

Remedial Action Work Plan (RAWP)

Oregon Road Site
Olean, New York
BCP Site #C905045

Revised September 2020

0311-019-001

Prepared For:

Homer Street Properties, LLC



Prepared By:



REMEDIAL ACTION WORK PLAN (RAWP)

**OREGON ROAD SITE
BCP SITE NUMBER: C905045
OLEAN, NEW YORK**

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Prepared for:

Homer Street Properties, LLC

Prepared By:



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Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer and that this revised September 2020 Remedial Action Work Plan (RAWP) for the Oregon Road Site (C905045) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



SEAL

9-28-20

Date

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1.0 INTRODUCTION

Benchmark Environmental Engineering and Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (TurnKey), referred to herein as Benchmark-TurnKey, has prepared this Remedial Action Work Plan (RAWP) on behalf of Homer Street Properties, LLC (HSP) to present the proposed scope of work and implementation procedures for completion of remedial activities at the Oregon Road Site, Brownfield Cleanup Program (BCP) Site C905045, located at the northwest corner of Oregon Road and Homer Street, Olean, New York (Site).

The remedial activities will be completed by HSP, and their designated remedial contractors and subcontractors, with oversight provided by Benchmark-TurnKey. The work will be completed in accordance with 6NYCRR Part 375 and New York State Department of Environmental Conservation (NYSDEC) DER-10 guidelines.

1.1 Background and History

The BCP property located at the northwest corner of Oregon Road and Homer Street (Tax ID No. 94.001-2-13.2 and 94.001-2-13.8) is situated in a residential, commercial and industrial zoned area of the Town of Olean, Cattaraugus County, New York and consists of two parcels totaling 24.57-acres (see Figures 1 and 2). The Site is currently vacant land with green areas and paved asphalt access road.

The Site was used for oil storage from at least the late 1800s, likely associated with the former Vacuum Oil and subsequently Standard Oil refinery in Olean. A Buckeye Oil Co. pipeline ran through the site as shown on Figure 2. The tanks associated with the refinery appear to have been removed in the late 1960s. Historically, nearby adjacent properties were also developed and used in association with oil refining operations and petroleum storage. The Site is currently vacant land.

1.2 Summary of Environmental Conditions

Benchmark-TurnKey completed and submitted to NYSDEC a Remedial Investigation Alternatives Analysis Report (RI/AA), revised February 2020, on behalf of Homer Street Properties, LLC. The Decision Document was issued on June 11, 2020. The RI/AA report included a detailed review of previous studies completed by others. The RI was completed in accordance with the approved RI Work Plan dated December 2016 and subsequent supplemental work plans.

The purpose of the RI was to define the nature and extent of contamination on the BCP Site, and to collect data of sufficient quantity and quality to perform the remedial alternatives evaluation. The RI was completed across the BCP Site to supplement previous environmental data and to delineate or identify areas requiring remediation. On-site field activities included soil boring advancement; test pit excavations; surface and subsurface soil/fill sampling; sediment sampling; monitoring well installation; and groundwater quality sample collection.

Based on the data and analyses obtained during the RI and a historic Phase II by others, the following environmental conditions exist at the Site:

1.2.1 Geology

- Topsoil material and silty sand in the upper approximate 4 feet below ground surface (fbgs) overlying lean clays with various amount of sand and/or gravel to depths of at least 15 fbgs. Layers of well graded/poorly sorted sand and gravel were also noted during the investigation, primarily at shallower intervals (i.e., 4 to 8 fbgs) on the northern portion of the Site and deeper intervals (i.e., 11 to 15 fbgs) throughout the Site.
- Bedrock was encountered at 11 RI investigation locations in the northwest part of the Site at varying depths ranging between 0 and 12 fbgs.

1.2.2 Hydrogeology

Based on the findings of the RI, groundwater was encountered between 2.4 and 16.5 fbgs in the uppermost water bearing zone. On-site groundwater in the uppermost aquifer flows in a southeasterly direction consistent with other nearby sites Benchmark-TurnKey has investigated.

1.2.3 Contamination

1.2.3.1 Surface Soil/Fill

Surface soil/fill is impacted by arsenic (multiple locations and depth intervals) and benzo(a)pyrene (one location). Both contaminants were detected above CSCOs in surface/near surface soil/fill. Per- and polyfluoroalkyl substances (PFAS) analytes, including Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS), were detected in TP-52 and TP-54 located west of the on-site access road. Synthetic precipitation leaching procedure (SPLP) concentrations at these two locations also exceeded the NYSDEC guidance levels of 70 nanograms per liter (ng/L) via SPLP testing and require remediation.

1.2.3.2 Subsurface Soil/Fill

Arsenic was detected across the Site in subsurface soil at concentrations exceeding its USCOs and CSCO. Total semi-volatile organic compound (SVOC) tentatively identified compounds (TICs) were detected at 1,095 mg/kg at test pit TP-42 (8-10'), with an estimated volume of 560 cubic yards or 900 tons. Elevated concentrations of PFAS analytes PFOA and PFOS above 70 ng/L and total PFAS above 500 ng/L via SPLP testing were detected at TP-54 to depths ranging from approximately 2 to 5 fbs. Grossly Contaminated Soil (GCS), as defined by the presence of mobile light non-aqueous phase liquid (LNAPL), was identified in the north-central portion of the Site from approximately 3 to 7 fbs, with an estimated volume of 20,000 cubic yards or 32,900 tons.

Volatile organic compounds (VOCs), pesticides, herbicides, and polychlorinated biphenyls (PCBs) were not detected above Part 375 CSCOs.

1.2.3.3 Underground Piping

Abandoned underground petroleum piping was encountered in several test pits during the RI. Most of the piping was found on the northern and eastern portions of the Site; however, additional piping was found on the southern portion of the Site. Pipe diameters ranged between 4 and 8-inches.

Due to many of the encountered pipes being formerly cut off or capped with metal plating, most of the pipes were tapped and found to be empty. One sample of liquid pipe contents was collected for waste characterization and was not characteristically hazardous. The following compounds were detected: 1,2,4-trimethylbenzene (39 ug/L), benzene (4.88 ug/L), and cyclohexane (108 ug/L), methylcyclohexane (111 ug/L); and the liquid was not ignitable or corrosive.

1.2.3.4 Groundwater

During the historic investigation and RI sampling event, petroleum-like odors were noted in monitoring wells MW-1 through MW-4, MW-6, MW-8, MW-9, and MW-11. Apparent petroleum product was observed on the water during drilling of historic temporary well MW-2; however, LNAPL was not observed during any groundwater sampling event. Petroleum impacts observed in the groundwater monitoring wells is reasonably attributable to the GCS present on-site.

Five SVOCs were detected above Groundwater Quality Standards/Guidance Values (GWQS/GV) in one well during the historic Phase II Investigation. During the RI, one

pesticide (dieldrin, 0.014 ug/L) in one groundwater sample exceeded the GWQS/GV of 0.004 ug/L. There were no exceedances for VOCs, SVOCs, herbicides and PCBs during the RI sampling. VOC-TICs were detected up to 334 ug/L and SVOC-TICs were detected up to 3,946 ug/L indicating weather petroleum impacts. While total metals were detected above the GWQS/GVs for several metals, the dissolved fraction did not show any exceedances except for iron and manganese, which are naturally occurring and are commonly present in drinking water. PFAS were detected at concentrations exceeding action levels at MW-10, MW-12, and MW-13.

1.2.3.5 Sediment

Four sediment samples were collected along the on-site tributary to Two Mile Creek. Several VOCs, SVOCs and pesticides were detected in varo but at concentrations below sediment guidance values (SGVs). Herbicides and PCBs were not detected at any sample locations.

The inorganic compounds detected above Class A SGVs are arsenic in the midstream (SED-2) and downstream (SED-3) samples as well as nickel in the furthest downstream (SED-4) sample; however, all concentrations detected were below Class C SGVs. Sediment toxicity testing of samples SED-2 and SED-3 indicate the sediment is non-toxic to aquatic life.

1.2.3.6 Surface Water

There were no significant VOC, SVOC, pesticides, herbicides, and PCBs detections. VOC-TICs were present in 3 of the 4 samples with the highest concentration detected in upstream sample SW-1. Iron was detected in 2 of the 4 samples at concentrations exceeding the NYSDEC TOGS 1.1.1 Class C Surface Water Quality Standards (SWQSs); however, iron is a naturally occurring mineral and does not pose an environmental threat to the Site or local receptors. Based on Benchmark-TurnKey knowledge of other nearby sites, naturally occurring iron is present in soil, groundwater, and surface water.

1.2.3.7 Soil Vapor Intrusion

On-Site

Compounds detected in soil vapor samples SV-02 through SV-05 generally included petroleum VOCs including benzene, ethylbenzene, toluene, and xylene (BTEX) and 1,2,4-trimethylbenzene. The highest soil vapor concentration was isopropanol detected at a

concentration of 5,920 ug/m³ in the SV-03 sample, this result appears anomalous compared to the other sample results.

There are currently no NYSDEC or New York State Department of Health (NYSDOH) standards, criteria, or guidance values for concentrations of petroleum compounds in soil vapor. Though NYSDOH's October 2006 Soil Vapor Intrusion (SVI) guidance document states that soil vapor sampling results are reviewed "as a whole," in conjunction with the results of other environmental sampling, to identify trends and spatial variations in the data. It also indicates that to put some perspective on the data, soil vapor results might be compared to background outdoor air levels, site-related outdoor air sampling results, or the NYSDOH's guidelines for volatile chemicals in air (i.e., soil vapor/indoor air matrices of the NYSDOH guidance document). Two compounds listed in those matrices were detected in soil vapor samples; tetrachloroethane (PCE) was detected in SV-02 at a concentration of 2.64 ug/m³ and methylene chloride was detected in SV-05 at a concentration of 2.35 ug/m³, both below the lowest threshold of the NYSDOH indoor air guideline (Matrix B) of 100 ug/m³ that would require mitigation. No petroleum-related VOCs are included on in the NYSDOH guidance document for comparison to Site soil vapor results.

Off-Site

Off-Site soil vapor sampling was completed by Roux Associated, Inc. in October 2016 at three residential properties adjacent to the Oregon Road Site. NYSDEC does not currently have standards, criteria or guidance to compare soil vapor data; however, Roux derived site-specific attenuation factors using a version of USEPA Johnson and Ettinger Model, estimated indoor air concentrations, then calculated cancer and non-cancer risks to demonstrate potential risk due to soil vapor intrusion of detected VOCs. The results of this study concluded that inhalation of vapors potentially present in indoor air as a result of potential vapor intrusion is below the excess lifetime cancer risk (ELCR) of 1 x 10⁻⁶. Further, cumulative non-cancer risks associated with each sample location is below USEPA's hazard index (HI) of 1, indicating that potential impacts to indoor air via vapor intrusion do not yield significant non-cancer risk.

1.2.3.8 Contamination Summary/Areas of Concern

Four distinct areas of concern (AOCs) were identified and designated: GCS Area; TP-42 SVOC Area; TP-52 PFAS Area; and, TP-54 PFAS Area, as shown on Figures 3 and 4 and further described below:

- GCS Area – located in the north-central part of the Site, GCS was observed from approximately 3 to 7 fbgs, with an estimated volume of 20,000 cubic yards or 32,900 tons.
- TP-42 SVOC Area – located on the southwest portion of the Site, elevated SVOC plus TICs concentration of 1,095 mg/kg was identified at depths ranging between 8 fbgs and 10 fbgs, with an estimated volume of 560 cubic yards or 900 tons.
- TP-52 PFAS Area – located on the south-central portion of the Site, soil with PFOA+PFOS concentrations above NYSDEC SPLP Guidance values at depths of approximately 0-2 inches below ground surface, with an estimated volume of approximately 56 cubic yards or 90 tons.
- TP-54 PFAS Area – located on the southwestern portion of the Site, soil with PFOA+PFOS and total PFAS concentrations above NYSDEC SPLP Guidance values at depths ranging from approximately 2 to 5 fbgs, with an estimated average depth of 3.5 ft and estimated volume of 1,200 cubic yards or 1,920 tons.

1.3 Primary Constituents of Concern (COCs)

Based on the historic use of the Site as well as results of the historic investigation and RI activities, the COCs are presented below:

- **Soil/Fill:** GCS, arsenic, SVOCs and PFAS
- **Groundwater:** VOC-TICs, SVOC-TICs and PFAS

1.4 Site Specific Action Levels (SSALs)

Site-specific action levels (SSALs) were developed for the Site. These SSALs will be applicable to soil/fill that greatly exceeds Restricted-Commercial SCOs, has the potential to impact groundwater, or otherwise represents an unacceptable risk to public health or the environment in the context of reasonably anticipated future use and a Track 4 cleanup and therefore require removal, treatment or stabilization. These SSALs were developed based on the planned removal of potential source areas, including areas that have a greater potential for contaminant migration, and the feasibility of achieving the SSALs based on the nine factors outlined in 6NYCRR Part 375-1.8(f). The SSALs only apply to a Track 4 cleanup with a cover system to be installed over all areas with remaining soil/fill concentrations above CSCOs, a Site Management Plan (SMP), and Environmental Easement. The following SSALs were developed and used to designate soil/fill AOCs requiring remediation:

- Total SVOCs > 500 mg/kg
- GCS soil/fill areas
- Total PFAS > 500 ng/L SPLP
- PFOA + PFOS > 70 ng/L SPLP

1.5 Remedial Action Objectives

The remedial actions for the Oregon Road Site must satisfy Remedial Action Objectives (RAOs). RAOs are site-specific statements that convey the goals for minimizing substantial risks to public health and the environment. RAOs have been defined for the Site as follows:

Soil RAOs

- Remove subsurface infrastructure (i.e., abandoned process piping) to prevent potential discharge of contaminants to surrounding soil/fill.
- Remove, treat, or mitigate soil to the degree possible to protect public health and the environment and prevent further degradation of on-site and off-site groundwater quality.
- Prevent ingestion/direct contact with contaminated soil.
- Prevent migration of contaminants that may further result in groundwater or surface water contamination.
- Prevent inhalation of or exposure to contaminants volatilizing from contaminated soil/fill.

Groundwater RAOs

- Prevent ingestion of groundwater containing contaminant levels exceeding NYSDEC Class GA GWQS/GVs or with evidence of LNAPL or nuisance characteristics.
- Prevent further degradation of on-site and off-site water quality.

Subsurface Piping RAOs

- Remove or mitigate subsurface piping to the degree necessary to protect public health and the environment and to prevent further degradation of on-site and off-site soil/fill and groundwater quality.

Soil Vapor RAOs

- Mitigate impacts to public health resulting from soil vapor intrusion into potential future buildings at the Site.

1.6 Project Organization and Responsibilities

The remedial actions will be completed by remedial construction specialty contractors under contract to Homer Street Properties, LLC and/or Benchmark-TurnKey. The certifying professional engineer will monitor the activities to verify that the work is performed in accordance with the Brownfield Cleanup Agreement (BCA), the approved RAWP, 6NYCRR Part 375, and NYSDEC DER-10 guidance.

2.0 PRE-REMEDIATION/PREPARATION TASKS

The following tasks were or will be completed in preparation of remedial action activities:

2.1 Bench-Scale PFAS Stabilization Assessment

Bench-scale soil/fill treatability testing was completed to evaluate potential soil amendments to treat PFAS in soil SPLP concentrations to below 70 ng/L PFOA+PFOS and 500 ng/L Total PFAS. Initial SPLP PFOA+PFOS and SPLP total PFAS analysis of TP-52 and TP-54 homogeneous soil/fill samples identified TP-54 having the highest PFAS concentrations. Therefore, soil collected from the TP-54 was used as the baseline pre-treatment sample and treated it with three different amendments at three discrete concentrations to determine the most effective at soil stabilization. Sample methodology is further described below.

2.1.1 *Bench-Scale PFAS Stabilization Pre- and Post-Treatment Testing*

The scope of work associated with the bench-scale PFAS stabilization assessment completed by Benchmark-TurnKey complied with the Department approved “Soil Delineation and PFAS Soil Stabilization Work Plan” letter and consisted of the following:

- One HDPE five-gallon bucket of soil/fill from the historic test pit TP-54 (0-2”) area was collected by Benchmark-TurnKey using an excavator.
- One soil/fill sample from TP-54 area was analyzed for SPLP total PFAS. The baseline SPLP concentration at TP-54 was 750 ng/L PFOA+PFOS and 987 ng/L total PFAS indicating that the soil samples contained concentrations above NYSDEC guidance values for leachable PFAS-impacted soil (i.e., PFOA+PFOS > 70ng/L and total PFAS > 500 ng/L). Results were consistent with historic investigation concentrations at TP-54 (756 ng/L PFOA+PFOS and 1140 ng/L total PFAS) and therefore confirmed that TP-54 material represents the best baseline to assess effective soil stabilization treatment.
- Nine (9) total samples consisting of homogenized soil/fill samples from TP-54 were placed and weighed in disposable HDPE containers.
- Each amendment was weighed into aliquots, based on the weight of the soil/fill sample and desired percent by weight concentration. Amendments were mixed into nine soil/fill samples.
- A dosing of deionized water at approximately 20% by weight was applied to each sample (nine total samples).

- The nine treated soil/fill samples (three treated with powdered activated carbon (PAC), three treated with Fluoro-Sorb ®, and three treated with RemBind ®) were then tested for SPLP Total PFAS.

A summary of the bench-scale stabilization method and evaluation is included in Table 1. Results of the bench-scale PFAS stabilization and the recommended amendment/dosing are described below.

2.1.2 Bench-Scale PFAS Stabilization Assessment Results

Results of all nine treated soil/fill samples indicate that SPLP PFAS concentrations were reduced to less than 5.11 ng/L (see Table 2).

Soil/fill samples treated with 1% by weight PAC were reduced to 2.72 ng/L concentrations of SPLP PFOA+PFOS and 4.22 ng/L of SPLP Total PFAS, both below their SPLP respective NYSDEC guidance value (70 ng/L PFOA+PFOS and 500 ng/L Total PFAS). Treatment with 2% and 5% by weight achieved results less than those listed above.

Soil/fill samples treated with 1% by weight RemBind ® were reduced to 1.92 ng/L concentrations of SPLP PFOA+PFOS and 5.11 ng/L of SPLP Total PFAS, both below their SPLP respective NYSDEC guidance value (70 ng/L PFOA+PFOS and 500 ng/L Total PFAS). Treatment with 2% and 5 % by weight achieved results less than those listed above.

Soil/fill samples treated with 1% by weight Fluoro-Sorb ® were reduced to 1.9 ng/L concentrations of SPLP PFOA+PFOS and 4.45 ng/L of SPLP Total PFAS, both below their SPLP respective NYSDEC guidance value (70 ng/L PFOA+PFOS and 500 ng/L Total PFAS). Treatment with 2% and 5% by weight achieved results less than those listed above, except for the PFOA+PFOS result treated with 2% amendment which was slightly higher at 2.25 ng/L, but still well below its guidance value.

A summary of the bench-scale stabilization results is included in Table 2. Bench-Scale evaluation laboratory analytical results (pre- and post-treatment) are provided in Appendix A.

2.2 TP-52 and TP-54 Area PFAS Soil Delineation

Benchmark collected additional samples in the TP-52 and TP-54 area to further delineate the extent of PFAS-impacted soil in these areas. A sample was collected from each

interval (0-2", 2"-1', 1'-2', 2'-3') at each 50-foot step-out delineation sample location (TP-52-A, TP-52-B, TP-52-D, TP-54-A, TP-54-C, and TP-54-E) and analyzed for SPLP Total PFAS. All samples were below NYSDEC guidance values except for TP-52-A1, TP-54-A1 through A4, and TP-54-E1 through E4 which exceeded either the SPLP PFOA+PFOS or total PFAS guidance value. Based on these results, Benchmark had the lab analyze the 75-foot step out samples TP-54-B1 through B4 and TP-54-F1 through F4 to further delineate the north and south stabilization area around TP-54. Test pit TP-52-F and TP-52-G were completed to further delineate the boundary northwest of TP-52-A. Delineation sampling and results are discussed below.

2.2.1 TP-52 Area

A sample was collected from each interval (0-2", 2"-1', 1'-2', 2'-3') at each 50-foot step-out delineation sample location (TP-52-A, TP-52-B, TP-52-D) and analyzed for SPLP Total PFAS. All samples were below NYSDEC guidance values except for TP-52-A1, which exceeded the SPLP PFOA+PFOS guidance value. Based on these results, TP-52-F and TP-52-G were completed to further delineate the boundary northwest of TP-52-A, which were completed approximately 60-feet west and 50-feet southwest of TP-52-A, respectively. A sample was collected from each of the following intervals: 0-2", 2"-1', 1'-2', and 2'-3' and analyzed for SPLP total PFAS. All results were less than the Total PFOA+PFOS and Total PFAS NYSDEC guidance values.

2.2.2 TP-54 Area

A sample was collected from each interval (0-2", 2"-1', 1'-2', 2'-3') at each 50-foot step-out delineation sample location (TP-54-A, TP-54-C, and TP-54-E) and analyzed for SPLP Total PFAS. Samples from TP-54-A1 through A4, and TP-54-E1 through -E4 exceeded either the SPLP PFOA+PFOS or total PFAS guidance value. Based on these results, Benchmark had the lab analyze the 75-foot step out samples TP-54-B1 through -B4 and TP-54-F1 through -F4 to further delineate the north and south stabilization area around TP-54. Samples TP-54-B1 through TP-54-B3 exceeded the guidance values for Total PFOA + PFOS while TP-54-B4 was below both guidance values. All the results from TP-54-F met NYSDEC guidance values. Additional depth interval samples were collected from 3-4 fbs at TP-54-A, TP-54-E, and TP-54-F to determine vertical extents of contamination. Results from TP-54-A and TP-54-F met guidance values. The sample from 3-4 fbs at TP-54-E

exceeded both the Total PFOA+PFOS and Total PFAS guidance values. Therefore, one data gap exists at the depth of TP-54E, which will be determined during the remedial work.

