None
9:55	0.50	1.00	0.08	4.11	6.84	28.2	2709	12.0%, 0.92	3.12	↓	↓
9:58	0.25	1.25	0.08	4.11	6.83	28.1	2707	11.4%, 0.87	1.60	↓	↓
10:01	0.25	1.50	0.08	4.11	6.83	28.1	2707	9.3%, 0.72	0.79	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kaylelsh Douglass/AEI	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 10:03	SAMPLING ENDED AT: 10:06
PUMP OR TUBING DEPTH IN WELL (feet): 6.1	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
GW-SAT3	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS: Rusty particles in water, most likely from. Slowed pump due to high DO + ~~tor~~bidity

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-SUN1	SAMPLE ID: GW-SUN1-1
	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 3 feet to 13 feet	STATIC DEPTH TO WATER (feet): 6.12	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
6.88 = (13 feet − 6.12 feet) X 0.06 gallons/foot = 0.413 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8.1	PURGING INITIATED AT: 12:12	PURGING ENDED AT: 12:24	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
12:16	0.5	0.5	0.125	6.24	5.63	26.6	2342	1.6%, 0.12	0.70	Slightly Yellow	None
12:20	0.5	1.0	0.125	6.24	5.60	26.6	2340	1.2%, 0.10	0.60	↓	↓
12:24	0.5	1.5	0.125	6.25	5.60	26.6	2339	1.1%, 0.09	0.65	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos II	SAMPLING INITIATED AT: 12:27	SAMPLING ENDED AT: 12:30
PUMP OR TUBING DEPTH IN WELL (feet): 8.1	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-SUN1	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	4100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-SUN2	SAMPLE ID: GW-SUN2-1
	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 4 feet to 14 feet	STATIC DEPTH TO WATER (feet): 6.02	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 7.98 = (14 feet – 6.02 feet) X 0.06 gallons/foot = 0.479 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8.0	PURGING INITIATED AT: 10:46	PURGING ENDED AT: 11:02	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
10:50	0.5	0.5	0.125	6.07	6.32	27.9	1471	1.47, 0.11	1.18	Clear	None
10:54	0.5	1.0	0.125	6.07	6.17	27.9	1465	1.47, 0.11	0.62	↓	↓
10:58	0.5	1.5	0.125	6.07	6.10	27.8	1439	2.61, 0.20	0.57	↓	↓
11:02	0.5	2.0	0.125	6.07	6.10	27.8	1429	2.31, 0.18	0.45	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos II	SAMPLING INITIATED AT: 11:06	SAMPLING ENDED AT: 11:09
PUMP OR TUBING DEPTH IN WELL (feet): 8.0	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-SUN2	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-SUN3	SAMPLE ID: GW-SUN3-1
DATE: 10/17/18	

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 3.73	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
8.27 = (12 feet – 3.73 feet) X 0.06 gallons/foot = 0.496 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 5.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5.7	PURGING INITIATED AT: 11:25	PURGING ENDED AT: 11:45	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:30	0.5	0.5	0.10	3.93	5.34	27.8	1453	25%, 0.20	2.60	slightly yellow	Sulfer
11:35	0.5	1.0	0.10	3.93	5.32	27.6	1381	1.4%, 0.11	1.94	↓	↓
11:40	0.5	1.5	0.10	3.93	5.34	27.6	1348	2.2%, 0.17	1.90	↓	↓
11:45	0.5	2.0	0.10	3.93	5.37	27.6	1336	1.9%, 0.15	2.19	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kayleigh Douglass	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 11:48	SAMPLING ENDED AT: 11:51
PUMP OR TUBING DEPTH IN WELL (feet): 5.7	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-Sun3	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:	
WELL NO: GW-TC1	SAMPLE ID: GW-TC1-1	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 8 feet to 18 feet	STATIC DEPTH TO WATER (feet): 11.06	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
6.94 = (18 feet – 11.06 feet) X 0.06 gallons/foot = 0.416 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13.1	PURGING INITIATED AT: 2:49	PURGING ENDED AT: 3:00	TOTAL VOLUME PURGED (gallons): 1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
2:54	0.50	0.50	0.10	11.63	6.70	26.2	3948	1.9%, 0.15	1.35	slightly yellow	Sulfer
2:57	0.25	0.75	0.08	11.62	6.71	26.2	3954	1.7%, 0.13	1.35	↓	↓
3:00	0.25	1.00	0.08	11.62	6.71	26.1	3951	1.5%, 0.12	1.17	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Hayleigh Douglass/ACI	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 3:02	SAMPLING ENDED AT: 3:05
PUMP OR TUBING DEPTH IN WELL (feet): 13.1	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GWTC1	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:	
WELL NO: GW-TC2	SAMPLE ID: GW-TC2-1	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 12 feet to 22 feet	STATIC DEPTH TO WATER (feet): 11.12	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
11.88 = (23 feet – 11.12 feet) X 0.06 gallons/foot = 0.78 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