At the time of the additional delineation sampling, test pit TP-54-G was completed 125-feet north of the original TP-54 location to determine northern extents of contamination. All TP-54-G results were below guidance values.

The delineated areas of TP-52 and TP-54 are shown on Figure 3. Results of the delineation sampling are summarized on Table 3. Test pit TP-52 and TP-54 delineation laboratory analytical data is provided in Appendix B.

2.3 Pre-Construction Activities

2.3.1 Clearing, Grubbing, Grading

Prior to implementation of the remedial activities, vegetation, shrubs, and trees will be grubbed and cleared from the work area. Vegetation will be processed on-Site and will either be reused on-Site or transported off-site for disposal/re-use. On-site reuse of vegetation would include wood chips for temporary haul roads during remedial work.

2.3.2 Erosion and Sedimentation Control

A Master Erosion Control Plan (MECP) for the Site is included in Appendix C. Erosion control measures (i.e., silt sock, hay bales, silt fence) will be put in place to ensure no potentially contaminated stormwater is discharged from the Site.

Asphalt paved roadways/areas exist on-Site; however, haul roads may be installed, as necessary, to allow truck access for remedial activities.

2.3.3 Utility Clearance

Prior to intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor at a minimum of three (3) business days in advance of the work and informed of the intent to perform excavation work at the Site.

2.3.4 Permits/Notifications

A United States Army Corps of Engineers (USACE) and New York State (NYS) Joint Application Form was submitted for the following applications:

- USACE Nationwide Permit 38; and
- NYSDEC 401 Water Quality Certification

Remedial activities will require use of potable water obtained from public hydrants and possibly the need for a temporary sewer discharge permit. These permits will be acquired from the City of Olean prior to remedial activity.

2.4 Health and Safety Plan Development

A Health and Safety Plan (HASP) has been prepared and it will be enforced by the remediation contractor in accordance with the requirements of 29 CFR 1910.120. The Benchmark-TurnKey HASP covers on-site remedial activities. Benchmark-TurnKey will be responsible for site control and for the health and safety of its authorized site workers. Benchmark-TurnKey's HASP is provided in Appendix D. If a remediation contractor other than Benchmark-TurnKey is used, they will be required to develop a HASP at least as stringent as Benchmark-TurnKey's HASP.

2.4.1 Dust Monitoring and Controls

A Community Air Monitoring Plan (CAMP), which is included within the HASP in Appendix D, will be implemented during intrusive activities. If community air monitoring indicates the need for dust suppression, the contractor will apply a water spray across the excavation and surrounding areas, and on-site haul roads as necessary to mitigate airborne dust formation and migration. Potable water will either be obtained from a public hydrant, provided by an off-site water service or provided via a water truck with water from an off-site source. Other dust suppression techniques that may be used to supplement the water spray include:

- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-Site.
- Hydro-seeding of final grades.

2.5 Groundwater Monitoring

Groundwater monitoring will be completed before (1 event), during (1 event), and after (1 event) the remedial work to assess groundwater quality in monitoring wells MW-2R and MW-9, which are adjacent to the residences. Samples will be analyzed for TCL VOCs and TCL SVOCs. All future groundwater monitoring events beyond the remedial action will be addressed in the SMP.

All on-site wells will be gauged monthly during the remedial action to determine potential changes in groundwater flow.

2.6 Waste Characterization

Waste Management landfill in Chaffee, New York has been selected as the permitted commercial landfill for soil disposal. Waste characterization samples will be collected from the GCS and TP-42 excavation areas in accordance with landfill analytical disposal requirements. Pre-characterization of the soil/fill will allow for direct loading and off-site transportation at the time of the impacted soil/fill excavation. Based on the results of the waste characterization sampling, impacted soil will be managed according to all federal, state and local waste disposal regulations.

2.7 Imported Backfill/Cover Soil Characterization

Imported soil/fill material utilized for backfill or cover soil will be subject to characterization requirements in accordance with DER-10 Table 5.4(e)10, or as otherwise approved by NYSDEC prior to import to the Site. Imported soil will also be sampled for per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane per the Department's Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs. Characterization testing will be performed by an independent, NYSDOH ELAP-approved laboratory. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report by an independent, third party data validation expert. QA samples will be collected to support the data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples. Each individual source of backfill or cover soil material will require approval prior to import.

3.0 REMEDIAL ACTION ACTIVITIES

The NYSDEC will be notified at least 5 business days in advance of any planned remedial activities. Remedial work will be performed in accordance with this work plan and will be documented by an experienced Benchmark-TurnKey professional, which will generally include:

- Excavating and disposing GCS and SVOC-impacted soil/fill to meet SSALs followed by backfill and site grading;
- Removing and disposing/recycling subsurface piping. Extracting and properly disposing off-site the contents of the piping. Piping extending beyond the property line will be cut, capped, and located by GPS;
- Managing impacted groundwater and stormwater during remedial activities;
- Restoring the portion of the on-site tributary proximate the GCS area to either its current condition or a state that provides improved habitat;
- Stabilizing PFAS-impacted surface soil in-situ to meet NYSDEC guidance levels; and,
- Installing liquid activated carbon downgradient of well MW-12 to address PFAS-impacted groundwater; and,

Additional details relative to each remedial activity is provided below:

3.1.1 *General GCS-Impacted Area*

- The remedial contractor will excavate non-impacted soil/fill that resides over the GCS, nominally the top 3 feet; staging that soil/fill on-site. Staged material will be reused as backfill within the GCS excavation area after removal of the underlying GCS. On-site non-impacted soil/fill backfill depth is estimated from 7 fbgs to 1 to 4 feet below final grade (depending on final grades in a particular remedial excavation area). NYSDEC-approved imported material will be placed above the on-site backfill material to final grades. The estimated quantity of non-impacted soil/fill is approximately 14,500 CY (see Figure 4).
- Stockpiled soil/fill will be secured with proper erosion controls to minimize runoff and dust generation.
- The remedial contractor will excavate the GCS soil/fill area as shown on Figure 4 to a target depth of 3 to 7 fbgs, with an estimated volume of 20,000 cubic yards or 32,900 tons. These soils will be removed for off-Site disposal at Waste Management commercial landfill in Chaffee, New York.
- GCS soil/fill adjacent to and within the tributary will not be excavated until there is an approved United States Army Corps of Engineers (USACE) and New York State (NYS) Joint Application Permit.
- Post-excavation samples will be collected by Benchmark-TurnKey at a frequency of one sample per 5,000 square feet of excavation bottom and one sample per 200 linear

feet along perimeter sidewalls. Samples will be analyzed for TCL VOCs + TICs, TCL SVOCs + TICs and arsenic.

- In addition to post-excavation analytical samples, representative soil samples will be visually observed for presence of GCS and scanned with a photoionization detector (PID) every approximate 30-feet of sidewall and every approximate 900 square feet of excavation bottom and documented. Locations of all post-excavation locations selected for visual observations and PID readings will be recorded a Trimble GPS unit. The visual observations and PID readings will be recorded and included in the Final Engineering Report (FER).
- If GCS is present beyond the anticipated perimeter or depth, the remedial contractor will excavate, transport and dispose additional soils at the direction of Benchmark-TurnKey.
- Following excavation, the remedial contractor will backfill the area with on-Site soil and/or imported backfill material.
- Final excavation limits will be surveyed with a handheld Trimble GeoXH GPS unit and excavation depths will be manually measured in the field. Horizontal limits and locations of final remedial excavations will be presented on the Site Map in the FER.

3.1.2 SVOC-Impacted Area (TP-42)

- The remedial contractor will excavate non-impacted soil from the TP-42 location to a target depth of 5 fbg. Non-impacted soils from 0-5 fbg will be staged on-Site for reuse as backfill. SVOC-impacted soils from approximately 5-11 fbg will be removed for off-Site disposal at Waste Management commercial landfill in Chaffee, New York. Volume of SVOC-impacted soil/fill is estimated at 560 CY or 900 tons.
- Stockpiled soil/fill will be secured with proper erosion controls to minimize runoff and dust generation.
- Post-excavation confirmation samples will be collected by Benchmark-TurnKey at a frequency up to one per 900 square feet of excavation bottom and up to one per 30 linear feet of sidewall. Samples will be analyzed for TCL SVOCs + TICs.
- If post-excavation samples exceed SSALs, the remedial contractor will excavate, transport and dispose additional soils at the direction of the Benchmark-TurnKey and the Benchmark-TurnKey will collect additional post-excavation soil samples.
- Following excavation, the remedial contractor will backfill the TP-42 area with on-site soil and/or imported backfill material.

3.1.3 Subsurface Piping

- The remedial contractor will excavate subsurface piping during impacted soil excavation. If piping extends beyond the extent of the impacted soil excavation, piping will be traced and removed until the piping terminus or a property boundary is encountered.
- Pipe contents will be extracted and drummed prior to recycling/disposal off-site. Removed piping will be cleaned of residue and transported off-site to a designated

recycling or disposal facility.

- Piping extending beyond the property line will be cut, capped, and located by GPS.

3.1.4 Tributary Restoration

- Tributary restoration will be completed in compliance with a United States Army Corps of Engineers (USACE) and New York State (NYS) Joint Application Permit. Appendix E includes a copy of the revised submitted USACE-NYS Joint Application Form. Existing conditions and preliminary stream reconstruction details are shown on Figure 6.

3.1.5 PFAS-Impacted Soil/Fill Stabilization (TP-52 and TP-54)

- Prior to stabilization work, a test pit will be completed proximate to TP-54-E to a depth of 5 fbg and a sample collected. The sample will be analyzed for PFAS SPLP. In the event the sample fails to meet SSALs additional samples will be collected starting at 6 fbg and so on until vertical extent of contamination is determined and target treatment depth is identified for this area.
- Lateral and vertical extents of PFAS contamination determined by delineation soil sampling in the areas of TP-52 and TP-54 and shown on Figure 3 will be marked out using stakes prior to remedial work.
- At TP-52, treatment will be completed in the upper 2-inches of the approximate 9,200 ft² area with an estimated volume to be treated of approximately 56 cubic yards or 90 tons.
- At TP-54, treatment will be completed in the upper 2-ft to greater than 4-ft of the approximate 10,000 ft² area with an estimated volume of 1,200 cubic yards or 1,920 tons.
- The remedial contractor will excavate soil/fill in-place within the extents of treatment areas. Using the excavator bucket, soil/fill within these areas will be broken up and turned over in-place. Powder activated carbon (PAC) will be mixed into the disturbed soil/fill using the excavator bucket. Approval to use the nearby hydrant will be obtained from the City of Olean Department of Public Works. Water will be applied to the disturbed soil until an approximately 20% by weight concentration to adequately homogenize the amendment material within the impacted soil interval. Water addition will be controlled to prevent saturation or run-off.
- Hydrant water will be sampled for PFAS prior to stabilization. A grab sample will be collected from the hydrant and sampled for PFAS via Modified EPA Method 537.
- After blending, soils will be covered with plastic sheeting and allowed to stabilize for approximately 24-hours. Post-treatment SPLP PFAS soil samples will be collected by Benchmark-TurnKey as follows:
 - TP-52 area (representing approximately 56 CY of treated soil/fill) – One composite sample, consisting of 4 grab samples, will be collected from 0-2-inches.

- TP-54 area (representing approximately 1,300 CY of treated soil/fill) – Three composite samples, each consisting of 4 grab samples, will be collected from TP-54 Treatment Zone TZ-1 (0-2 inches), TZ-2 (0-3 feet), and TZ-3(0-~5 feet).
- In the event treated soils do not meet the SSALs the remedial contractor will add additional amendment at the direction of the Benchmark-TurnKey, and Benchmark-TurnKey will retest the soils.
- Once soils meet SSALs, the remedial contractor will compact the excavation area and backfill to grade with approved backfill and/or cover soils.

3.1.6 PlumeStop® Liquid Activated Carbon Application

- Proof that the Underground Injection Control (UIC) permit application has been submitted to the USEPA will be provided to the Department a minimum of 30-days before injections are scheduled to begin.
- PlumeStop® liquid activated carbon is a groundwater remediation technology designed to rapidly remove and permanently degrade groundwater contaminants, including PFAS. PlumeStop® is composed of very fine particles of activated carbon suspended in water using organic polymer dispersion chemistry. Once in the subsurface, the material behaves as a colloidal biomatrix, binding to the aquifer matrix, rapidly removing contaminants from groundwater.
- PlumeStop® will be injected along an approximate 100 linear feet (LF) section within a target zone of 13 to 17 fbgs along the southeast property boundary to prevent PFAS migration off-site through groundwater. The location is shown on Figure 4.
- Using 1.5-inch diameter direct-push threaded rods and expendable tips the remedial contractor will complete 50 injection points spaced six feet apart and laid out in three rows. At each injection point, approximately 9.8 gallons of PlumeStop® and 182 gallons of water will be injected. A total of 4,400 pounds of PlumeStop® will be applied. [Benchmark-TurnKey will obtain permission to use the nearby hydrant from the City of Olean Department of Public Works].
- Benchmark-TurnKey will install new monitoring well MW-16 downgradient of the PlumeStop® liquid carbon application for future monitoring. The boring for the new well location will be advanced to approximately 15 fbgs, with a target minimum of five feet below the first encountered groundwater. MW-16 will be constructed with a minimum 5-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. Each well screen and attached riser will be installed from the base of the well to a maximum of two feet above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. The newly installed monitoring well will be completed with stick-up casing over the riser, and lockable J-plug with keyed-alike lock. Concrete will be placed in the boring around the protective casing and sloped away from the casing. Drill cuttings will be either tested to meet SSALs and placed beneath the final cover

system or placed in a sealed NYSDOT-approved drum and labeled for subsequent characterization and disposal, if necessary.

- Appendix F contains PlumeStop® safety data sheet and manufacturer specifications.

3.2 Post- Excavation/Stabilization Verification Sampling QA/QC

An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report (DUSR) by an independent, third party data validation expert. Expedited turnaround times may be requested for the analytical results to minimize the time that the excavation(s) remains open. Quality Assurance (QA) samples will be collected to support the verification sample data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples. Dedicated equipment will be used to avoid the need for equipment blanks.

3.3 Excavation Backfill

Following NYSDEC concurrence that the remedial excavation is complete, the excavation will be backfilled with approved backfill material in accordance with DER-10.

Backfill material may consist of the following materials:

- Gravel, rock, or stone, consisting of virgin material, from a permitted mine or quarry may be imported, without chemical testing, if it meets the requirements of DER-10, or as otherwise approved by NYSDEC.
- Recycled concrete or brick from a NYSDEC-registered construction and demolition debris processing facility may be imported, without chemical testing, if it meets the requirements of DER-10, or as otherwise approved by NYSDEC.
- Imported soil/fill originating from known off-site sources having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum, and which meets the chemical criteria for Commercial Use Sites in DER-10, Appendix 5. No off-site materials meeting the definition of a solid waste as defined in 6NYCRR, Part 360-1.2(a) shall be used as backfill. Imported soil/fill to be used near Two Mile Creek will meet the lower of the Protection of Ecological Resources or Commercial Soil Cleanup Objectives (SCOs).
- Re-use of on-site soil/fill, including excavated overburden soil/fill removed to access impacted soil/fill and site spoils generated from grading activities. Any debris within the on-site soil/fill will be removed off-Site and disposed of appropriately.

Imported soil/fill material will be subject to characterization requirements in accordance with DER-10 Table 5.4(e)10, or as otherwise approved by NYSDEC prior to import to the Site. Characterization testing will be performed by an independent, NYSDOH ELAP-approved laboratory. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report by an independent, third party data validation expert. QA samples will be collected to support the data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples.

3.4 Groundwater Management

Water removed from excavations and surface water run-in to excavations during the impacted soil removal will be handled on-site prior to discharge to the municipal sewer. In general, water removed from excavations will be stored/settled in a portable storage tank, and if deemed necessary, will be pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be disposed of off-site.

If the accumulated waters required treatment, the spent GAC will be characterized and regenerated off-site, or disposed at a permitted disposal facility in accordance with applicable federal and state regulations. The storage tank will be decontaminated via pressure washing. Benchmark-TurnKey or the Site owner will coordinate with the municipal sanitary sewer authority to obtain any necessary temporary sewer discharge permits.

3.5 Cover System

A cover system will be installed across the Site to prevent direct contact with underlying soil. The planned cover system includes different cover types, including vegetated soil cover and hardscaped (asphalt) areas. Soils imported for use as cover will be subject to analysis per DER-10 and NYSDEC approval. An existing asphalt pavement cover system is present as the site's access road. The existing asphalt will be inspected and repaired as necessary to ensure it properly functions as a part of the Site-wide cover system. A planned cover system layout is provided on Figure 7. Where soil cover system transitions to hardscape, and/or at the limits of the BCP property, the cover will be keyed-in as necessary to achieve the minimum 12-inches of approved backfill material without tapering as shown on Cover System Details provided in Figure 7.

4.0 REMEDIAL ACTIVITIES SUPPORT DOCUMENTS

4.1 Health and Safety Protocols

Benchmark-TurnKey has prepared a HASP for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix D, includes the following site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for Site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan as described above.

Health and safety activities will be monitored throughout the remedial field activities. A member of the field team will be designated to serve as the Site Safety and Health Officer (SSHO). The SSHO will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

4.1.1 COVID-19 Safe Work Procedures

All Benchmark-TurnKey employees shall conform to the following daily protocols during all on-site work activities for the duration of the COVID-19 outbreak:

- Benchmark/TurnKey personnel shall complete and electronically submit to the corporate Health and Safety Director and/or his designee the daily health assessment form included as Attachment D in the HASP. Any positive responses shall require evaluation prior to reporting for work.
- Visitors shall complete a paper copy of the health assessment form included in Attachment D of the HASP prior to accessing the work area or field trailer. The form shall be completed in advance when possible; otherwise it shall be

completed in the visitors personal vehicle or outside the work area with instruction that any positive responses require evaluation by Benchmark's corporate Health and Safety Director prior to allowing access to the Site. A visitor sign-in sheet will be filled out and maintained, with visitor health assessment forms, in the field trailer.

- Benchmark-TurnKey will ensure that there is an adequate supply of personal protective equipment (PPE), hand washing, and disinfecting chemicals at the Site. Supplies will be checked on a regular basis to avoid running out.
- All Benchmark-TurnKey employees must comply with the minimum 6-foot social distancing whenever possible. When this cannot be accomplished, PPE (masks; gloves and eye protection as needed) will be worn. Pre-shift or tailgate meetings will be held in a space large enough that employees can be 6 feet apart.
- For use in reducing exposure to COVID-19 the following face masks shall be used inside of equipment cabs and in the trailer:
 - Disposable surgical masks
 - KN-95
 - N-95
 - Self-made face mask provided it covers the nose and mouth
- All shared spaces, tools and equipment will be disinfected at a minimum of once per shift or at the beginning and end of each shift or before equipment or space is shared by another employee. Heavy equipment and vehicles should also be disinfected at a minimum of the same frequency. This includes steering wheels, door handles, and all controls. Disinfection can be accomplished with a variety of different chemicals. Disinfectant wipes (ex. Chlorox wipes) or spray (ex. Lysol) are acceptable as is 70% alcohol or bleach solution (1/4 cup bleach to 1-gallon water). Nitrile gloves and safety glasses are required during the handling of disinfection chemicals. At no time is it permitted to mix cleaning chemicals. Only one cleaner is to be used at a time. The CDC guidance on cleaning hard, non-porous surfaces is included below:
 - Follow labeled instructions on all containers.
 - Clean surface with soap and water to remove all visible debris and stains.

- Rinse surface with clean water and wipe with clean towel.
 - Apply the disinfectant. To effectively kill the virus, make sure the surface stays wet with the disinfectant for at least 10 minutes before wiping with a clean towel.
 - Rinse with water and allow surface to air dry.
 - Remove gloves and discard.
 - Wash hands after removing gloves and handling any contaminated material, trash, or waste.
- Social distancing practices will be followed, and masks will be worn at all times if more than one person is inside trailer. A portable restroom will be set up on-site for Benchmark-TurnKey employee use. All surfaces in the field trailer and portable restroom will be disinfected at a minimum of one per shift or at the beginning and end of each shift or before equipment or space is shared by another employee.

4.1.2 Community Air Monitoring

Real-time community air monitoring will be performed during remedial activities at the Site. A Community Air Monitoring Plan is included with Benchmark-TurnKey's HASP. Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during subgrade excavation, grading, and soil/fill handling activities in accordance with this plan. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

Due to the proximity of the GCS excavation to the off-site residential properties, a permanent CAMP station will be located along this portion of the site boundary. The contractor will have an odor and dust suppressant on-site and ready for use during excavation and backfilling activities as soon as odors or particulates are detected.

4.2 Citizen Participation Activities and Fact Sheets

NYSDEC will coordinate and lead community relations throughout the course of the project with support from Benchmark-TurnKey as requested. A Citizen Participation (CP)

Plan has previously been prepared as a separate document and submitted to the NYSDEC. A copy of the approved CP Plan was placed at the designated document repository.

The NYSDEC, with input from Benchmark-TurnKey and Homer Street Properties, LLC, will issue project-related fact sheets to keep the public informed of BCP activities.

5.0 REPORTING AND SCHEDULE

Benchmark-TurnKey environmental professionals will be on-site full-time during all remedial activities to monitor and document: construction stake-out; record drawings; daily reports of remediation activities; community air monitoring results; post-excavation sampling and analysis; and progress photographs and sketches. The remedial activities are planned as follows:

October 2020: Mobilize equipment, clearing and grubbing, start GCS remedial excavation.

October-December 2020: GCS remedial excavation, tributary restoration, SVOC-area excavation, PFAS soil stabilization, Site grading.

Spring 2021: PFAS groundwater (PlumeStop) application, soil cover placement.

Written weekly progress reports will be submitted to the Department commencing the week following the start of remedial action activities. Weekly reports will include relevant items identified in Appendix A, Paragraph XI of the Brownfield Cleanup Agreement. Full details of the remedial activities will be included in the Final Engineering Report (FER).

Work will commence upon NYSDEC approval of the work plan, anticipated October 2020.

6.0 REMEDIAL ACTIVITIES REPORTING

6.1.1 *Construction Monitoring*

A Benchmark-TurnKey scientist or engineer will be on-site on a full-time basis to document remedial activities. Such documentation will include, at minimum, daily reports of Remedial Action activities, community air monitoring results, photographs and sketches. CAMP summary tables will be provided to the NYSDOH project manager on a weekly basis. Both the Department and NYSDOH project managers will be notified of any CAMP exceedances that require corrective actions or shut down of work within one business day. CAMP monitoring will be summarized on the daily reports. Appendix G contains sample project documentation forms.

The completed reports will be available on-site and submitted to the NYSDEC as part of the FER. The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item.

Photo documentation of the remedial activities will be prepared by a field representative throughout the duration of the project as necessary to convey typical work activities, changed conditions, and/or special circumstances. If determined to be necessary, periodic on-site construction progress meetings will be held to which NYSDEC will receive an invitation.

6.2 Final Engineering Report

A FER will be prepared at the conclusion of remedial activities. The FER will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Remediation:

- Introduction and background.
- Planimetric map showing the areas remediated, including significant site features.
- Map showing the lateral limits of any excavations and/or treatment areas. Vertical limits of each excavation will be noted on this map.
- Tabular summaries of unit quantities including: volume of soil excavated and/or treated and disposition of excavated/treated soil; and, origin and volume of imported soil.
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes.

- Tabular comparison of verification and other sample analytical results to SCOs and SSALs. An explanation shall be provided for any results exceeding acceptance criteria.
- Documentation on the disposition of impacted soil removed.
- Documentation of the cover system, including survey elevations.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the Site activities were carried out in accordance with this Work Plan.

In addition, Homer Street Properties, LLC, will subcontract for third-party data review of post-excavation verification data by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The DUSR format will follow the NYSDEC's September 1997 DUSR guidelines and draft DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the FER.

6.3 Site Management Plan

For any BCP site not cleaned up to NYSDEC Part 375 USCOs, preparation of a SMP that describes site-specific Institutional Controls and/or Engineering Controls (IC/EC) is a required component of the final remedy. Therefore, as part of the final remedy, a SMP will be prepared. Consistent with NYSDEC BCP requirements, the SMP will include the following components:

- **Engineering and Institutional Controls Plan.** Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the site to commercial or industrial purposes.
- **Operation and Maintenance Plan** that describes the measures necessary to operate, monitor, and maintain the soil cover system.

- **Excavation Work Plan** to assure that post-remediation intrusive activities and soil/fill handling at the Property related to redevelopment, operation, and maintenance are completed in a safe and environmentally responsible manner.
- **Site Monitoring Plan** that includes provisions for a groundwater monitoring plan and a Property-wide inspection program to assure that the IC/ECs remain effective.
- **Environmental Easement** filed with Cattaraugus County.

7.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10 Technical Guidance for Site Investigation and Remediation*. May 2010.
2. New York State Department of Environmental Conservation. *6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 and 375-6*. Effective December 14, 2006.
3. Benchmark-TurnKey, *Remedial Investigation/ Alternatives Analysis Report, Oregon Road Site, Olean, New York, BCP Site #C905045*. Revised February 2020.

TABLES

Table 1

**SUMMARY OF BENCH-SCALE PFAS STABILIZATION EVALUATION
Oregon Road Site
Olean, New York**

Powdered Activated Carbon				
Sample	Weight of Material (g)	Weight of PAC (g)	% Water	Water Added (mL) ¹
PAC-1	907	9.0	20	60
PAC-2	907	18.0	20	80
PAC-5	907	45.0	20	90

RemBind ®				
Sample	Weight of Material (g)	Weight of RemBind (g)	% Water	Water Added (mL) ¹
RB-1	907	9.0	20	60
RB-2	907	18.0	20	60
RB-5	907	45.0	20	70

Fluoro-Sorb ®				
Sample	Weight of Material (g)	Weight of Fluoro-Sorb (g)	% Water	Water Added (mL) ¹
FS-1	907	9.0	20	60
FS-2	907	18.0	20	60
FS-5	907	45.0	20	70

1. The material from the field already had an elevated moisture content due to recent weather conditions. Water was added as needed to reach the required percent water by weight.

Notes:

lb = pound

Table 2

Bench-Scale PFAS Treatment Results
Oregon Road Site
Olean, New York

Parameter	TP-54 Initial SPLP (ng/L)	Post-Treated SPLP Results								
		PAC-1	PAC-2	PAC-5	RB-1	RB-2	RB-5	FS-1	FS-2	FS-5
Perfluorobutanoic Acid (PFBA)	4.85	0.535 J	ND	ND	0.519 J	ND	ND	0.904 J	0.62 J	ND
Perfluoropentanoic Acid (PFPeA)	10	0.591 J	0.45 J	0.504 J	0.47 J	0.493 J	ND	0.911 J	0.631 J	0.48 J
Perfluorobutanesulfonic Acid (PFBS)	2.94	ND	ND	ND	1.72 J	ND	ND	ND	ND	ND
Perfluorohexanoic Acid (PFHxA)	29.2	0.378 J	0.344 J	ND	0.477 J	0.406 J	0.329 J	0.733 J	0.624 J	0.379 J
Perfluoroheptanoic Acid (PFHpA)	8.59	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic Acid (PFHxS)	163	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanoic Acid (PFOA)	11.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	11.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorononanoic Acid (PFNA)	1.85	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic Acid (PFOS)	738	2.72	2.36	0.615 J	1.92	ND	0.536 J	1.9	2.25	1.11 J
Perfluorodecanoic Acid (PFDA)	0.781 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroundecanoic Acid (PFUnA)	0.396 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic Acid (PFDS)	1.03 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	2.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic Acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOA + PFOS	750	2.72	2.36	0.615	1.92	ND	0.536	1.9	2.25	1.11
Total PFAS	987	4.22	3.15	1.12	5.11	0.899	0.865	4.45	4.13	1.97



TABLE 3
SUMMARY OF TP-52 & TP-54 DELINEATION ANALYTICAL RESULTS
REMEDIAL ACTION WORK PLAN
OREGON ROAD SITE
OLEAN, NEW YORK

Parameter ¹	NYSDEC Guidance Value for SPLP	TP-52-A1 (0-2")	TP-52-A2 (2"-1')	TP-52-A3 (1'-2')	TP-52-A4 (2'-3')	TP-52-B1 (0-2")	TP-52-B2 (2"-1')	TP-52-B3 (1'-2')	TP-52-B4 (2'-3')	TP-52-D1 (0-2")	TP-52-D2 (2"-1')	TP-52-D3 (1'-2')	TP-52-D4 (2'-3')	TP-52-F1 (0-2")	TP-52-F2 (2"-1')	TP-52-F3 (1'-2')	TP-52-F4 (2'-3')	TP-52-G1 (0-2")	TP-52-G2 (2"-1')	TP-52-G3 (1'-2')	TP-52-G4 (2'-3')
		5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020
SPLP Per- and Poly- fluoroalkyl Substances (PFA) - ng/L																					
Perfluorobutanoic Acid (PFBA)	--	9.44	2.62	1.47 J	0.985 J	4.36	3.95 J	ND	ND	5.8 J	ND	ND	ND	1.7 J	1.53 J	0.573 J	ND	ND	ND	0.42 J	ND
Perfluoropentanoic Acid (PFPeA)	--	10.7	2.94	1.57 J	1.31 J	1.65 J	1.95 J	ND	ND	ND	ND	ND	ND	1.06 J	1.42 J	0.912 J	0.513 J	ND	2.18 J	0.494 J	1.09 J
Perfluorobutanesulfonic Acid (PFBS)	--	1.4 J	0.259 J	0.5 J	2.59	ND	ND	ND	ND	ND	ND	ND	ND	0.476 J	0.356 J	ND	ND	ND	ND	0.242 J	ND
Perfluorohexanoic Acid (PFHxA)	--	19.5	4.97	3.15	4.82	2.41 J	3.53 J	5 J	4.8 J	8.55 J	5.65 J	4.35 J	ND	2.67	1.76 J	0.818 J	0.635 J	3.06 J	3.9 J	1.01 J	0.83 J
Perfluoroheptanoic Acid (PFHpA)	--	3.82	0.778 J	0.563 J	0.92 J	1.17 J	1.47 J	ND	ND	ND	ND	ND	ND	1.34 J	1.2 J	0.464 J	ND	ND	2.22 J	ND	ND
Perfluorohexanesulfonic Acid (PFHxS)	--	38.6	10.6	10.4	28.8	11.6	14.9	ND	ND	8.45 J	7.4 J	6.05 J	ND	16.6	13.3	1.28 J	0.572 J	9.64 J	26.6	4.29	1.13 J
Perfluorooctanoic Acid (PFOA)	--	8	2.31	1.27 J	3.21	3.06 J	1.92 J	ND	ND	3.15 J	4 J	ND	ND	2.26	2.41	0.358 J	0.406 J	3.22 J	2.48 J	0.591 J	ND
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	--	6.5	1.11 J	ND	2.01	ND	ND	ND	ND	ND	ND	ND	ND	1.12 J	ND	ND	ND	ND	ND	ND	ND
Perfluorononanoic Acid (PFNA)	--	1.16 J	0.337 J	ND	ND	0.755 J	1.09 J	ND	ND	ND	ND	ND	ND	0.45 J	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic Acid (PFOS)	--	194	66.8	64.4	28.9	26	14.4	ND	ND	42	16.8	ND	ND	22.8	15.2	3.23	1.64 J	16.3	25.2	2.84	4.19
Perfluorodecanoic Acid (PFDA)	--	0.758 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroundecanoic Acid (PFUnA)	--	0.54 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic Acid (PFDS)	--	2.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	--	ND	2.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NETFOSAA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic Acid (PFDoA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic Acid (PFTrDA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic Acid (PFTA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PFOA + PFOS	70	202	69.1	65.7	32.1	29.1	16.3	ND	ND	45.2	20.8	ND	ND	25.1	17.6	3.6	2.0	19.5	27.7	3.4	4.2
TOTAL PFAS	500	297	95	83	74	51	43	5	5	68	34	10	ND	50	37	8	4	32	63	10	7

Notes:

1. Only those parameters detected at a minimum of one sample location presented; all other compounds were reported as non-detect.

Definitions:

SPLP = Synthetic Precipitation Leaching Procedure

ng/L = nanograms per liter.

ND = Parameter not detected above laboratory detection limit.

J = Estimated value; result is less than the sample quantitation limit but greater than zero.

= Value exceeds NYSDEC Guidance Value for SPLP



TABLE 3
SUMMARY OF TP-52 & TP-54 DELINEATION ANALYTICAL RESULTS
REMEDIAL ACTION WORK PLAN
OREGON ROAD SITE
OLEAN, NEW YORK

Parameter ¹	NYSDEC Guidance Value for SPLP	TP-54-A1 (0-2")	TP-54-A2 (2"-1')	TP-54-A3 (1'-2')	TP-54-A4 (2'-3')	TP-54-A5 (3'-4')	TP-54-B1 (0-2")	TP-54-B2 (2"-1')	TP-54-B3 (1'-2')	TP-54-B4 (2'-3')	TP-54-C1 (0-2")	TP-54-C2 (2"-1')	TP-54-C3 (1'-2')	TP-54-C4 (2'-3')	TP-54-E1 (0-2")	TP-54-E2 (2"-1')	TP-54-E3 (1'-2')	TP-54-E4 (2'-3')	TP-54-E5 (3'-4')	TP-54-F1 (0-2")	TP-54-F2 (2"-1')	TP-54-F3 (1'-2')	TP-54-F4 (2'-3')	TP-54-F5 (3'-4')	TP-54-G1 (0-2")	TP-54-G2 (2"-1')	TP-54-G3 (1'-2')
		5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/27/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/27/2020	5/15/2020	5/15/2020	5/15/2020	5/15/2020	5/27/2020	5/27/2020	5/27/2020
		SPLP Per- and Poly- fluoroalkyl Substances (PFA) - ng/L																									
Perfluorobutanoic Acid (PFBA)	--	ND	ND	ND	ND	ND	5.52 J	0.563 J	0.692 J	ND	ND	ND	ND	ND	8.05 J	ND	5.2 J	8.45 J	8.55 J	2.42 J	2.14 J	ND	ND	ND	2.79	2.75	ND
Perfluoropentanoic Acid (PFPeA)	--	6.35 J	ND	ND	ND	2.66 J	14.4	1.75 J	1.81	0.915 J	ND	ND	ND	ND	17.9 J	8.75 J	10.2 J	16.5 J	18.3 J	ND	2.16 J	2.06 J	ND	ND	4.2	2.45	0.736 J
Perfluorobutanesulfonic Acid (PFBS)	--	ND	ND	ND	ND	2.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19.3 J	37.6	30.2	ND	ND	ND	ND	ND	0.355 J	0.332 J	ND
Perfluorohexanoic Acid (PFHxA)	--	8.65 J	4.9 J	5.65 J	7.05 J	6.46 J	15.2	2.13	2.29	1.28 J	4.2 J	4.9 J	7.25 J	14.2 J	19.2 J	13.8 J	61.4	90	106	3.2 J	3.48 J	3.44	2.26 J	3.76 J	6.11	3.5	0.933 J
Perfluoroheptanoic Acid (PFHpA)	--	ND	ND	ND	ND	1.28 J	8.68 J	0.718 J	0.518 J	0.36 J	ND	ND	ND	ND	6.45 J	ND	14.4 J	17.4 J	19 J	ND	1.24 J	ND	ND	ND	4.54	1.69 J	0.539 J
Perfluorohexanesulfonic Acid (PFHxS)	--	17.8 J	10.6 J	16.4 J	21 J	27.7	26.8	5.35	6.99	3.21	9.65 J	17.4 J	24.8 J	39.8	50.2	27.2	592	571	992	2.82 J	2.58 J	ND	ND	ND	5.26	3.56	1.9
Perfluorooctanoic Acid (PFOA)	--	3.25 J	ND	ND	ND	2.24 J	5.88	0.747 J	0.913 J	0.233 J	ND	3.7 J	ND	6.7 J	8.1 J	5.2 J	54.1	42.6	86.7	2.48 J	2.84 J	1.24	ND	ND	3.33	1.43	ND
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.48
Perfluoroheptanesulfonic Acid (PFHpS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63.4	13.6 J	60	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorononanoic Acid (PFNA)	--	ND	ND	ND	ND	ND	2.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02 J	ND	ND	ND	ND	0.915 J	1.25 J	ND
Perfluorooctanesulfonic Acid (PFOS)	--	122	152	102	90.6	37.9	239	76.9	139	44.4	9.4 J	13.5 J	29.2	59.4	290	348	1,630	70.9	1040	29.3	29.5	20.7	9.12 J	ND	20.6	20.5	16.2
Perfluorodecanoic Acid (PFDA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68 J	ND	ND	ND	0.447 J	ND	ND
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroundecanoic Acid (PFUnA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic Acid (PFDS)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	--	ND	ND	ND	ND	ND	ND	2.76	1.76 J	ND	ND	ND	ND	ND	ND	32.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NETFOSAA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic Acid (PFDoA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic Acid (PFTrDA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic Acid (PFTA)	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PFOA + PFOS	70	125.3	152	102	90.6	40.1	244.9	77.6	139.9	44.6	9.4	17.2	29.2	66.1	298.1	353.2	1684.1	113.5	1126.7	31.8	32.3	21.9	9.1	ND	23.9	21.9	16.2
TOTAL PFAS	500	158	168	124	119	80	318	91	154	50	23	40	61	120	400	449	2450	868	2361	40	48	27	11	4	49	37	25

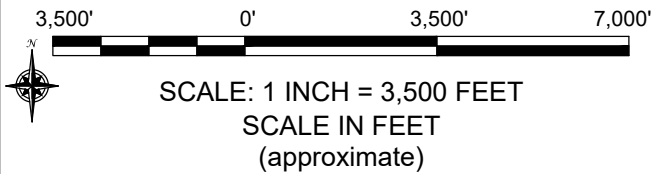
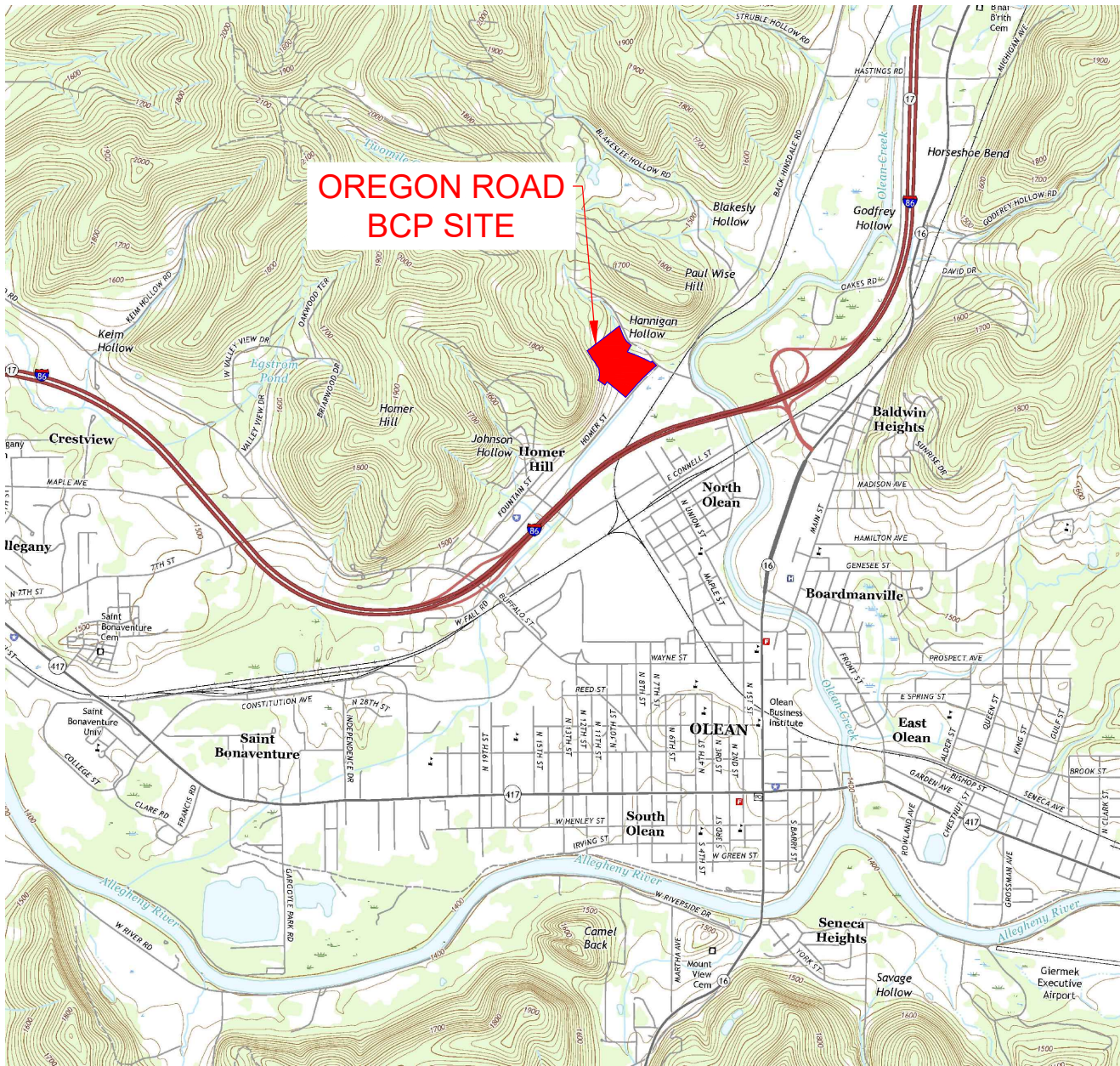
Notes:
1. Only those parameters detected at a minimum of one sample location presented; all other compounds were reported as non-detect.