14.1

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.1	PURGING INITIATED AT: 2:12	PURGING ENDED AT: 2:31	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
2:18	0.50	0.50	0.08	12.74	6.20	26.1	1754	3.2%, 0.26	4.04	slightly yellow	Sulfer
2:22	0.25	0.75	0.06	12.85	6.19	25.9	1750	1.9%, 0.16	4.95	↓	↓
2:25	0.25	1.00	0.08	12.97	6.18	25.8	1750	1.8%, 0.15	5.71	↓	↓
2:28	0.25	1.25	0.08	13.03	6.18	25.6	1750	1.7%, 0.14	5.63	↓	↓
2:31	0.25	1.50	0.08	13.11	6.18	25.6	1750	1.6%, 0.13	6.22	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos - TT	SAMPLING INITIATED AT: 2:34	SAMPLING ENDED AT: 2:37
PUMP OR TUBING DEPTH IN WELL (feet): 14.1	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-TC2	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-TC3	SAMPLE ID: GW-TC3-1
	DATE: 10/17/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 8.5 feet to 18.5 feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
8.4 = (18.55 feet – 10.15 feet) X 0.06 gallons/foot = 0.504 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

13.2

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12.2	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13.2	PURGING INITIATED AT: 1:28	PURGING ENDED AT: 1:51	TOTAL VOLUME PURGED (gallons): 1.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1:35	0.50	0.50	0.07	12.3	6.04	27.0	1436	4.0%, 0.31	6.00	Clear	Sulfer
1:41	0.25	0.75	0.04	12.52	6.11	26.3	1578	1.4%, 0.11	4.10	↓	↓
1:46	0.25	1.00	0.05	12.74	6.12	26.3	1570	1.4%, 0.11	5.16	↓	↓
1:51	0.25	1.25	0.05	12.93	6.13	26.2	1568	1.4%, 0.11	5.52	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Hayleigh Douglass/TEI	SAMPLER(S) SIGNATURE(S): Hayleigh Douglass	SAMPLING INITIATED AT: 1:55	SAMPLING ENDED AT: 1:58
PUMP OR TUBING DEPTH IN WELL (feet): 13.2	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-TC3	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** *11-10-05*

Project/Site: Brevard County PFAS Screening Date: 10/24/18 Meter # AEI

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book* _____

Dissolved Oxygen	**DEP SOP FT 1500**	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °C	% DO	Saturation mg/L (from chart)	Pass or Fail
											Acceptance Criteria:+/-0.3mg/l
(CAL) ICV CCV		KD	10/24/18	7:23			8.70	21.6	98.8	8.812	(P) F
(CAL) ICV CCV		KD	10/24/18	7:24			8.77	21.8	99.8	8.777	(P) F
CAL (ICV) CCV		KD	10/24/18	7:27			8.79	21.8	99.9	8.777	(P) F
CAL ICV (CCV)		JR	10/24/18	5:00			8.42	23.7	99.4	8.466	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	**DEP SOP FT 1200**	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass or Fail
										Acceptance Criteria: +/- 5%	
(CAL) ICV CCV		KD	10/24/18	7:29	4500	Jun19	8GF1018	9		4388	(P) F
(CAL) ICV CCV		KD	10/24/18	7:32	4500	Jun19	8GF1018	9		4501	(P) F
CAL (ICV) CCV		KD	10/24/18	7:34	1413	Apr19	8GD864	11		1438	(P) F
CAL ICV (CCV)		JR	10/24/18	5:04	4500	Jun 19	8GF-1018	9		4487	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	**DEP SOP FT 1100**	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
										Acceptance Criteria: +/- 0.2 SU	
(CAL) ICV CCV		KD	10/24/18	7:36	10.0	Nov19	7GK699	2		10.03	(P) F
(CAL) ICV CCV		KD	10/24/18	7:38	7.0	Dec19	7GL372	3		7.03	(P) F
(CAL) ICV CCV		KD	10/24/18	7:39	7.0	Dec19	7GL372	3		7.00	(P) F
CAL (ICV) CCV		KD	10/24/18	7:42	10.0	Nov19	7GK699	2		9.95	(P) F
CAL ICV (CCV)		JR	10/24/18	5:06	4.0	Jun 20	8GF-041	3		3.97	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: _____ Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed: Yes No

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: _____ LOT #: _____

PURCHASE DATE: _____ EXPIRATION DATE: Nov 18

Brevard County PFAS Screening

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
10/24/18	James Ramos	AEI	10/22/18	10	9.63	P
10/24/18	James Ramos	AEI	10/22/18	10	9.46	P

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-TITUS1	SAMPLE ID: GW-TITUS1-1
DATE: 10/24/18	