Definitions:
SPLP = Synthetic Precipitation Leaching Procedure
ng/L = nanograms per liter.
ND = Parameter not detected above laboratory detection limit.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

= Value exceeds NYSDEC Guidance Value for SPLP

FIGURES

FIGURE 1



QUADRANGLE LOCATION

NOTE: BASE MAP USGS OLEAN, NY QUADRANGLE 2016

SITE LOCATION & VICINITY MAP

REMEDIAL ACTION WORK PLAN

OREGON ROAD SITE
BCP SITE NO. C905045
OLEAN, NEW YORK

PREPARED FOR
HOMER STREET PROPERTIES, LLC



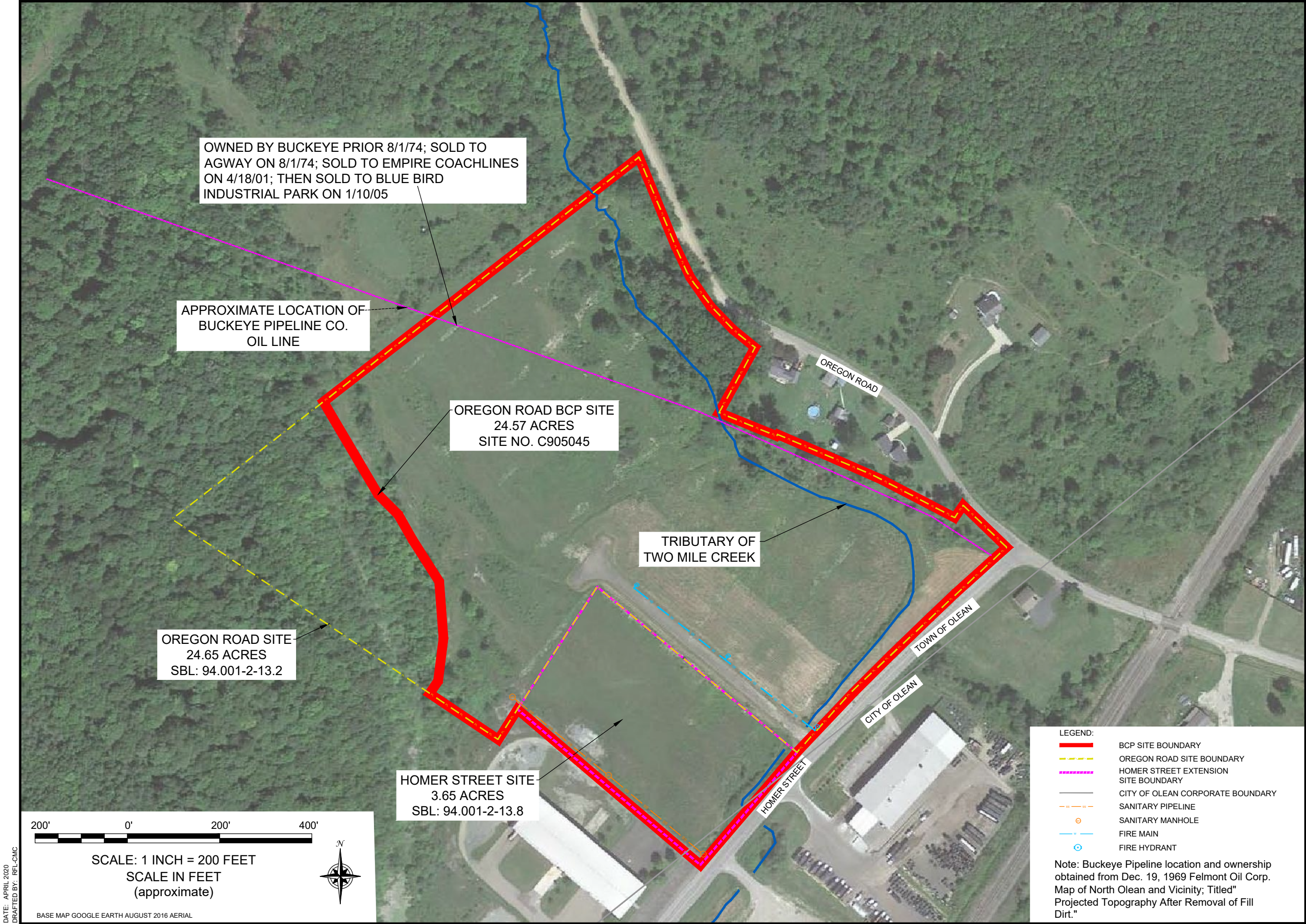
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0311-019-001

DATE: APRIL 2020

DRAFTED BY: RFL-CMC

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IN ASSOCIATION WITH



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

FIGURE 2

SITE PLAN (AERIAL)

REMEDIAL ACTION WORK PLAN

OREGON ROAD SITE

OLEAN, NEW YORK

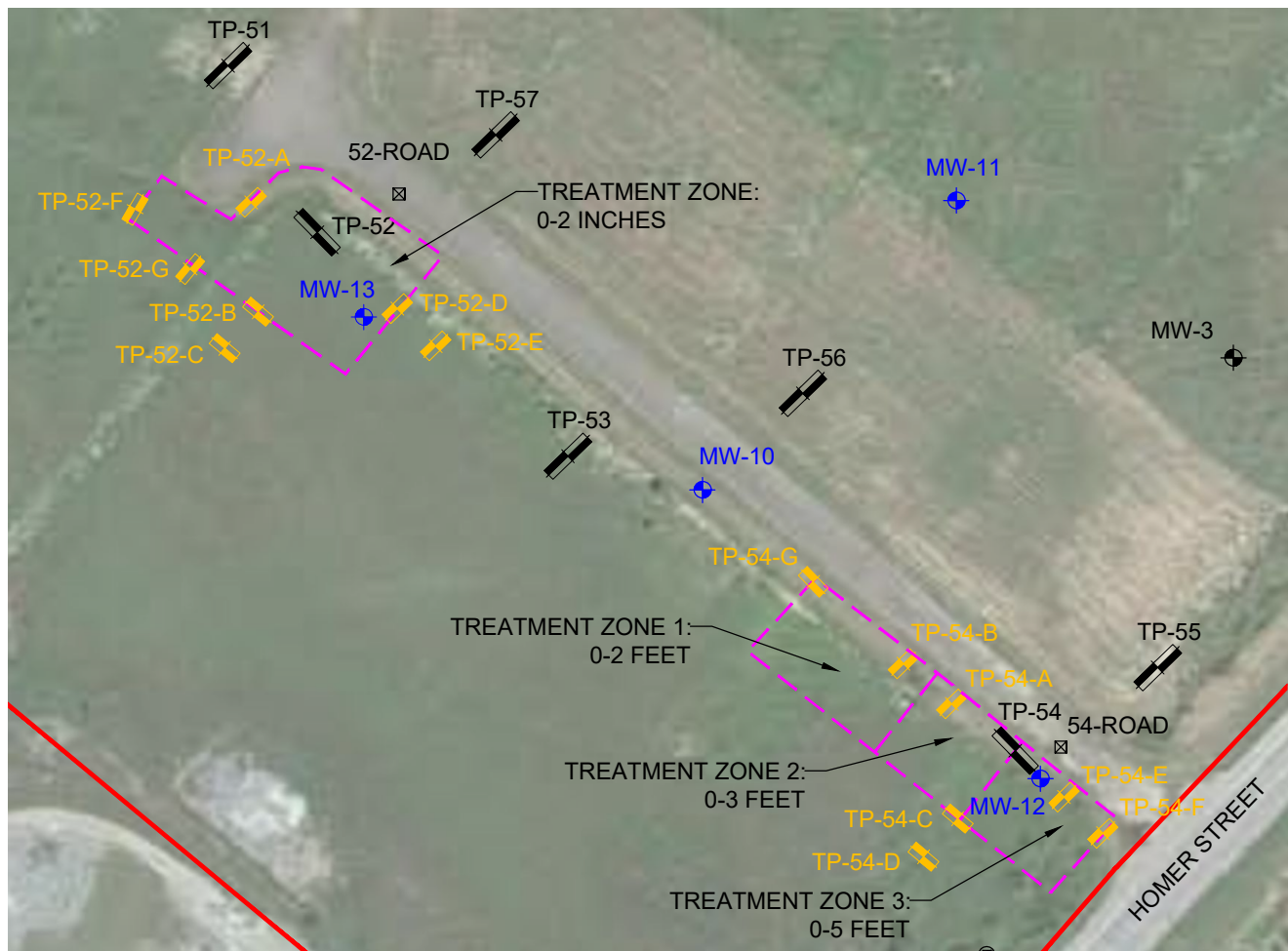
PREPARED FOR

HOMER STREET PROPERTIES, LLC

JOB NO.: 0311-019-001

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FIGURE 3



SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)

LEGEND:

- BCP BOUNDARY
- MW-3  1" MONITORING WELL
- MW-5  MONITORING WELL
- TP-52  TEST PIT LOCATION
- 52-ROAD  SOIL SAMPLE IN ROADWAY
- TP  STEP-OUT DELINEATION TEST PIT
- APPROXIMATE PFAS STABILIZATION AREA



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599



PROJECT NO.: 0311-019-001

DATE: APRIL 2020

DRAFTED BY: CMC

TP-52 & TP-54 PFAS DELINEATION SAMPLE LOCATIONS

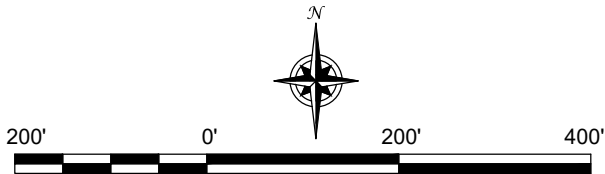
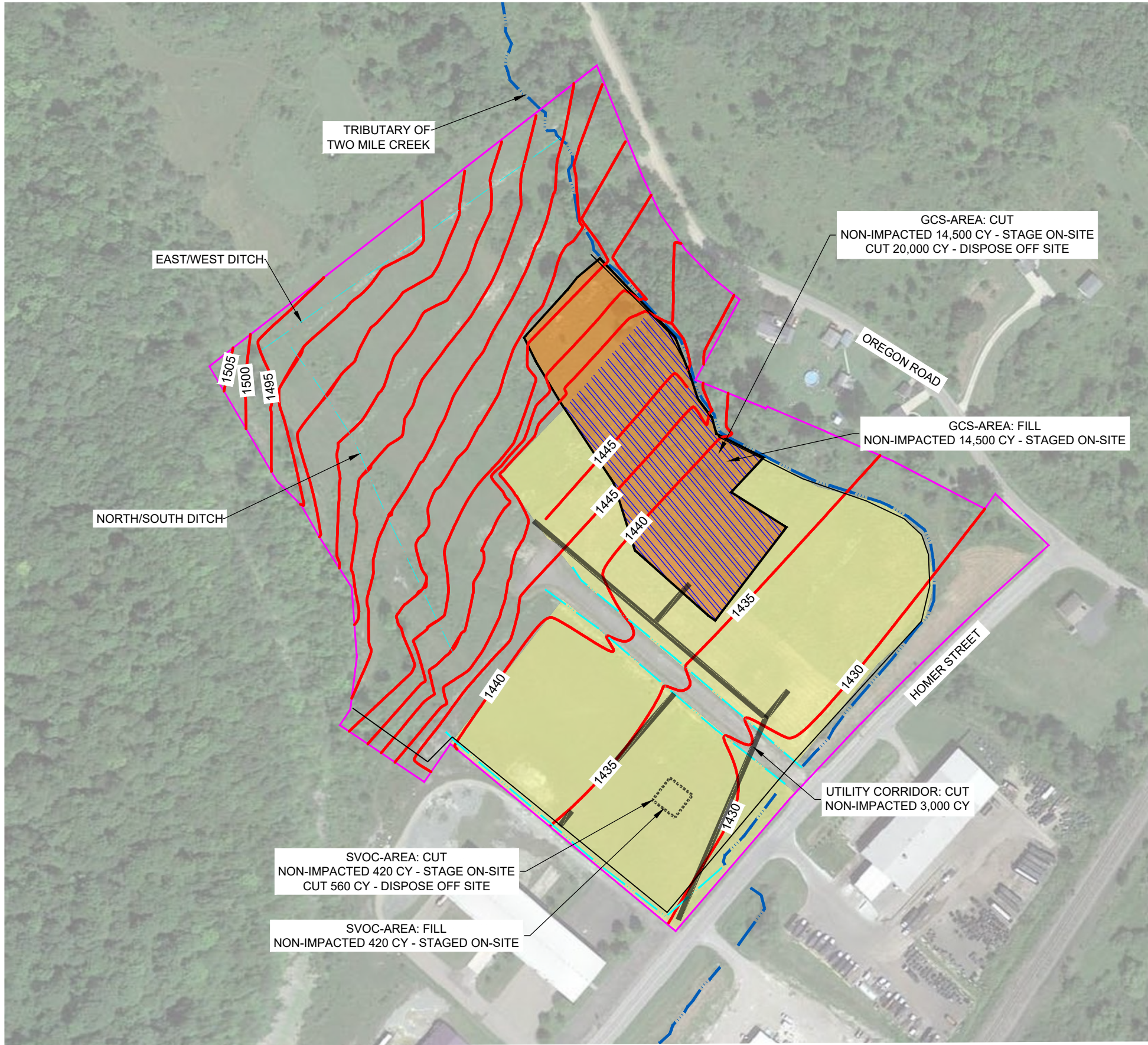
REMEDIAL ACTION WORK PLAN

OREGON ROAD SITE
BCP SITE NO. C905045
OLEAN, NEW YORK

PREPARED FOR
HOMER STREET PROPERTIES, LLC

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DATE: NOVEMBER 2018
DRAFTED BY: REL



SCALE: 1 INCH = 200 FEET
SCALE IN FEET
(approximate)

LEGEND:

- BCP SITE BOUNDARY
- 1450 PLANNED POST-DEVELOPMENT GROUND SURFACE CONTOUR (MAJOR INTERVAL (5'))
- PROPOSED DRAINAGE DITCH
- AREA TO BE STRIPPED OF ONE FOOT OF SOIL/FILL TO PROVIDE BACKFILL AND TO ALLOW FOR COVER SYSTEM
- AREA TO BE CUT TO 2% SLOPE TO PROVIDE BACKFILL FOR REMEDIAL EXCAVATION AREAS.
- AREA TO BE EXCAVATED TO REMOVE GCS
- AREA TO BE EXCAVATED TO REMOVE GCS, THEN GRADED TO A 2% SLOPE
- UTILITY CORRIDOR - PLANNED

- NOTES:
- VERTICAL ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988.
 - THE SITE CUT AND FILL HAS BEEN BALANCED SO THAT OTHER THAN THE COVER SYSTEM SOILS, NO IMPORT IS REQUIRED.



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0323-017-001

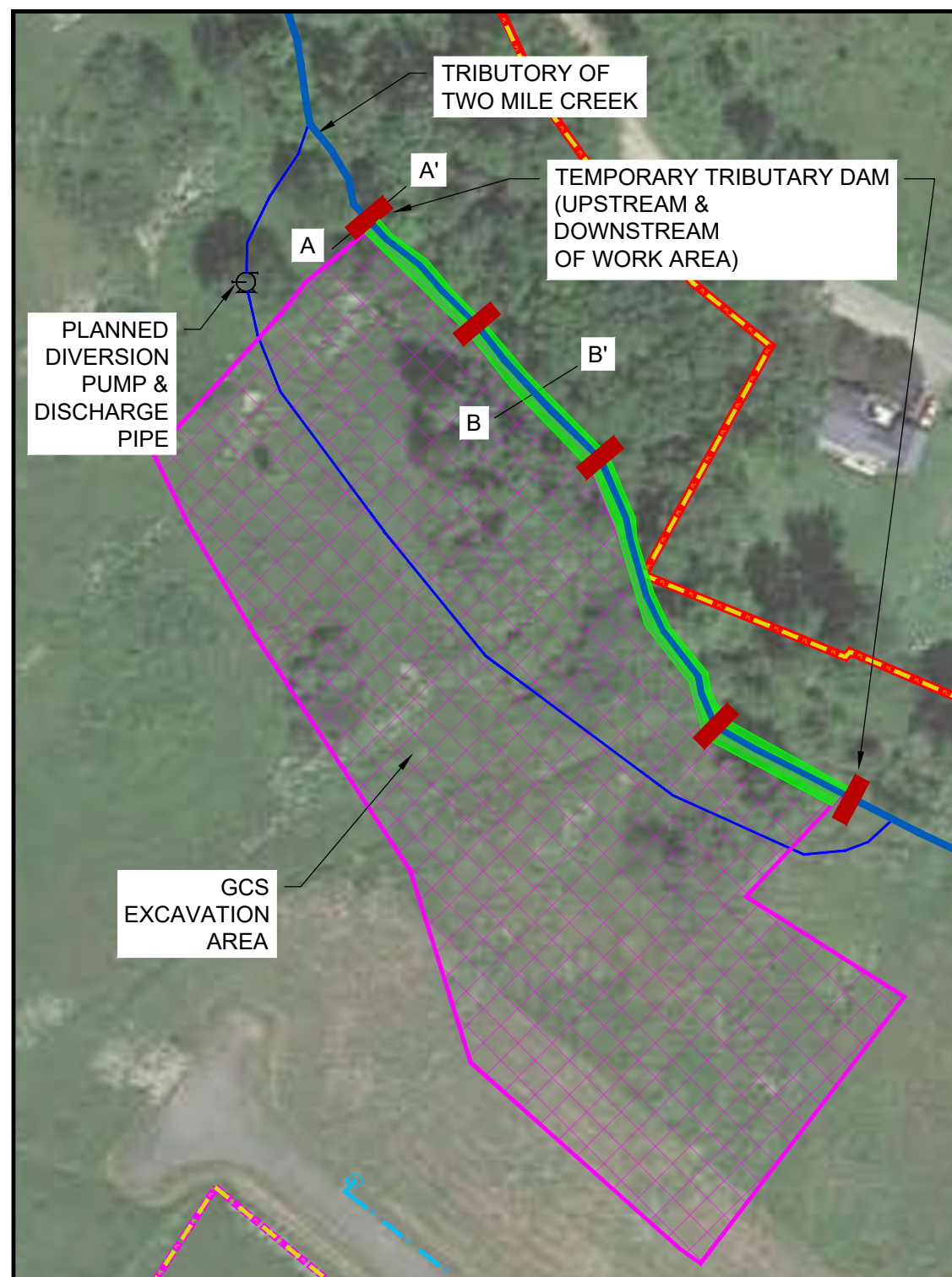
PRELIMINARY FINAL GRADING PLAN

REMEDIAL ACTION WORK PLAN
OREGON ROAD SITE
OLEAN, NEW YORK
PREPARED FOR
HOMER STREET PROPERTIES, LLC

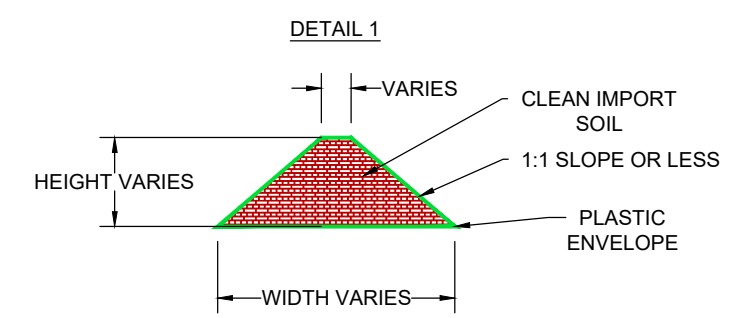
FIGURE 5

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DATE: MAY 2020
DRAFTED BY: GNC

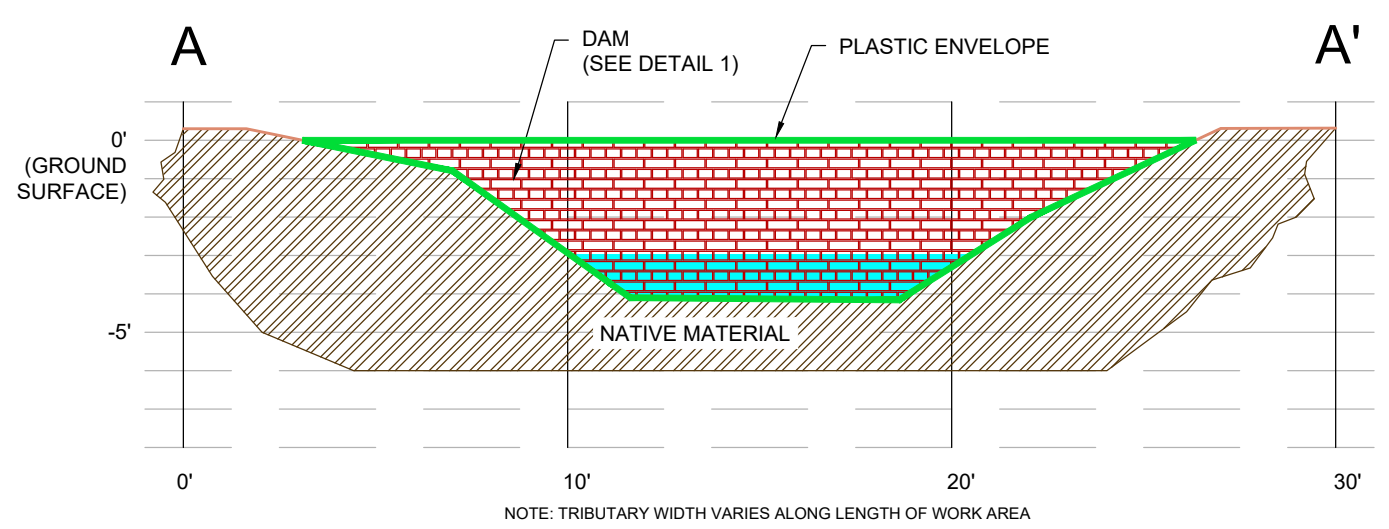


- LEGEND:
- BCP SITE BOUNDARY
 - OREGON ROAD SITE BOUNDARY
 - PLANNED GCS EXCAVATION AREA
 - SOIL TO MEET NYSDEC PROTECTION OF ECOLOGICAL RESOURCES SCOs

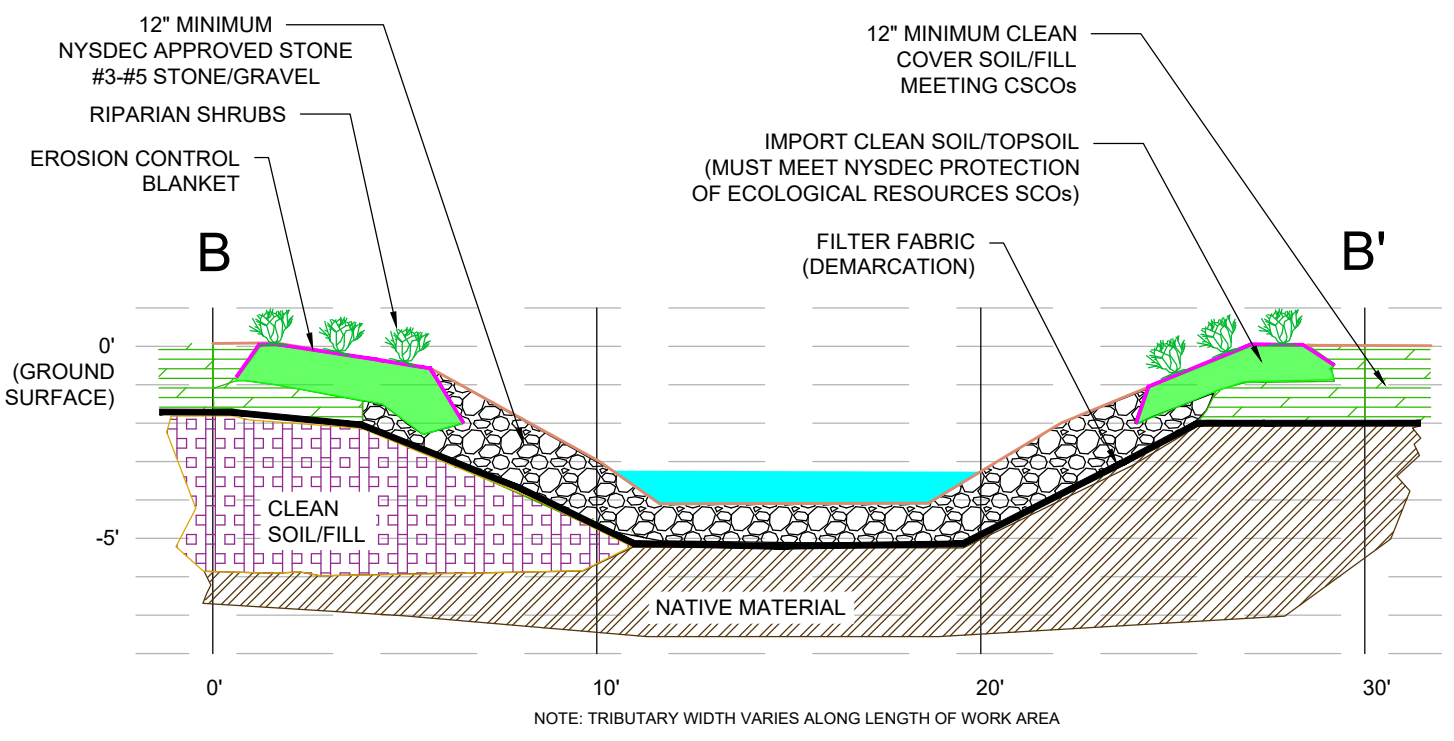


NOTE: ADDITIONAL DAMS MAY BE ADDED WEATHER DEPENDENT

TYPICAL DAMMED TRIBUTARY CROSS-SECTION



TYPICAL TRIBUTARY RECONSTRUCTION CROSS-SECTION



TRIBUTARY RECONSTRUCTION CROSS-SECTION DETAILS

REMEDIAL ACTION WORK PLAN
OREGON ROAD SITE
OLEAN, NEW YORK
PREPARED FOR
HOMER STREET PROPERTIES, LLC



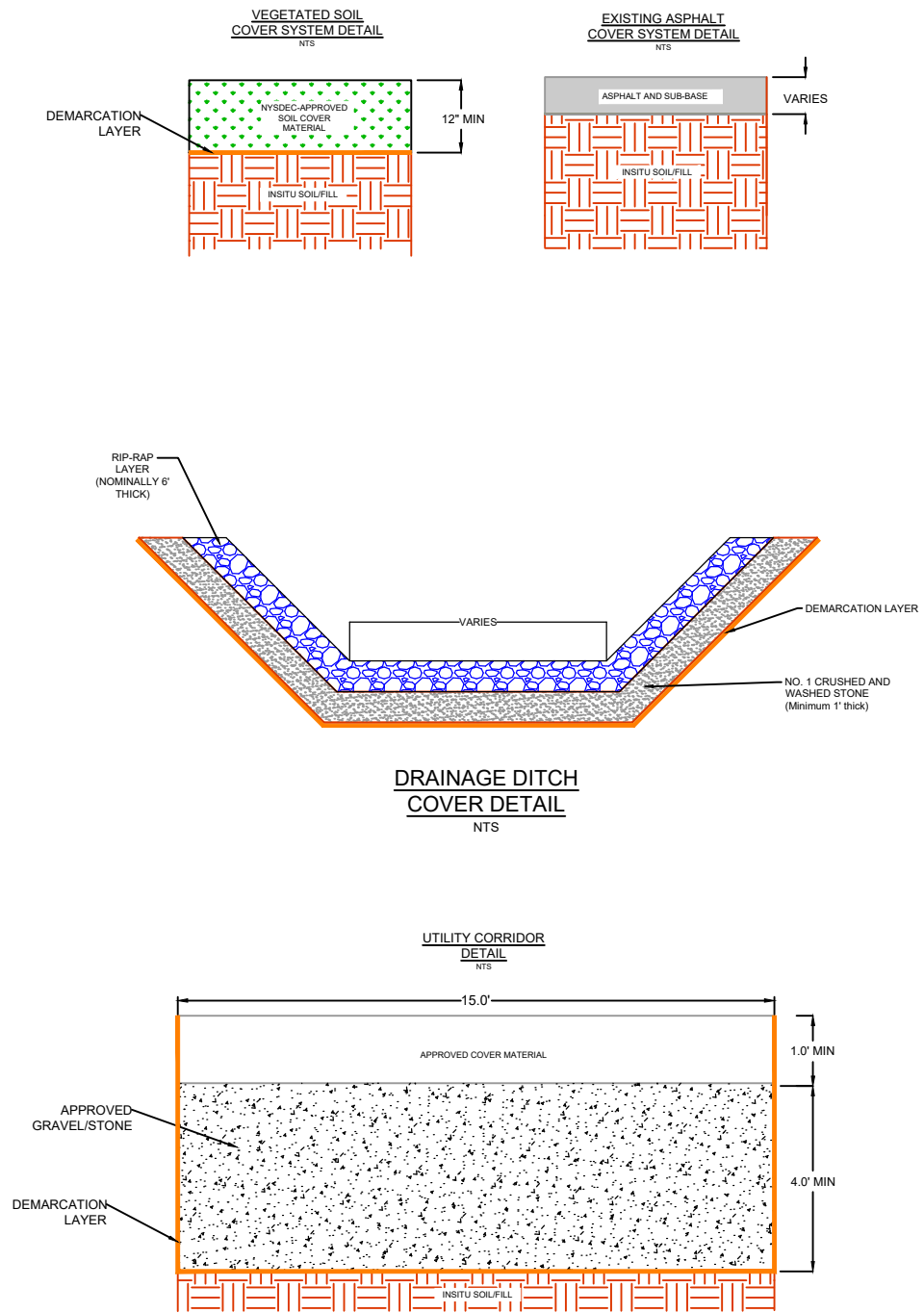
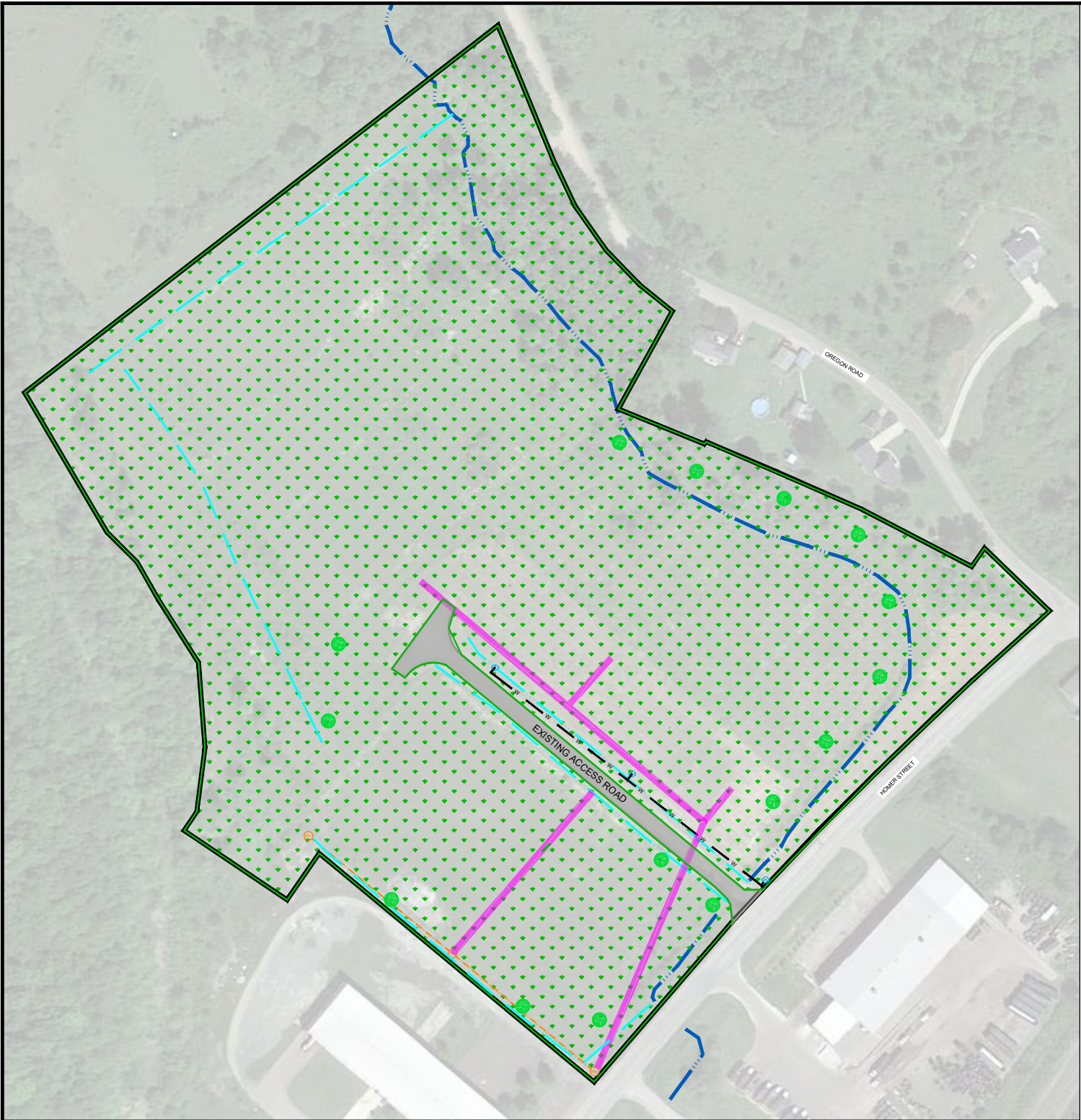
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0311-019-001

FIGURE 6

DISCLAIMER: PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.

DATE: FEBRUARY 2020
DRAFTED BY: RFL



SITE COVER SYSTEM AND DETAILS

REMEDIAL ACTION WORK PLAN
OREGON ROAD SITE
OLEAN, NEW YORK
PREPARED FOR
HOMER STREET PROPERTIES, LLC



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0323-017-001

FIGURE 7

DISCLAIMER: PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.

APPENDIX A

BENCH-SCALE EVALUATION LABORATORY ANALYTICAL RESULTS (PRE- AND POST-TREATMENT)



ANALYTICAL REPORT

Lab Number:	L2020684
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Mike Lesakowski
Phone:	(716) 856-0599
Project Name:	OREGON RD SITE
Project Number:	T0323-017-001-008
Report Date:	05/26/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2020684-01	TP-54	SOIL	OLEAN NY	05/19/20 15:00	05/19/20
L2020684-02	PAC-1	SOIL	OLEAN NY	05/19/20 15:50	05/19/20
L2020684-03	PAC-2	SOIL	OLEAN NY	05/19/20 14:45	05/19/20
L2020684-04	PAC-5	SOIL	OLEAN NY	05/19/20 14:48	05/19/20
L2020684-05	RB-1	SOIL	OLEAN NY	05/19/20 15:10	05/19/20
L2020684-06	RB-2	SOIL	OLEAN NY	05/19/20 15:20	05/19/20
L2020684-07	RB-5	SOIL	OLEAN NY	05/19/20 15:35	05/19/20
L2020684-08	FS-1	SOIL	OLEAN NY	05/19/20 15:53	05/19/20
L2020684-09	FS-2	SOIL	OLEAN NY	05/19/20 15:56	05/19/20
L2020684-10	FS-5	SOIL	OLEAN NY	05/19/20 15:59	05/19/20

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

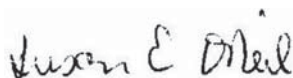
SPLP Perfluorinated Alkyl Acids by Isotope Dilution

WG1373511-4: This blank represents the SPLP tumbling blank associated with L2020684-01 through -10.

The WG1373511-5 MS recovery, performed on L2020684-01, is outside the acceptance criteria for perfluorodecanesulfonic acid (pfd) (176%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/26/20

ORGANICS

SEMIVOLATILES

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-01
Client ID: TP-54
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:00
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:05
Analyst: SG

Extraction Method: ALPHA 23528

Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.85		ng/l	1.77	0.360	1
Perfluoropentanoic Acid (PFPeA)	10.0		ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	2.94		ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	29.2		ng/l	1.77	0.290	1
Perfluoroheptanoic Acid (PFHpA)	8.59		ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	163		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	11.7		ng/l	1.77	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	11.9		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	1.85		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	738		ng/l	1.77	0.445	1
Perfluorodecanoic Acid (PFDA)	0.781	J	ng/l	1.77	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.572	1
Perfluoroundecanoic Acid (PFUnA)	0.396	J	ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	1.03	J	ng/l	1.77	0.866	1
Perfluorooctanesulfonamide (FOSA)	2.27		ng/l	1.77	0.512	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.710	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-01
Client ID: TP-54
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:00
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-02
Client ID: PAC-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:50
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:09
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.535	J	ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	0.591	J	ng/l	1.75	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
Perfluorohexanoic Acid (PFHxA)	0.378	J	ng/l	1.75	0.287	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.601	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	2.72		ng/l	1.75	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.566	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.857	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.507	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.703	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.217	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-02
Client ID: PAC-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:50
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-03
Client ID: PAC-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:45
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:25
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	0.374	1
Perfluoropentanoic Acid (PFPeA)	0.450	J	ng/l	1.83	0.363	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
Perfluorohexanoic Acid (PFHxA)	0.344	J	ng/l	1.83	0.300	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.344	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.630	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.286	1
Perfluorooctanesulfonic Acid (PFOS)	2.36		ng/l	1.83	0.462	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.278	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.593	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.897	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.531	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.736	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.341	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.300	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.83	0.227	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-03
Client ID: PAC-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:45
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	44		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	52		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	39		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	37		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	46		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	49		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	49		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	31		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-04
Client ID: PAC-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:48
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:42
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	0.504	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	0.615	J	ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-04
Client ID: PAC-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:48
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	57		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-05
Client ID: RB-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:10
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:21
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.519	J	ng/l	1.88	0.383	1
Perfluoropentanoic Acid (PFPeA)	0.470	J	ng/l	1.88	0.372	1
Perfluorobutanesulfonic Acid (PFBS)	1.72	J	ng/l	1.88	0.224	1
Perfluorohexanoic Acid (PFHxA)	0.477	J	ng/l	1.88	0.308	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293	1
Perfluorooctanesulfonic Acid (PFOS)	1.92		ng/l	1.88	0.474	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.609	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.233	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-05
Client ID: RB-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:10
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-06
Client ID: RB-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:20
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:38
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	0.493	J	ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	0.406	J	ng/l	1.81	0.297	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-06
Client ID: RB-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:20
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-07
Client ID: RB-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:35
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.73	0.353	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.73	0.342	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.73	0.206	1
Perfluorohexanoic Acid (PFHxA)	0.329	J	ng/l	1.73	0.284	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.73	0.195	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.73	0.325	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.73	0.204	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.73	1.15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.73	0.595	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.73	0.270	1
Perfluorooctanesulfonic Acid (PFOS)	0.536	J	ng/l	1.73	0.436	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.73	0.263	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.73	1.05	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.73	0.560	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.73	0.225	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.73	0.848	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.73	0.502	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.73	0.696	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.73	0.322	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.73	0.283	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.73	0.214	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-07
Client ID: RB-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:35
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	66		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	59		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-08
 Client ID: FS-1
 Sample Location: OLEAN NY

Date Collected: 05/19/20 15:53
 Date Received: 05/19/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 20:11
 Analyst: SG

Extraction Method: ALPHA 23528

Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.904	J	ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	0.911	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.733	J	ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	1.90		ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-08
Client ID: FS-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:53
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	65		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-09
Client ID: FS-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:56
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 20:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.620	J	ng/l	1.74	0.355	1
Perfluoropentanoic Acid (PFPeA)	0.631	J	ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.207	1
Perfluorohexanoic Acid (PFHxA)	0.624	J	ng/l	1.74	0.286	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	2.25		ng/l	1.74	0.439	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-09
Client ID: FS-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:56
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-10
Client ID: FS-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:59
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 20:44
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 07:13

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	0.480	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	0.379	J	ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	1.11	J	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-10
Client ID: FS-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:59
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 18:32
Analyst: SG
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.340	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:32
 Analyst: SG
 TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:48
 Analyst: SG
 TCLP/SPLP Extraction Date: 05/21/20 14:26

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	0.362
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.77	0.351
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.211
Perfluorohexanoic Acid (PFHxA)	0.365	J	ng/l	1.77	0.291
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	0.200
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.333
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	0.209
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.610
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.447
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.270
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.574
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.869
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.514
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.713
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.330
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.290
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.220

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:48
 Analyst: SG
 TCLP/SPLP Extraction Date: 05/21/20 14:26

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	52		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	44		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 Batch: WG1373511-2 WG1373511-3								
Perfluorobutanoic Acid (PFBA)	125		127		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	124		126		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	122		129		65-157	6		30
Perfluorohexanoic Acid (PFHxA)	131		132		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	133		128		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	122		140		69-177	14		30
Perfluorooctanoic Acid (PFOA)	123		127		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	154		114		49-187	30		30
Perfluoroheptanesulfonic Acid (PFHpS)	134		138		61-179	3		30
Perfluorononanoic Acid (PFNA)	127		133		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	139		137		52-151	1		30
Perfluorodecanoic Acid (PFDA)	123		122		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	124		121		56-173	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	112		124		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	119		125		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	133		148		38-156	11		30
Perfluorooctanesulfonamide (FOSA)	138		127		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	148		118		45-170	23		30
Perfluorododecanoic Acid (PFDoA)	126		131		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	138		130		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	134		131		59-182	2		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 Batch: WG1373511-2 WG1373511-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		87		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		57		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		83		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		60		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		59		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		88		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		84		33-143

Matrix Spike Analysis

Batch Quality Control

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-5 QC Sample: L2020684-01 Client ID: TP-54												
Perfluorobutanoic Acid (PFBA)	4.85	34.6	47.7	124		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	10.0	34.6	53.0	124		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.94	30.6	40.1	121		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	29.2	34.6	71.9	123		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	8.59	34.6	53.6	130		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	163	31.6	207	139		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	11.7	34.6	55.7	127		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	32.9	39.0	119		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	11.9	32.9	68.4	172		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.85	34.6	47.6	132		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	738	32	758	62		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.781J	34.6	48.5	140		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	33.2	46.2	139		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	34.6	45.7	132		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	0.396J	34.6	44.0	127		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.03J	33.4	58.9	176	Q	-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	2.27	34.6	43.2	118		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	34.6	56.6	164		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	34.6	45.9	133		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	34.6	49.7	144		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	34.6	45.2	131		-	-		59-182	-		30

Matrix Spike Analysis**Batch Quality Control****Project Name:** OREGON RD SITE**Project Number:** T0323-017-001-008**Lab Number:** L2020684**Report Date:** 05/26/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-5 QC Sample: L2020684-01 Client ID: TP-54

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	76				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123				31-159

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-6 QC Sample: L2020684-04 Client ID: PAC-5						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.504J	0.496J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	0.615J	0.648J	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-6 QC Sample: L2020684-04 Client ID: PAC-5						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		61		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		78		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		52		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		53		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		50		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		83		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		54		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		56		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		67		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	57		50		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		47		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		39		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		56		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		65		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		70		33-143

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-01A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-01B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-01X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-02A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-02B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-02X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-03A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-03B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-03X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-04A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-04B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-04X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-05A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-05B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-05X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-06A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-06B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-06X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-07A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-07B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-07X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-08A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-08B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-08X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-09A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-09B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-09X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-10A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-10B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-10X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X9	Tumble Vessel	A	NA		4.4	Y	Absent		-

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Serial_No:05262014:50
Lab Number: L2020684
Report Date: 05/26/20

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCS D	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
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Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 17

Published Date: 4/28/2020 9:42:21 AM

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg. **EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

APPENDIX B

TP-52 & TP-54 DELINEATION SOIL SAMPLING ANALYTICAL RESULTS



ANALYTICAL REPORT

Lab Number:	L2020684
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Mike Lesakowski
Phone:	(716) 856-0599
Project Name:	OREGON RD SITE
Project Number:	T0323-017-001-008
Report Date:	05/26/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2020684-01	TP-54	SOIL	OLEAN NY	05/19/20 15:00	05/19/20
L2020684-02	PAC-1	SOIL	OLEAN NY	05/19/20 15:50	05/19/20
L2020684-03	PAC-2	SOIL	OLEAN NY	05/19/20 14:45	05/19/20
L2020684-04	PAC-5	SOIL	OLEAN NY	05/19/20 14:48	05/19/20
L2020684-05	RB-1	SOIL	OLEAN NY	05/19/20 15:10	05/19/20
L2020684-06	RB-2	SOIL	OLEAN NY	05/19/20 15:20	05/19/20
L2020684-07	RB-5	SOIL	OLEAN NY	05/19/20 15:35	05/19/20
L2020684-08	FS-1	SOIL	OLEAN NY	05/19/20 15:53	05/19/20
L2020684-09	FS-2	SOIL	OLEAN NY	05/19/20 15:56	05/19/20
L2020684-10	FS-5	SOIL	OLEAN NY	05/19/20 15:59	05/19/20

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

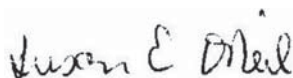
SPLP Perfluorinated Alkyl Acids by Isotope Dilution

WG1373511-4: This blank represents the SPLP tumbling blank associated with L2020684-01 through -10.