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 8.61	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 3.39 = (12 feet – 8.61 feet) X 0.06 gallons/foot = 0.203 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10.6	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10.6	PURGING INITIATED AT: 11:14	PURGING ENDED AT: 11:26	TOTAL VOLUME PURGED (gallons): 1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:19	0.50	0.50	0.10	8.66	7.50	27.3	208.8	3.5%, 0.27	2.47	Clear	None
11:23	0.25	0.75	0.06	8.67	7.45	27.5	207.2	3.3%, 026	2.61	Clear	None
11:26	0.25	1.00	0.08	8.67	7.45	27.5	206.6	3.0%, 025	2.45	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos II	SAMPLING INITIATED AT: 11:28	SAMPLING ENDED AT: 11:31
PUMP OR TUBING DEPTH IN WELL (feet): 10.6	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-TITUS1	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-TITUS2	SAMPLE ID: GW-TITUS2-1
DATE: 10/24/18	

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.32	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
7.68 = (12 feet – 4.32 feet) X 0.06 gallons/foot = 0.461 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 6.3	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 6.3	PURGING INITIATED AT: 11:45	PURGING ENDED AT: 11:59	TOTAL VOLUME PURGED (gallons): 1.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:50	0.50	0.50	0.10	4.39	6.28	27.0	505	1.8%, 0.14	3.99	Clear	None
11:53	0.25	0.75	0.08	4.39	6.26	27.0	533	2.2%, 0.18	3.37	↓	↓
11:56	0.25	1.00	0.08	4.39	6.26	27.1	531	2.4%, 0.18	3.36	↓	↓
11:59	0.25	1.25	0.08	4.39	6.25	26.9	530	1.8%, 0.15	3.29	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kayleigh Douglass/AET	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 12:01	SAMPLING ENDED AT: 12:05
PUMP OR TUBING DEPTH IN WELL (feet): 6.3	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GWTITUS2	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS: Lawn company across street using fertilizers and possibly incesticide /herbicides, durring purge but not during sampling.

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:	
WELL NO: GW-TITUS3	SAMPLE ID: GW-TITUS3-1	DATE: 10/24/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 3.92	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
8.08 = (12 feet – 3.92 feet) X 0.06 gallons/foot = 0.485 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 5.9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 5.9	PURGING INITIATED AT: 12:16	PURGING ENDED AT: 12:30	TOTAL VOLUME PURGED (gallons): 1.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
12:21	0.50	0.50	0.10	3.96	6.56	28.6	456.7	1.4%, 0.11	4.66	Clear	None
12:24	0.25	0.75	0.08	3.96	6.51	28.5	441.5	1.8%, 0.14	3.50	↓	↓
12:27	0.25	1.00	0.08	3.96	6.48	28.6	432.9	1.5%, 0.12	2.61	↓	↓
12:30	0.25	1.25	0.08	3.96	6.45	28.6	425.3	1.4%, 0.11	2.42	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: James Ramos / AEI	SAMPLER(S) SIGNATURE(S): James Ramos II	SAMPLING INITIATED AT: 12:32	SAMPLING ENDED AT: 12:35
PUMP OR TUBING DEPTH IN WELL (feet): 5.9	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
GW-TITUS3	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	<100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:
WELL NO: GW-N1	SAMPLE ID: GW-N1-1
	DATE: 10/24/18

PURGING DATA

WELL DIAMETER (inches): 1.5	TUBING DIAMETER (inches): 0.17	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 4.96	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – 4.96 feet) X 0.06 gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.0	PURGING INITIATED AT: 10:27	PURGING ENDED AT: 10:37	TOTAL VOLUME PURGED (gallons): 1.00

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
10:32	0.50	0.50	0.10	5.10	6.99	25.0	894	4.5%, 0.38	1.79	Clear	None
10:35	0.25	0.75	0.08	5.10	6.96	25.0	889	3.8%, 0.31	1.11	↓	↓
10:37	0.25	1.00	0.125	5.10	6.95	25.0	888	3.2%, 0.27	1.35	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kayleigh Douglass	SAMPLER(S) SIGNATURE(S): Kayleigh Douglass / AEI	SAMPLING INITIATED AT: 10:40	SAMPLING ENDED AT: 10:43
PUMP OR TUBING DEPTH IN WELL (feet): 7.0	TUBING MATERIAL CODE: HDPE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
GW-N1	2	HDPE	125mL	None	None	N/A	EPA 537 Mod	PP	≤100mL/min

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

TURBIDITY SECONDARY STANDARD CAL-VERIFICATION LOG

VENDOR: _____ LOT #: _____

PURCHASE DATE: _____ EXPIRATION DATE: Nov 18

County PFAS Screening

DATE SECONDARY STANDARD VERIFIED	ANALYST NAME	METER ID	DATE OF METER VERIFICATION WITH PRIMARY STANDARDS	SECONDARY STANDARD VERIFICATION ACCEPTED		
				ASSIGNED VALUE	METER READING	PASS OR FAIL?
10/25/18	Khayleigh Douglass	AEI	10/22/18	10	9.88	P
10/25/18	Khayleigh Douglass	AEI	10/22/18	10	9.58	P