The WG1373511-5 MS recovery, performed on L2020684-01, is outside the acceptance criteria for perfluorodecanesulfonic acid (pfd) (176%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/26/20

ORGANICS

SEMIVOLATILES

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-01
Client ID: TP-54
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:00
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.85		ng/l	1.77	0.360	1
Perfluoropentanoic Acid (PFPeA)	10.0		ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	2.94		ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	29.2		ng/l	1.77	0.290	1
Perfluoroheptanoic Acid (PFHpA)	8.59		ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	163		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	11.7		ng/l	1.77	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	11.9		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	1.85		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	738		ng/l	1.77	0.445	1
Perfluorodecanoic Acid (PFDA)	0.781	J	ng/l	1.77	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.572	1
Perfluoroundecanoic Acid (PFUnA)	0.396	J	ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	1.03	J	ng/l	1.77	0.866	1
Perfluorooctanesulfonamide (FOSA)	2.27		ng/l	1.77	0.512	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.710	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-01
Client ID: TP-54
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:00
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-02
Client ID: PAC-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:50
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:09
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.535	J	ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	0.591	J	ng/l	1.75	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
Perfluorohexanoic Acid (PFHxA)	0.378	J	ng/l	1.75	0.287	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.601	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	2.72		ng/l	1.75	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.566	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.857	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.507	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.703	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.217	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-02
Client ID: PAC-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:50
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-03
Client ID: PAC-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:45
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:25
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	0.374	1
Perfluoropentanoic Acid (PFPeA)	0.450	J	ng/l	1.83	0.363	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
Perfluorohexanoic Acid (PFHxA)	0.344	J	ng/l	1.83	0.300	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.344	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.630	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.286	1
Perfluorooctanesulfonic Acid (PFOS)	2.36		ng/l	1.83	0.462	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.278	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.593	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.897	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.531	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.736	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.341	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.300	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.83	0.227	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-03
Client ID: PAC-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:45
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	44		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	52		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	39		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	37		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	46		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	49		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	49		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	31		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-04
Client ID: PAC-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:48
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 17:42
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	0.504	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	0.615	J	ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-04
Client ID: PAC-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 14:48
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	57		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-05
Client ID: RB-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:10
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:21
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.519	J	ng/l	1.88	0.383	1
Perfluoropentanoic Acid (PFPeA)	0.470	J	ng/l	1.88	0.372	1
Perfluorobutanesulfonic Acid (PFBS)	1.72	J	ng/l	1.88	0.224	1
Perfluorohexanoic Acid (PFHxA)	0.477	J	ng/l	1.88	0.308	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293	1
Perfluorooctanesulfonic Acid (PFOS)	1.92		ng/l	1.88	0.474	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.609	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.233	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-05
Client ID: RB-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:10
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-06
Client ID: RB-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:20
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:38
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	0.493	J	ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	0.406	J	ng/l	1.81	0.297	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-06
Client ID: RB-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:20
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-07
Client ID: RB-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:35
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 19:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.73	0.353	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.73	0.342	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.73	0.206	1
Perfluorohexanoic Acid (PFHxA)	0.329	J	ng/l	1.73	0.284	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.73	0.195	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.73	0.325	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.73	0.204	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.73	1.15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.73	0.595	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.73	0.270	1
Perfluorooctanesulfonic Acid (PFOS)	0.536	J	ng/l	1.73	0.436	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.73	0.263	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.73	1.05	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.73	0.560	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.73	0.225	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.73	0.848	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.73	0.502	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.73	0.696	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.73	0.322	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.73	0.283	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.73	0.214	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-07
Client ID: RB-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:35
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	66		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	59		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-08
Client ID: FS-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:53
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 20:11
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.904	J	ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	0.911	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.733	J	ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	1.90		ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-08
Client ID: FS-1
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:53
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	65		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-09
Client ID: FS-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:56
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 20:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.620	J	ng/l	1.74	0.355	1
Perfluoropentanoic Acid (PFPeA)	0.631	J	ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.207	1
Perfluorohexanoic Acid (PFHxA)	0.624	J	ng/l	1.74	0.286	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	2.25		ng/l	1.74	0.439	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-09
Client ID: FS-2
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:56
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-10
Client ID: FS-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:59
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 20:44
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 07:13

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/21/20 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	0.480	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	0.379	J	ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	1.11	J	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

SAMPLE RESULTS

Lab ID: L2020684-10
Client ID: FS-5
Sample Location: OLEAN NY

Date Collected: 05/19/20 15:59
Date Received: 05/19/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/23/20 18:32
Analyst: SG
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.340	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:32
 Analyst: SG
 TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:48
 Analyst: SG
 TCLP/SPLP Extraction Date: 05/21/20 14:26

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	0.362
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.77	0.351
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.211
Perfluorohexanoic Acid (PFHxA)	0.365	J	ng/l	1.77	0.291
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	0.200
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.333
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	0.209
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.610
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.447
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.270
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.574
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.869
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.514
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.713
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.330
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.290
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.220

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/23/20 18:48
 Analyst: SG
 TCLP/SPLP Extraction Date: 05/21/20 14:26

Extraction Method: ALPHA 23528
 Extraction Date: 05/22/20 06:57

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-10 Batch: WG1373511-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	52		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	44		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 Batch: WG1373511-2 WG1373511-3								
Perfluorobutanoic Acid (PFBA)	125		127		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	124		126		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	122		129		65-157	6		30
Perfluorohexanoic Acid (PFHxA)	131		132		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	133		128		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	122		140		69-177	14		30
Perfluorooctanoic Acid (PFOA)	123		127		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	154		114		49-187	30		30
Perfluoroheptanesulfonic Acid (PFHpS)	134		138		61-179	3		30
Perfluorononanoic Acid (PFNA)	127		133		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	139		137		52-151	1		30
Perfluorodecanoic Acid (PFDA)	123		122		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	124		121		56-173	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	112		124		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	119		125		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	133		148		38-156	11		30
Perfluorooctanesulfonamide (FOSA)	138		127		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	148		118		45-170	23		30
Perfluorododecanoic Acid (PFDoA)	126		131		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	138		130		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	134		131		59-182	2		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 Batch: WG1373511-2 WG1373511-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		87		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		57		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		83		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		60		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		59		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		88		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		84		33-143

Matrix Spike Analysis

Batch Quality Control

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-5 QC Sample: L2020684-01 Client ID: TP-54												
Perfluorobutanoic Acid (PFBA)	4.85	34.6	47.7	124	-	-	-	-	67-148	-	-	30
Perfluoropentanoic Acid (PFPeA)	10.0	34.6	53.0	124	-	-	-	-	63-161	-	-	30
Perfluorobutanesulfonic Acid (PFBS)	2.94	30.6	40.1	121	-	-	-	-	65-157	-	-	30
Perfluorohexanoic Acid (PFHxA)	29.2	34.6	71.9	123	-	-	-	-	69-168	-	-	30
Perfluoroheptanoic Acid (PFHpA)	8.59	34.6	53.6	130	-	-	-	-	58-159	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	163	31.6	207	139	-	-	-	-	69-177	-	-	30
Perfluorooctanoic Acid (PFOA)	11.7	34.6	55.7	127	-	-	-	-	63-159	-	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	32.9	39.0	119	-	-	-	-	49-187	-	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	11.9	32.9	68.4	172	-	-	-	-	61-179	-	-	30
Perfluorononanoic Acid (PFNA)	1.85	34.6	47.6	132	-	-	-	-	68-171	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	738	32	758	62	-	-	-	-	52-151	-	-	30
Perfluorodecanoic Acid (PFDA)	0.781J	34.6	48.5	140	-	-	-	-	63-171	-	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	33.2	46.2	139	-	-	-	-	56-173	-	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	34.6	45.7	132	-	-	-	-	60-166	-	-	30
Perfluoroundecanoic Acid (PFUnA)	0.396J	34.6	44.0	127	-	-	-	-	60-153	-	-	30
Perfluorodecanesulfonic Acid (PFDS)	1.03J	33.4	58.9	176	Q	-	-	-	38-156	-	-	30
Perfluorooctanesulfonamide (FOSA)	2.27	34.6	43.2	118	-	-	-	-	46-170	-	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	34.6	56.6	164	-	-	-	-	45-170	-	-	30
Perfluorododecanoic Acid (PFDoA)	ND	34.6	45.9	133	-	-	-	-	67-153	-	-	30
Perfluorotridecanoic Acid (PFTrDA)	ND	34.6	49.7	144	-	-	-	-	48-158	-	-	30
Perfluorotetradecanoic Acid (PFTA)	ND	34.6	45.2	131	-	-	-	-	59-182	-	-	30

Matrix Spike Analysis**Batch Quality Control****Project Name:** OREGON RD SITE**Project Number:** T0323-017-001-008**Lab Number:** L2020684**Report Date:** 05/26/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-5 QC Sample: L2020684-01 Client ID: TP-54

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	76				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123				31-159

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-6 QC Sample: L2020684-04 Client ID: PAC-5						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.504J	0.496J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	0.615J	0.648J	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2020684

Report Date: 05/26/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1373511-6 QC Sample: L2020684-04 Client ID: PAC-5						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		61		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		78		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		52		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		53		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		50		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		83		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		54		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		56		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		67		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	57		50		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		47		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		39		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		56		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		65		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		70		33-143

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-01A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-01B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-01X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-01X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-02A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-02B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-02X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-02X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-03A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-03B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-03X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-03X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-04A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-04B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-04X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-04X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-05A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-05B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-05X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-05X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-06A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-06B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-06X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-06X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-07A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-07B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-07X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-07X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-08A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-08B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()

Project Name: OREGON RD SITE**Lab Number:** L2020684**Project Number:** T0323-017-001-008**Report Date:** 05/26/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2020684-08X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-08X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-09A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-09B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-09X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-09X9	Tumble Vessel	A	NA		4.4	Y	Absent		-
L2020684-10A	Plastic 8oz unpreserved	A	NA		4.4	Y	Absent		-
L2020684-10B	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		ARCHIVE()
L2020684-10X	Plastic 250ml unpreserved Extracts	A	NA		4.4	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L2020684-10X9	Tumble Vessel	A	NA		4.4	Y	Absent		-

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Serial_No:05262014:50
Lab Number: L2020684
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PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCS D	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2020684
Report Date: 05/26/20

REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 17

Published Date: 4/28/2020 9:42:21 AM

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.**EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 NEW YORK CHAIN OF CUSTODY Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page 1 of 1		Date Rec'd in Lab 5/20/20		ALPHA Job # L2020684	
		Project Information Project Name: <u>Oregon Rd Site</u> Project Location: <u>Olean NY</u> Project # <u>T0323-017-001-008</u> (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☐ ASP-B ☐ EQULS (1 File) ☐ EQULS (4 File) ☐ Other		Billing Information ☐ Same as Client Info PO #			
Client Information Client: <u>Turnkey Env. Restoration</u> Address: <u>3558 Hamburg Turnpike</u> Phone: Fax: Email: <u>MLesakowski@bm-ll.com</u>		Project Manager: ALPHAQuote #: Turn-Around Time Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Regulatory Requirement ☐ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:			
These samples have been previously analyzed by Alpha ☐						ANALYSIS		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)	
Other project specific requirements/comments:						SPL PFAS		Total Bottles	
Please specify Metals or TAL.									
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date Time		Sample Matrix	Sampler's Initials				
20684-01	TP-54	5/19/20	15:00	Soil	CMC	X			2
-02	PAC-1		15:50			X			2
-03	PAC-2		14:45			X			2
-04	PAC-5		14:48			X			2
-05	RB-1		15:10			X			2
-06	RB-2		15:20			X			2
-07	RB-5		15:35			X			2
-08	FS-1		15:53			X			2
-09	FS-2		15:56			X			2
-10	FS-5		15:59			X			2
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)	
		Relinquished By:		Date/Time		Received By:		Date/Time	
		<u>Charlotte Clark</u>		<u>5/19/2020 16:00</u>		<u>4 Regent</u>		<u>5/19/20 16:00</u>	
		<u>4 Regent</u>		<u>5/19/20 16:00</u>		<u>[Signature]</u>		<u>5/20/20 00:15</u>	



ANALYTICAL REPORT

Lab Number:	L2021444
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Mike Lesakowski
Phone:	(716) 856-0599
Project Name:	OREGON ROAD SITE
Project Number:	T0323-017-001-008
Report Date:	05/29/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2021444-01	TP-54-B1	SOIL	OLEAN NY	05/15/20 12:06	05/15/20
L2021444-02	TP-54-B2	SOIL	OLEAN NY	05/15/20 12:10	05/15/20
L2021444-03	TP-54-B3	SOIL	OLEAN NY	05/15/20 12:50	05/15/20
L2021444-04	TP-54-B4	SOIL	OLEAN NY	05/15/20 12:54	05/15/20
L2021444-05	TP-54-F1	SOIL	OLEAN NY	05/15/20 13:58	05/15/20
L2021444-06	TP-54-F2	SOIL	OLEAN NY	05/15/20 14:01	05/15/20
L2021444-07	TP-54-F3	SOIL	OLEAN NY	05/15/20 14:04	05/15/20
L2021444-08	TP-54-F4	SOIL	OLEAN NY	05/15/20 14:07	05/15/20

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L2021444-01, -05, -06, -07, and -08: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

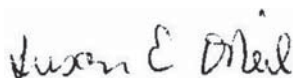
WG1374488-6: This blank represents the SPLP tumbling blank associated with L2021444-01 through -08. The reporting limit was elevated for Perfluorooctanesulfonamide (FOSA) due to low recovery of the extracted internal standard Perfluoro[13C8]Octanesulfonamide (M8FOSA). The low recovery was attributed to the sample matrix.

The WG1374488-3 LCSD recovery, associated with L2021444-01 through -08, is above the acceptance criteria for n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (174%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported

The WG1374488-2/-3 LCS/LCSD RPD(s), associated with L2021444-01 through -08, are above the acceptance criteria for perfluorodecanesulfonic acid (pfd) (38%) and n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (63%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/29/20

ORGANICS

SEMIVOLATILES

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

SAMPLE RESULTS

Lab ID: L2021444-01
Client ID: TP-54-B1
Sample Location: OLEAN NY

Date Collected: 05/15/20 12:06
Date Received: 05/15/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/27/20 19:10
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/26/20 14:00

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.52	J	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	14.4		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	15.2		ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	8.68	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	26.8		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	5.88	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	2.16	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	239		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-01

Date Collected: 05/15/20 12:06

Client ID: TP-54-B1

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	41		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	52		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		33-143

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-02

Date Collected: 05/15/20 12:10

Client ID: TP-54-B2

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 05/26/20 14:00

Analytical Date: 05/27/20 19:27

Analyst: RS

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.563	J	ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	1.75	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	2.13		ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	0.718	J	ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	5.35		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	0.747	J	ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	76.9		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	2.76		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-02

Date Collected: 05/15/20 12:10

Client ID: TP-54-B2

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	61		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	43		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	60		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	59		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		33-143

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

SAMPLE RESULTS

Lab ID: L2021444-03
Client ID: TP-54-B3
Sample Location: OLEAN NY

Date Collected: 05/15/20 12:50
Date Received: 05/15/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/27/20 20:00
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/26/20 14:00

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.692	J	ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	1.81		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	2.29		ng/l	1.81	0.297	1
Perfluoroheptanoic Acid (PFHpA)	0.518	J	ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	6.99		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	0.913	J	ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	139		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	1.76	J	ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-03

Date Collected: 05/15/20 12:50

Client ID: TP-54-B3

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	67		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		33-143

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

SAMPLE RESULTS

Lab ID: L2021444-04
Client ID: TP-54-B4
Sample Location: OLEAN NY

Date Collected: 05/15/20 12:54
Date Received: 05/15/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/27/20 20:33
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/26/20 14:00

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	0.360	1
Perfluoropentanoic Acid (PFPeA)	0.915	J	ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	1.28	J	ng/l	1.77	0.290	1
Perfluoroheptanoic Acid (PFHpA)	0.360	J	ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	3.21		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	0.233	J	ng/l	1.77	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	44.4		ng/l	1.77	0.445	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.572	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.866	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.512	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.710	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-04

Date Collected: 05/15/20 12:54

Client ID: TP-54-B4

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	60		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	34		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	40		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-05

Date Collected: 05/15/20 13:58

Client ID: TP-54-F1

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 05/26/20 14:00

Analytical Date: 05/27/20 20:50

Analyst: RS

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.42	J	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.20	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	2.82	J	ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.48	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	29.3		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTaA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-05

Date Collected: 05/15/20 13:58

Client ID: TP-54-F1

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	39		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	51		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		33-143

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-06

Date Collected: 05/15/20 14:01

Client ID: TP-54-F2

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 05/26/20 14:00

Analytical Date: 05/27/20 21:06

Analyst: RS

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.14	J	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2.16	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.48	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	1.24	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	2.58	J	ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.84	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	2.02	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	29.5		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	1.68	J	ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-06

Date Collected: 05/15/20 14:01

Client ID: TP-54-F2

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	59		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	65		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		33-143

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

SAMPLE RESULTS

Lab ID: L2021444-07
Client ID: TP-54-F3
Sample Location: OLEAN NY

Date Collected: 05/15/20 14:04
Date Received: 05/15/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/27/20 21:23
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/26/20 14:00

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2.06	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.44	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	1.24	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	20.7		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-07

Date Collected: 05/15/20 14:04

Client ID: TP-54-F3

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	47		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		33-143

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-08

Date Collected: 05/15/20 14:07

Client ID: TP-54-F4

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 05/26/20 14:00

Analytical Date: 05/27/20 21:39

Analyst: RS

TCLP/SPLP Ext. Date: 05/24/20 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	2.26	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	9.12	J	ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**SAMPLE RESULTS**

Lab ID: L2021444-08

Date Collected: 05/15/20 14:07

Client ID: TP-54-F4

Date Received: 05/15/20

Sample Location: OLEAN NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	56		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	53		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		33-143

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/27/20 18:04
Analyst: RS
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 05/26/20 14:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-08 Batch: WG1374488-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/27/20 18:04
 Analyst: RS
 TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
 Extraction Date: 05/26/20 14:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-08 Batch: WG1374488-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	72		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		33-143

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/27/20 18:21
 Analyst: RS
 TCLP/SPLP Extraction Date: 05/24/20 07:30

Extraction Method: ALPHA 23528
 Extraction Date: 05/26/20 14:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-08 Batch: WG1374488-6					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.363
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	0.352
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212
Perfluorohexanoic Acid (PFHxA)	0.306	J	ng/l	1.78	0.292
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	0.210
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	17.8	0.516
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/27/20 18:21
 Analyst: RS
 TCLP/SPLP Extraction Date: 05/24/20 07:30

Extraction Method: ALPHA 23528
 Extraction Date: 05/26/20 14:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-08 Batch: WG1374488-6					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	60		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	67		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	41		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	45		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON ROAD SITE

Project Number: T0323-017-001-008

Lab Number: L2021444

Report Date: 05/29/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 Batch: WG1374488-2 WG1374488-3								
Perfluorobutanoic Acid (PFBA)	104		101		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	97		96		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	95		91		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	106		105		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	110		100		58-159	10		30
Perfluorohexanesulfonic Acid (PFHxS)	84		80		69-177	5		30
Perfluorooctanoic Acid (PFOA)	108		98		63-159	10		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		103		49-187	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	112		99		61-179	12		30
Perfluorononanoic Acid (PFNA)	111		105		68-171	6		30
Perfluorooctanesulfonic Acid (PFOS)	109		103		52-151	6		30
Perfluorodecanoic Acid (PFDA)	105		104		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	73		73		56-173	0		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		85		60-166	14		30
Perfluoroundecanoic Acid (PFUnA)	101		113		60-153	11		30
Perfluorodecanesulfonic Acid (PFDS)	152		104		38-156	38	Q	30
Perfluorooctanesulfonamide (FOSA)	109		101		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	91		174	Q	45-170	63	Q	30
Perfluorododecanoic Acid (PFDoA)	106		102		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	109		108		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	108		114		59-182	5		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON ROAD SITE

Lab Number: L2021444

Project Number: T0323-017-001-008

Report Date: 05/29/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 Batch: WG1374488-2 WG1374488-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		107		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		90		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		73		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		95		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		50		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	53		56		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		47		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		85		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		75		33-143

Matrix Spike Analysis**Batch Quality Control****Project Name:** OREGON ROAD SITE**Project Number:** T0323-017-001-008**Lab Number:** L2021444**Report Date:** 05/29/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1374488-4 QC Sample: L2021444-02 Client ID: TP-54-B2												
Perfluorobutanoic Acid (PFBA)	0.563J	35.8	36.6	102		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	1.75J	35.8	36.2	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	31.8	29.4	93		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	2.13	35.8	39.3	104		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	0.718J	35.8	37.6	105		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	5.35	32.7	33.3	86		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.747J	35.8	37.2	104		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34	29.6	87		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34	35.2	103		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	35.8	40.9	114		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	76.9	33.2	106	88		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	35.8	35.8	100		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	34.4	25.8	75		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	35.8	32.6	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	35.8	37.0	103		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	34.6	38.5	111		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	2.76	35.8	37.2	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	35.8	37.1	104		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	35.8	38.4	107		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	35.8	39.5	110		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	35.8	37.0	103		-	-		59-182	-		30

Matrix Spike Analysis**Batch Quality Control****Project Name:** OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1374488-4 QC Sample: L2021444-02 Client ID: TP-54-B2

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	38				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	64				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	53				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85				31-159

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON ROAD SITE

Project Number: T0323-017-001-008

Lab Number: L2021444

Report Date: 05/29/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1374488-5 QC Sample: L2021444-03 Client ID: TP-54-B3						
Perfluorobutanoic Acid (PFBA)	0.692J	0.697J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.81	1.88	ng/l	4		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.29	2.23	ng/l	3		30
Perfluoroheptanoic Acid (PFHpA)	0.518J	1.10J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	6.99	7.26	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	0.913J	1.16J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	0.631J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	139	143	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	1.00J	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	1.76J	2.08	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON ROAD SITE

Project Number: T0323-017-001-008

Lab Number: L2021444

Report Date: 05/29/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1374488-5 QC Sample: L2021444-03 Client ID: TP-54-B3						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		97		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		81		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		54		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	67		66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		37		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62		57		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		59		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		42		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		40		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		14		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		44		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		65		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		61		33-143

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021444-01A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-01X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-01X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-01X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-01X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-01X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-02A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-02X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-02X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-02X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-02X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-02X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-03A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-03X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-03X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-03X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-03X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-03X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-04A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-04X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-04X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-04X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-04X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)

Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021444-04X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-05A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-05X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-05X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-05X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-05X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-05X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-06A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-06X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-06X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-06X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-06X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-06X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-07A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-07X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-07X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-07X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-07X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-07X9	Tumble Vessel	A	NA		3.5	Y	Absent		-
L2021444-08A	Plastic 8oz unpreserved for Grain Size	A	NA		3.5	Y	Absent		-
L2021444-08X1	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-08X2	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-08X3	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-08X4	Plastic 250ml unpreserved Extracts	A	NA		3.5	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021444-08X9	Tumble Vessel	A	NA		3.5	Y	Absent		-

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Serial_No:05292015:57
Lab Number: L2021444
Report Date: 05/29/20

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSA's)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1

Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCS D	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON ROAD SITE**Lab Number:** L2021444**Project Number:** T0323-017-001-008**Report Date:** 05/29/20**Data Qualifiers**

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: OREGON ROAD SITE
Project Number: T0323-017-001-008

Lab Number: L2021444
Report Date: 05/29/20

REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 17

Published Date: 4/28/2020 9:42:21 AM

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Certification Information**The following analytes are not included in our Primary NELAP Scope of Accreditation:****Westborough Facility****EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B**The following analytes are included in our Massachusetts DEP Scope of Accreditation****Westborough Facility:****Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg. **EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

L2021444

5/22/20 (CWS)

 NEW YORK CHAIN OF CUSTODY Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page 4 of 5		Date Rec'd in Lab 5/16/20		ALPHA Job # L2020332									
Client Information Client: Turnkey Env. Restoration Address: 2558 Hamburg Turnpike Phone: Fax: Email: MLesakowski@bm-tk.com		Project Information Project Name: Oregon Road Site Project Location: Olean NY Project # T0323-017-001-008 (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☐ ASP-B ☐ EQuIS (1 File) ☐ EQuIS (4 File) ☐ Other		Billing Information ☐ Same as Client Info PO #											
Regulatory Requirement ☐ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:		Turn-Around Time Standard ☒ ☐ Rush (only if pre approved) Due Date: # of Days:		ANALYSIS		Sample Filtration ☐ Done ☐ Lab to do ☐ Lab to do (Please Specify below)									
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments: Cat B Please specify Metals or TAL.		ALPHA Lab ID (Lab Use Only)		Sample ID		Collection Date Time		Sample Matrix		Sampler's Initials		SPLP PFAS		Sample Specific Comments		Total Bottles	
20331-31		TP-52-E3		5/15/2020 10:43		Soil		CME		X				hold		2	
-32		TP-52-E4		10:46						X				hold		2	
-01 -33		TP-54-B1		12:06						X				hold		2	
02 -34		TP-54-B2		12:10						X				hold		2	
03 -35		TP-54-B3		12:50						X				hold		2	
04 -36		TP-54-B4		12:54						X				hold		2	
-37		TP-54-D1		13:24						X				hold		2	
-38		TP-54-D2		13:27						X				hold		2	
-39		TP-54-D3		13:30						X				hold		2	
-40		TP-54-D4		13:33						X				hold		2	
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type Preservative		P A								Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)	
Relinquished By: Charlotte Clark Ch. of A/E		Date/Time 5/15/2020 16:30 5/15/20 16:30		Received By: Ch. of A/E Ch. of A/E		Date/Time 5/15/20 16:30 5/16/200120											

Form No: 01-25 HC (rev. 30-Sept-2013)

L2021444

 NEW YORK CHAIN OF CUSTODY		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page 5 of 5		Date Rec'd in Lab 5/16/20		ALPHA Job # L2020332	
Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		Project Information Project Name: Oregon Road Site Project Location: W. Olean NY Project # 0022 T0323-017-001-008 (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☐ ASP-B ☐ EQuIS (1 File) ☐ EQuIS (4 File) ☐ Other		Billing Information ☐ Same as Client Info PO #	
Client Information Client: Turnkey Env. Restoration Address: 255 B Hamburg Turnpike Phone: Fax: Email: MLesakowski@bn-tk.com		Project Manager: ALPHAQuote #: Turn-Around Time: Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Regulatory Requirement ☐ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:			
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments: Cat B				ANALYSIS		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)		Total Bottles	
Please specify Metals or TAL.				SPLP PFAS		Sample Specific Comments			
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler's Initials				
-05 21444-06-42	TP-54-F1	5/15/2020	13:58	soil	CMC	X			hold 2
07-43	TP-54-F2	↓	14:01	↓	↓	X			hold 2
08-44	TP-54-F3	↓	14:04	↓	↓	X			hold 2
	TP-54-F4	↓	14:07	↓	↓	X			hold 2
Preservative Code:		Container Code		Westboro: Certification No: MA935		Container Type		Preservative	
A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Mansfield: Certification No: MA015		P		A	
Form No: 01-25 HC (rev. 30-Sept-2013)		Relinquished By:		Date/Time		Received By:		Date/Time	
		Charlotte Clasky		5/15/2020 16:30		C. J. Ann		5/15/20 16:30	
		C. J. Ann		5/15/20 16:30		S. J.		5/16/20 01:00	
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)									



ANALYTICAL REPORT

Lab Number:	L2021816
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Mike Lesakowski
Phone:	(716) 856-0599
Project Name:	OREGON RD SITE
Project Number:	T0323-017-001-008
Report Date:	06/08/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2021816-01	TP-54-A5	SOIL	OLEAN, NY	05/27/20 11:00	05/27/20
L2021816-02	TP-54-B5	SOIL	OLEAN, NY	05/27/20 10:35	05/27/20
L2021816-03	TP-54-E5	SOIL	OLEAN, NY	05/27/20 11:10	05/27/20
L2021816-04	TP-54-F5	SOIL	OLEAN, NY	05/27/20 11:14	05/27/20
L2021816-05	TP-54-G1	SOIL	OLEAN, NY	05/27/20 10:45	05/27/20
L2021816-06	TP-54-G2	SOIL	OLEAN, NY	05/27/20 10:47	05/27/20
L2021816-07	TP-54-G3	SOIL	OLEAN, NY	05/27/20 10:49	05/27/20
L2021816-08	TP-54-G4	SOIL	OLEAN, NY	05/27/20 10:51	05/27/20
L2021816-09	TP-54-G5	SOIL	OLEAN, NY	05/27/20 10:53	05/27/20
L2021816-10	TP-52-F1	SOIL	OLEAN, NY	05/27/20 11:36	05/27/20
L2021816-11	TP-52-F2	SOIL	OLEAN, NY	05/27/20 11:40	05/27/20
L2021816-12	TP-52-F3	SOIL	OLEAN, NY	05/27/20 11:44	05/27/20
L2021816-13	TP-52-F4	SOIL	OLEAN, NY	05/27/20 11:48	05/27/20
L2021816-14	TP-52-G1	SOIL	OLEAN, NY	05/27/20 11:56	05/27/20
L2021816-15	TP-52-G2	SOIL	OLEAN, NY	05/27/20 12:00	05/27/20
L2021816-16	TP-52-G3	SOIL	OLEAN, NY	05/27/20 12:04	05/27/20
L2021816-17	TP-52-G4	SOIL	OLEAN, NY	05/27/20 12:08	05/27/20

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Case Narrative (continued)

Report Submission

June 8, 2020: Final report.

June 2, 2020: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2021816-17: The collection date and time on the chain of custody was 27-MAY-20 12:08; however, the collection date/time on the container label was 27-MAY-20 12:04. At the client's request, the collection date/time is reported as 27-MAY-20 12:08.

SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L2021816-01, -03, -14, and -15: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2021816-04: The sample was re-extracted within holding time due to matrix interference in the original extraction. The results of the re-extraction are reported.

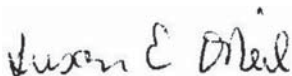
WG1376228-4: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

WG1376228-6: This blank represents the SPLP tumbling blank associated with L2021816-01, -03, -10, -11, -12, -13, -14, -15, -16, and -17.

WG1377253-4: This blank represents the SPLP tumbling blank associated with L2021816-04 through -07. The WG1377253-6 Laboratory Duplicate RPD for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (65%), is outside the acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 06/08/20

ORGANICS

SEMIVOLATILES

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-01
Client ID: TP-54-A5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:00
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 21:39
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2.66	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	2.16	J	ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	6.46	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	1.28	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	27.7		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.24	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	37.9		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-01
Client ID: TP-54-A5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:00
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	163		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	211		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	168		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-03
Client ID: TP-54-E5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:10
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 21:55
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.55	J	ng/l	25.0	5.10	1
Perfluoropentanoic Acid (PFPeA)	18.3	J	ng/l	25.0	4.95	1
Perfluorobutanesulfonic Acid (PFBS)	30.2		ng/l	25.0	2.98	1
Perfluorohexanoic Acid (PFHxA)	106		ng/l	25.0	4.10	1
Perfluoroheptanoic Acid (PFHpA)	19.0	J	ng/l	25.0	2.82	1
Perfluorohexanesulfonic Acid (PFHxS)	992		ng/l	25.0	4.70	1
Perfluorooctanoic Acid (PFOA)	86.7		ng/l	25.0	2.95	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	25.0	16.6	1
Perfluoroheptanesulfonic Acid (PFHpS)	60.0		ng/l	25.0	8.60	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	25.0	3.90	1
Perfluorooctanesulfonic Acid (PFOS)	1040		ng/l	25.0	6.30	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	25.0	3.80	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	25.0	15.2	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	25.0	8.10	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	25.0	3.25	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	25.0	12.2	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	25.0	7.25	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	25.0	10.0	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	25.0	4.65	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	25.0	4.09	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	25.0	3.10	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-03
Client ID: TP-54-E5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:10
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	115		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-04 **RE**
Client ID: TP-54-F5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:14
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/06/20 23:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/06/20 12:45

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 06/01/20 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	20.0	4.08	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
Perfluorohexanoic Acid (PFHxA)	3.76	J	ng/l	20.0	3.28	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	20.0	2.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	20.0	13.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	20.0	12.1	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	6.48	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	20.0	5.80	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	8.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	20.0	2.48	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-04 **RE**
Client ID: TP-54-F5
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:14
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-05
Client ID: TP-54-G1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:45
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 17:57
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 06/01/20 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.79		ng/l	1.77	0.362	1
Perfluoropentanoic Acid (PFPeA)	4.20		ng/l	1.77	0.351	1
Perfluorobutanesulfonic Acid (PFBS)	0.355	J	ng/l	1.77	0.211	1
Perfluorohexanoic Acid (PFHxA)	6.11		ng/l	1.77	0.291	1
Perfluoroheptanoic Acid (PFHpA)	4.54		ng/l	1.77	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	5.26		ng/l	1.77	0.333	1
Perfluorooctanoic Acid (PFOA)	3.33		ng/l	1.77	0.209	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.610	1
Perfluorononanoic Acid (PFNA)	0.915	J	ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	20.6		ng/l	1.77	0.447	1
Perfluorodecanoic Acid (PFDA)	0.447	J	ng/l	1.77	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.574	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.869	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.514	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.713	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.330	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.290	1
Perfluorotetradecanoic Acid (PFTaA)	ND		ng/l	1.77	0.220	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-05
Client ID: TP-54-G1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:45
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-06
Client ID: TP-54-G2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:47
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 18:13
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 06/01/20 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.75		ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	2.45		ng/l	1.98	0.391	1
Perfluorobutanesulfonic Acid (PFBS)	0.332	J	ng/l	1.98	0.235	1
Perfluorohexanoic Acid (PFHxA)	3.50		ng/l	1.98	0.324	1
Perfluoroheptanoic Acid (PFHpA)	1.69	J	ng/l	1.98	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	3.56		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	1.43	J	ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	1.25	J	ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	20.5		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.640	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.968	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.573	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.794	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-06
Client ID: TP-54-G2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:47
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	51		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	40		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	43		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-07
Client ID: TP-54-G3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:49
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 18:30
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 06/01/20 15:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	0.736	J	ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
Perfluorohexanoic Acid (PFHxA)	0.933	J	ng/l	1.76	0.289	1
Perfluoroheptanoic Acid (PFHpA)	0.539	J	ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	1.90		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.48		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	16.2		ng/l	1.76	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.863	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.708	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-07
Client ID: TP-54-G3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 10:49
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-10
Client ID: TP-52-F1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:36
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 22:29
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.70	J	ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	1.06	J	ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	0.476	J	ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	2.67		ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	1.34	J	ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	16.6		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	2.26		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.12	J	ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	0.450	J	ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	22.8		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-10
Client ID: TP-52-F1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:36
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-11
Client ID: TP-52-F2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:40
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 23:02
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.53	J	ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	1.42	J	ng/l	1.98	0.391	1
Perfluorobutanesulfonic Acid (PFBS)	0.356	J	ng/l	1.98	0.235	1
Perfluorohexanoic Acid (PFHxA)	1.76	J	ng/l	1.98	0.324	1
Perfluoroheptanoic Acid (PFHpA)	1.20	J	ng/l	1.98	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	13.3		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	2.41		ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	15.2		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.640	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.968	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.573	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.794	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-11
Client ID: TP-52-F2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:40
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	127		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-12
Client ID: TP-52-F3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:44
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 23:18
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.573	J	ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	0.912	J	ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	0.818	J	ng/l	1.82	0.299	1
Perfluoroheptanoic Acid (PFHpA)	0.464	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	1.28	J	ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.358	J	ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	3.23		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTaA)	ND		ng/l	1.82	0.226	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-12
Client ID: TP-52-F3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:44
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	62		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-13
Client ID: TP-52-F4
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:48
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/02/20 00:18
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.

TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	0.513	J	ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.635	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	0.572	J	ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	0.406	J	ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	1.64	J	ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-13
Client ID: TP-52-F4
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:48
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-14
Client ID: TP-52-G1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:56
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/02/20 00:34
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.06	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	9.64	J	ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	3.22	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	16.3		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-14
Client ID: TP-52-G1
Sample Location: OLEAN, NY

Date Collected: 05/27/20 11:56
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-15
Client ID: TP-52-G2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:00
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/02/20 00:51
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2.18	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.90	J	ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	2.22	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	26.6		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.48	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	25.2		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-15
Client ID: TP-52-G2
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:00
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-16
Client ID: TP-52-G3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:04
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/02/20 01:08
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.420	J	ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	0.494	J	ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	0.242	J	ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	1.01	J	ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	4.29		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	0.591	J	ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	2.84		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-16
Client ID: TP-52-G3
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:04
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-17
Client ID: TP-52-G4
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:08
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/02/20 01:24
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Percent Solids: Results reported on an 'AS RECEIVED' basis.
TCLP/SPLP Ext. Date: 05/29/20 17:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	1.09	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.830	J	ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	1.13	J	ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	4.19		ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

SAMPLE RESULTS

Lab ID: L2021816-17
Client ID: TP-52-G4
Sample Location: OLEAN, NY

Date Collected: 05/27/20 12:08
Date Received: 05/27/20
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/01/20 20:49
Analyst: RS
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 05/31/20 12:30

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01,03,10-17 Batch: WG1376228-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.404	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 06/01/20 20:49
 Analyst: RS
 TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
 Extraction Date: 05/31/20 12:30

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01,03,10-17 Batch: WG1376228-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	95		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	114		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 06/02/20 01:41
 Analyst: RS
 TCLP/SPLP Extraction Date: 05/29/20 17:22

Extraction Method: ALPHA 23528
 Extraction Date: 05/31/20 12:30

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01,03,10-17 Batch: WG1376228-6					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.87	0.382
Perfluoropentanoic Acid (PFPeA)	0.614	J	ng/l	1.87	0.371
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.87	0.223
Perfluorohexanoic Acid (PFHxA)	0.412	J	ng/l	1.87	0.307
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.87	0.211
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.87	0.352
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.87	0.221
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	1.25
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.644
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	0.292
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.87	0.472
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	0.285
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	1.13
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	0.607
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.243
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.918
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	0.543
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.753
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.348
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.306
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	0.232

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 06/02/20 01:41
 Analyst: RS
 TCLP/SPLP Extraction Date: 05/29/20 17:22

Extraction Method: ALPHA 23528
 Extraction Date: 05/31/20 12:30

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01,03,10-17 Batch: WG1376228-6					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	73		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 15:41
Analyst: RS
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04-07 Batch: WG1377253-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.356	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	0.272	J	ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 15:41
Analyst: RS
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04-07 Batch: WG1377253-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/03/20 15:58
Analyst: RS
TCLP/SPLP Extraction Date: 06/01/20 15:59

Extraction Method: EPA 537
Extraction Date: 06/03/20 06:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04-07 Batch: WG1377253-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.76	0.348
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210
Perfluorohexanoic Acid (PFHxA)	0.356	J	ng/l	1.76	0.289
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.76	0.198
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.208
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.444
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.863
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.708
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
 Analytical Date: 06/03/20 15:58
 Analyst: RS
 TCLP/SPLP Extraction Date: 06/01/20 15:59

Extraction Method: EPA 537
 Extraction Date: 06/03/20 06:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04-07 Batch: WG1377253-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		33-143

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/06/20 22:45
Analyst: SG
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 06/06/20 12:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04 Batch: WG1378662-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.352	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: OREGON RD SITE
Project Number: T0323-017-001-008

Lab Number: L2021816
Report Date: 06/08/20

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/06/20 22:45
Analyst: SG
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528
Extraction Date: 06/06/20 12:45

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 04 Batch: WG1378662-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	132		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 Batch: WG1376228-2 WG1376228-3								
Perfluorobutanoic Acid (PFBA)	116		109		67-148	6		30
Perfluoropentanoic Acid (PFPeA)	114		110		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	114		107		65-157	6		30
Perfluorohexanoic Acid (PFHxA)	120		114		69-168	5		30
Perfluoroheptanoic Acid (PFHpA)	123		112		58-159	9		30
Perfluorohexanesulfonic Acid (PFHxS)	116		108		69-177	7		30
Perfluorooctanoic Acid (PFOA)	114		109		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	132		110		49-187	18		30
Perfluoroheptanesulfonic Acid (PFHpS)	125		120		61-179	4		30
Perfluorononanoic Acid (PFNA)	123		114		68-171	8		30
Perfluorooctanesulfonic Acid (PFOS)	112		110		52-151	2		30
Perfluorodecanoic Acid (PFDA)	124		115		63-171	8		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	112		94		56-173	17		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	124		105		60-166	17		30
Perfluoroundecanoic Acid (PFUnA)	116		112		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	130		112		38-156	15		30
Perfluorooctanesulfonamide (FOSA)	119		107		46-170	11		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		95		45-170	7		30
Perfluorododecanoic Acid (PFDoA)	117		108		67-153	8		30
Perfluorotridecanoic Acid (PFTrDA)	119		106		48-158	12		30
Perfluorotetradecanoic Acid (PFTA)	117		106		59-182	10		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 Batch: WG1376228-2 WG1376228-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		105		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		119		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		103		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		114		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		99		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		101		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		111		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		101		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		114		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		109		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		107		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		125		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		98		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		109		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		48		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		101		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		111		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		90		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 05-07 Batch: WG1377253-2 WG1377253-3								
Perfluorobutanoic Acid (PFBA)	110		113		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	106		107		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	96		99		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	113		116		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	116		126		58-159	8		30
Perfluorohexanesulfonic Acid (PFHxS)	105		108		69-177	3		30
Perfluorooctanoic Acid (PFOA)	107		111		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	116		112		49-187	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	105		111		61-179	6		30
Perfluorononanoic Acid (PFNA)	118		116		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	92		100		52-151	8		30
Perfluorodecanoic Acid (PFDA)	116		129		63-171	11		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	72		72		56-173	0		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	112		133		60-166	17		30
Perfluoroundecanoic Acid (PFUnA)	112		114		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	99		108		38-156	9		30
Perfluorooctanesulfonamide (FOSA)	93		102		46-170	9		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	110		113		45-170	3		30
Perfluorododecanoic Acid (PFDoA)	122		120		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	128		132		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	112		111		59-182	1		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 05-07 Batch: WG1377253-2 WG1377253-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		111		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		129		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		110		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107		123		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		110		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		97		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		108		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		104		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		111		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		118		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		112		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		75		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		100		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		56		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		80		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		90		33-143

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 04 Batch: WG1378662-2 WG1378662-3								
Perfluorobutanoic Acid (PFBA)	107		109		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	104		106		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	99		104		65-157	5		30
Perfluorohexanoic Acid (PFHxA)	112		113		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	110		116		58-159	5		30
Perfluorohexanesulfonic Acid (PFHxS)	109		109		69-177	0		30
Perfluorooctanoic Acid (PFOA)	110		112		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	144		118		49-187	20		30
Perfluoroheptanesulfonic Acid (PFHpS)	110		124		61-179	12		30
Perfluorononanoic Acid (PFNA)	111		113		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	104		111		52-151	7		30
Perfluorodecanoic Acid (PFDA)	97		106		63-171	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	82		85		56-173	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		118		60-166	2		30
Perfluoroundecanoic Acid (PFUnA)	104		116		60-153	11		30
Perfluorodecanesulfonic Acid (PFDS)	110		110		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	102		112		46-170	9		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	106		122		45-170	14		30
Perfluorododecanoic Acid (PFDoA)	114		116		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	109		114		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	118		124		59-182	5		30

Lab Control Sample Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 04 Batch: WG1378662-2 WG1378662-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		103		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	127		125		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		111		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		102		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		101		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		90		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		112		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		89		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		104		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		83		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		74		33-143

Matrix Spike Analysis

Batch Quality Control

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 QC Batch ID: WG1376228-4 QC Sample: L2021816-03 Client ID: TP-54-E5												
Perfluorobutanoic Acid (PFBA)	8.55J	500	588	118		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	18.3J	500	600	120		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	30.2	443	535	114		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	106	500	719	123		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	19.0J	500	640	128		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	992	456	1530	118		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	86.7	500	620	107		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	475	518	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	60.0	475	712	137		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	500	562	112		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	1040	463	1650	132		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	500	572	114		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	480	486	101		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	500	587	117		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	500	599	120		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	483	546	113		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	500	567	113		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	500	505	101		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	500	584	117		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	500	621	124		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	500	599	120		-	-		59-182	-		30

Matrix Spike Analysis**Batch Quality Control****Project Name:** OREGON RD SITE**Project Number:** T0323-017-001-008**Lab Number:** L2021816**Report Date:** 06/08/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 QC Batch ID: WG1376228-4 QC Sample: L2021816-03 Client ID: TP-54-E5

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	133				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	136				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106				31-159

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 QC Batch ID: WG1376228-5 QC Sample: L2021816-10 Client ID: TP-52-F1						
Perfluorobutanoic Acid (PFBA)	1.70J	1.86	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.06J	1.23J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.476J	0.470J	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.67	2.35	ng/l	13		30
Perfluoroheptanoic Acid (PFHpA)	1.34J	0.878J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	16.6	16.4	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	2.26	2.02	ng/l	11		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	1.12J	1.09J	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.450J	0.918J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	22.8	20.1	ng/l	13		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01,03,10-17 QC Batch ID: WG1376228-5 QC Sample: L2021816-10 Client ID: TP-52-F1						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		78		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		98		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		89		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		74		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		99		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		85		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		87		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		61		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		82		33-143

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 05-07 QC Batch ID: WG1377253-6 QC Sample: L2021816-07 Client ID: TP-54-G3						
Perfluorobutanoic Acid (PFBA)	ND	0.410J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.736J	0.768J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.933J	0.963J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.539J	0.561J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.90	1.94	ng/l	2		30
Perfluorooctanoic Acid (PFOA)	ND	0.262J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.48	8.81	ng/l	65	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	16.2	14.1	ng/l	14		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis **Batch Quality Control**

Project Name: OREGON RD SITE

Project Number: T0323-017-001-008

Lab Number: L2021816

Report Date: 06/08/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 05-07 QC Batch ID: WG1377253-6 QC Sample: L2021816-07 Client ID: TP-54-G3						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		101		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		98		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		89		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		82		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		85		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		116		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		82		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		75		33-143

Project Name: OREGON RD SITE**Lab Number:** L2021816**Project Number:** T0323-017-001-008**Report Date:** 06/08/20**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021816-01A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-01X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-01X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-01X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-01X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-01X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-02A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-02X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-02X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-02X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-02X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-02X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-03A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-03X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-03X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-03X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-03X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-03X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-04A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-04X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-04X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-04X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-04X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)

Project Name: OREGON RD SITE**Lab Number:** L2021816**Project Number:** T0323-017-001-008**Report Date:** 06/08/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021816-04X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-05A	Plastic 8oz unpreserved	A	N/A	N/A	2.9	Y	Absent		-
L2021816-05X	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-05X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-05X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-05X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-05X9	Plastic 8oz unpreserved	NA	NA			Y	Absent		-
L2021816-06A	Plastic 8oz unpreserved	A	N/A	N/A	2.9	Y	Absent		-
L2021816-06X	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-06X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-06X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-06X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-06X9	Plastic 8oz unpreserved	NA	NA			Y	Absent		-
L2021816-07A	Plastic 8oz unpreserved	A	N/A	N/A	2.9	Y	Absent		-
L2021816-07X	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-07X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-07X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-07X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-07X9	Glass 250ml/8oz unpreserved	NA	NA			Y	Absent		-
L2021816-08A	Plastic 8oz unpreserved	A	N/A	N/A	2.9	Y	Absent		HOLD-537(28)
L2021816-09A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-09X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-09X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-09X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-09X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		HOLD-537(28)
L2021816-09X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-10A	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-10B	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-

Project Name: OREGON RD SITE**Lab Number:** L2021816**Project Number:** T0323-017-001-008**Report Date:** 06/08/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021816-10C	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-10D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-10X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-10X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-10X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-10X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-10X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-11A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-11X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-11X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-11X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-11X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-11X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-12A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-12X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-12X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-12X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-12X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-12X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-13A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-13X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-13X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-13X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-13X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-13X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-14A	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-14B	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-14C	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-

Project Name: OREGON RD SITE**Lab Number:** L2021816**Project Number:** T0323-017-001-008**Report Date:** 06/08/20**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2021816-14D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		-
L2021816-14X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-14X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-14X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-14X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-14X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-15A	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		-
L2021816-15B	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		-
L2021816-15C	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		-
L2021816-15D	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		-
L2021816-15X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-15X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-15X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-15X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-15X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-16A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-16X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-16X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-16X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-16X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-16X9	Tumble Vessel	A	NA		2.9	Y	Absent		-
L2021816-17A	Plastic 8oz unpreserved	A	NA		2.9	Y	Absent		-
L2021816-17X	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-17X1	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-17X2	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-17X3	Plastic 250ml unpreserved Extracts	A	NA		2.9	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2021816-17X9	Tumble Vessel	A	NA		2.9	Y	Absent		-

Project Name: OREGON RD SITE
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PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8
Perfluorododecanoic Acid	PFDaA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDaDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCS D	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



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- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

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REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.**EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 NEW YORK CHAIN OF CUSTODY		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page <i>1</i> of <i>2</i>		Date Rec'd in Lab <i>05/28/20</i>		ALPHA Job # <i>L2021816</i>	
Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		Project Information Project Name: <i>Oregon Rd Site</i> Project Location: <i>Olean NY</i> Project # <i>TD323-617-001-008</i> (Use Project name as Project #) ☐		Deliverables ☐ ASP-A ☐ ASP-B ☐ EQUIS (1 File) ☐ EQUIS (4 File) ☐ Other		Billing Information ☐ Same as Client Info PO #	
Client Information Client: <i>TunnKey Env. Restoration</i> Address: <i>2558 Hamburg Turnpike</i> Phone: Fax: Email: <i>MLesakowski@bm-tk.com</i>		Project Manager: ALPHAQuote #: Turn-Around Time Standard ☐ Due Date: Rush (only if pre approved) ☒ # of Days: <i>5 Days</i>		Regulatory Requirement ☐ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:			
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments: <i>Cat B</i> Please specify Metals or TAL.				ANALYSIS		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)		Total Bottles	
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date Time		Sample Matrix	Sampler's Initials	SPLP PFAS			Sample Specific Comments
<i>21816-01</i>	<i>TP-54-A5</i>	<i>5/27/2020</i>	<i>11:00</i>	<i>Soil</i>	<i>CMC</i>	<i>X</i>			
<i>-02</i>	<i>TP-54-B5</i>		<i>10:35</i>			<i>X</i>			
<i>-03</i>	<i>TP-54-E5</i>		<i>11:10</i>			<i>X</i>			
<i>-04</i>	<i>TP-54-F5</i>		<i>11:14</i>			<i>X</i>			
<i>-05</i>	<i>TP-54-G1</i>		<i>10:45</i>			<i>X</i>			<i>hold</i>
<i>-06</i>	<i>TP-54-G2</i>		<i>10:47</i>			<i>X</i>			<i>hold</i>
<i>-07</i>	<i>TP-54-G3</i>		<i>10:49</i>			<i>X</i>			<i>hold</i>
<i>-08</i>	<i>TP-54-G4</i>		<i>10:51</i>			<i>X</i>			<i>hold</i>
<i>-09</i>	<i>TP-54-G5</i>		<i>10:53</i>			<i>X</i>			
<i>-10</i>	<i>TP-52-F1</i>	<i>✓</i>	<i>11:36</i>	<i>✓</i>	<i>✓</i>	<i>X</i>			
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type <i>D</i> Preservative <i>A</i>		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)	
Relinquished By: <i>Charlotte Clark</i> <i>ASR</i>		Date/Time <i>5/27/2020 15:00</i> <i>5/27/2020 15:55</i>		Received By: <i>ASR</i> <i>ASR</i>		Date/Time <i>5/27/2020 15:00</i> <i>5/27/2020 15:55</i>			

APPENDIX C

MASTER EROSION CONTROL PLAN

MASTER EROSION CONTROL PLAN

OREGON ROAD SITE
BCP SITE No. C905045
OLEAN, NEW YORK

Revised September 2020

0311-019-001

Prepared for:
Homer Street Properties, LLC

Prepared By:



Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0599

In Association With:



TurnKey Environmental Restoration, LLC
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1.0 INTRODUCTION

1.1 Background

The BCP property, located at the northwest corner of Oregon Road and Homer Street (Tax ID No. 94.001-2-13.2 and 94.001-2-13.8) is situated in a residential, commercial and industrial zoned area of the Town of Olean, Cattaraugus County, New York and consists of two parcels totaling 24.57-acres. The Site is currently vacant land with green areas and paved asphalt access road.

The Site was used for oil storage from at least the late 1800s, likely associated with the former Vacuum Oil and subsequently Standard Oil refiner in Olean. The tanks appear to have been removed in the 1960s. Historically, nearby adjacent properties were also developed and used in association with oil refining operations and petroleum storage. The Site is currently vacant land.

1.2 Purpose and Scope

This Master Erosion Control Plan (MECP) was prepared to provide guidance during remedial action activities since erosion control will be a critical component of preventing the potential migration of contaminants off-site during excavation activities.

2.0 POTENTIAL EROSION AND SEDIMENT CONTROL CONCERNS

Potential areas and items of concern during remedial action activities may include the following:

- Remediated areas or off-site properties adjacent to unremediated parcels need protection so they do not become impacted by Site operations.
- Runoff from soil stockpiles, if any, will require erosion controls.
- Surface slopes need to be minimized as much as practical to control sediment transfer.
- Soil/fill excavated will require proper handling and disposal.

3.0 EROSION AND SEDIMENT CONTROL MEASURES

3.1 Background

Standard soil conservation practices need to be incorporated into remedial activities to mitigate soil erosion damage, off-site sediment migration, and water pollution from erosion. These practices combine vegetative and structural measures, many of which will be permanent in nature and become part of the completed project (i.e., grading). Other measures will be temporary and serve only during the construction stage. Selected erosion and sediment control measures will meet the following criteria:

- Incorporate temporary and permanent erosion control measures.
- Remove sediment from sediment-laden storm water before it leaves the Site.

3.2 Temporary Measures

Temporary erosion and sedimentation control measures and facilities will be used during construction. These temporary measures will be installed and maintained until they are either no longer needed or until such time as permanent measures are installed and become effective. Erosion and sediment controls shall be installed in accordance with the standards and specifications presented in Attachment D-1. At a minimum, the following temporary measures will be used:

- Silt fencing, tubular silt socks
- Cautious placement, compaction and grading of stockpiles

3.2.1 Silt Fencing

Remedial activities may result in surface water flow to drainage ditches and adjacent properties. Silt fencing or tubular silt socks will be the primary sediment control measure used in these areas. Prior to extensive soil excavation or grading activities, silt fences or silt socks will be installed along the perimeter of all construction areas. The orientation of the fencing will be adjusted as necessary as the work proceeds to accommodate changing site conditions.

If necessary, intermediate fencing/socks will be used upgradient of the perimeter fencing/socks to help lower surface water runoff velocities and reduce the volume of sediment to perimeter fencing/socks. Stockpiles will also be surrounded with silt fencing/socks.

As sediment collects, the silt fences/socks will be cleaned as necessary to maintain their integrity. Removed sediment will be used elsewhere on-site as general fill. Sediment to be used as backfill on the site will comply with import and/or reuse criteria. All perimeter silt fences/socks will remain in place until construction activities in an area are completed and vegetative cover has been established.

3.2.2 Cautious Placement of Stockpiles

Excavation activities may produce stockpiles of soil and subgrade soil/fill materials. Careful placement and construction of stockpiles will be required to control erosion. Stockpiles will be placed no closer than 50 feet from storm water inlets and parcel boundaries. Additionally, stockpiles will be graded and compacted as necessary for positive surface water runoff and dust control. Stockpiles will be secured with proper erosion controls to minimize runoff and dust generation.

3.3 Permanent Control Measures during Site Redevelopment

Permanent erosion and sedimentation control measures and structures will be installed as soon as practical during construction for long-term erosion protection. Examples of permanent erosion control measures could include:

- Minimizing the potential contact with, and migration of, subsurface soil/fill through the placement of a crushed stone in areas not covered with structures, roads, parking areas, sidewalks, etc.
- Planting and maintaining vegetation.
- Limiting runoff flow velocities to the extent practical.

4.0 CONSTRUCTION MANAGEMENT PRACTICES

4.1 General

The following general construction practices should be evaluated for erosion and sedimentation control purposes during remedial activities:

- Clearing and grading only as much area as is necessary to accommodate the construction needs to minimize disturbance of areas subject to erosion (i.e., phasing the work).
- Covering exposed or disturbed areas of the Site as quickly as practical.
- Installing erosion and sediment control measures before disturbing the Site subgrade.
- Eliminating both on-site and off-site tracking of soil by vehicles by using routine entry/exit routes. When on-site and off-site tracking of soil is evident, use of a truck wash station will be evaluated.

4.2 Monitoring, Inspection and Maintenance

All erosion and sedimentation controls described in this Plan will be inspected by a qualified representative of the Site Owner within 24 hours of a heavy rainfall event (defined as more than 0.5 inches of precipitation in a 24-hour period) and repaired or modified as necessary to effectively control erosion or turbidity problems. Inspections should include areas under construction, stockpile areas, erosion control devices (i.e., silt fences, silt socks, storm drain inlet protection, etc.) and locations where vehicles enter and leave the site. Routine inspections of the entire Site should also be made on a weekly basis during development.

If inspections indicate problems, corrective measures should be implemented within 24 hours. A report summarizing the scope of the inspection, name of the inspector, date, observations made, and a description of the corrective actions taken should be completed. Attachment D-2 includes the Inspection and Maintenance Report Form.

4.2.1 Implementation

Erosion controls and features shall, at all times, be properly constructed, operated, and maintained in accordance with regulatory requirements and good engineering and construction practices. Erosion control measures and activities will be conducted in accordance with currently accepted Best Management Practices (BMPs).

Erosion control monitoring, inspection, and maintenance are an integral part of Site storm water and erosion control. The key elements of the monitoring effort include the following:

- Site inspections and maintenance
- BMPs monitoring
- Recordkeeping
- Review and modifications
- Certification of compliance

4.2.2 Site Inspections and Maintenance Practices

The temporary erosion control features will be maintained until no longer needed or permanent erosion control methods are installed. Site inspections are required every seven days or within 24 hours of a rainfall of 0.5 inches or greater. All disturbed areas, areas for material storage, locations where vehicles enter or exit the site, and all of the erosion and sediment controls identified as part of this Plan must be inspected. Controls must be in good operating condition until the affected area they protect has been completely stabilized and the construction activity is complete. If a repair is necessary, it must be completed within 24-hours of receipt of a report or notice, if practical. Inspection for specific erosion and sediment controls will include the following:

- Silt fence/silt socks will be inspected to determine the following:
 - 1) Depth
 - 2) Condition of fabric
 - 3) That the fabric is attached to the posts
 - 4) That the fence posts are firmly in the ground
- The silt fences/silt socks will be inspected weekly and within 24 hours of a 0.5 inch or greater storm event.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and other potential erosion control problems.
- The Contractor shall designate individual(s) that will be responsible for erosion control, maintenance, and repair activities. The designated individual will also be responsible for inspecting the site and filling out the inspection and maintenance report.

- Personnel selected for inspection and maintenance responsibilities will receive training as directed by the Engineer. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on-site in good working order.

The individual inspecting the Site must record any damages or deficiencies on the Inspection and Maintenance Report Form in Attachment D-2. This form can be used to request maintenance and repair and to document inspection and maintenance activities. Damages or deficiencies must be corrected as soon as possible after the inspection. Any changes that may be required to correct deficiencies in this Plan should also be made as soon as possible, but in no case later than seven days after the inspection.

4.2.3 Recordkeeping

A copy of the MECP and inspection and maintenance records must be kept at the Site from the time construction activities begins until the Site is stabilized. These documents will be made available upon request to regulatory agency representatives or members of the public.

4.2.4 Modifications to the Storm Water Management and Erosion Control Plan

During the course of construction, unanticipated changes may occur that affect this MECP such as schedule changes, phasing changes, staging area modifications, off-site drainage impacts, and repeated failures of designed controls. Any changes to the activities and controls identified in this Plan must be documented and the Plan revised accordingly. Certification of revisions to this plan shall be included at the end of the document.

ATTACHMENT D-1

EROSION CONTROL DETAILS

FINAL

New York State Standards and Specifications for Erosion and Sediment Control



November 2016



NEW YORK
STATE OF
OPPORTUNITY

**Department of
Environmental
Conservation**

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and

roll down. The area beyond the fence must be undisturbed or stabilized.

3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.

Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.

Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

Super Silt Fence

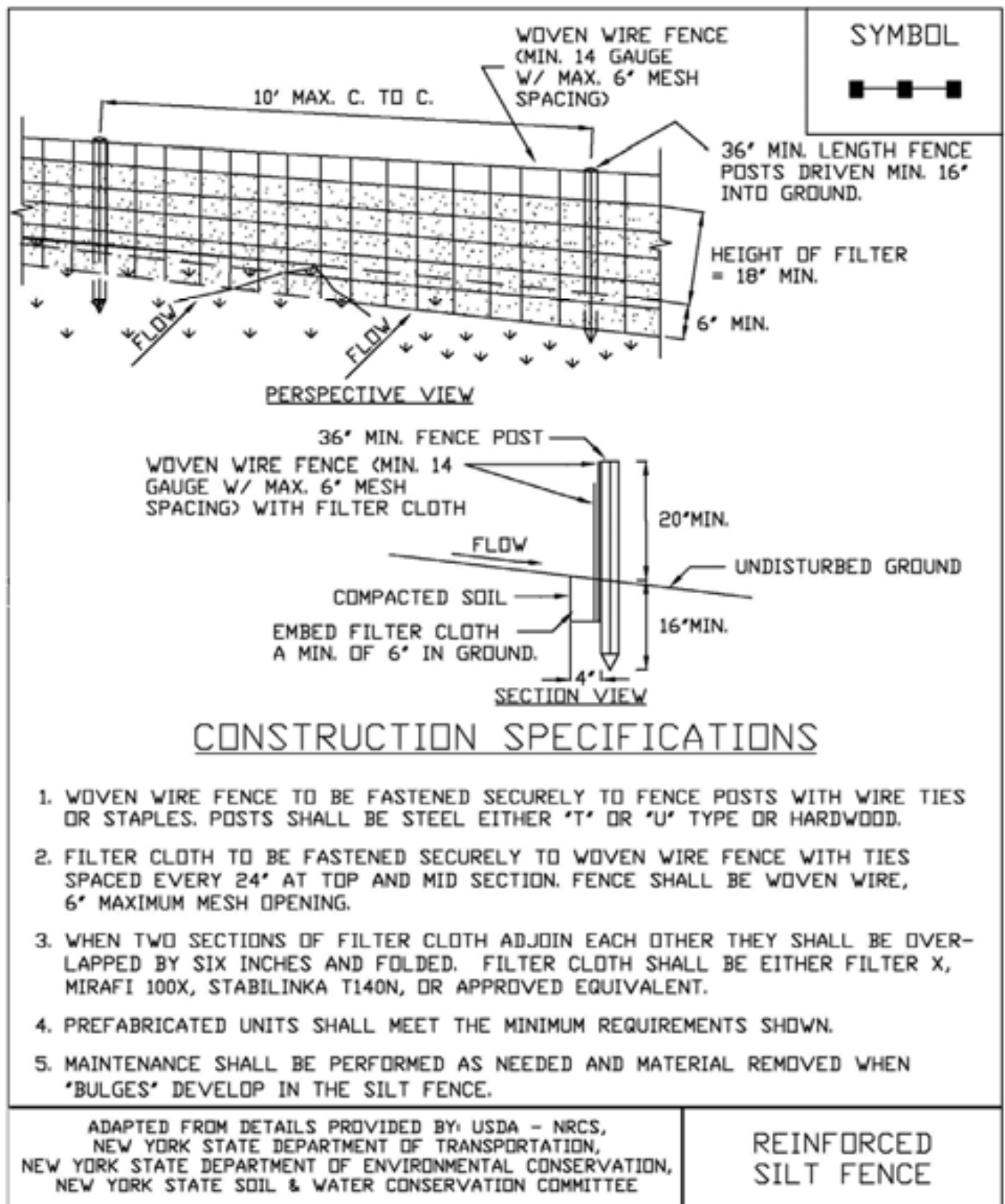


2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.
4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK



that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

- The flat dimension of the sock shall be at least 1.5 times the nominal diameter.
- The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50

* Length in feet



Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

- Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.
- Diameters designed for use shall be 12" – 32" except
- The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**
- The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.
8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.
3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.
4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.
5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

Maintenance

1. Traffic shall not be permitted to cross filter socks.
2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

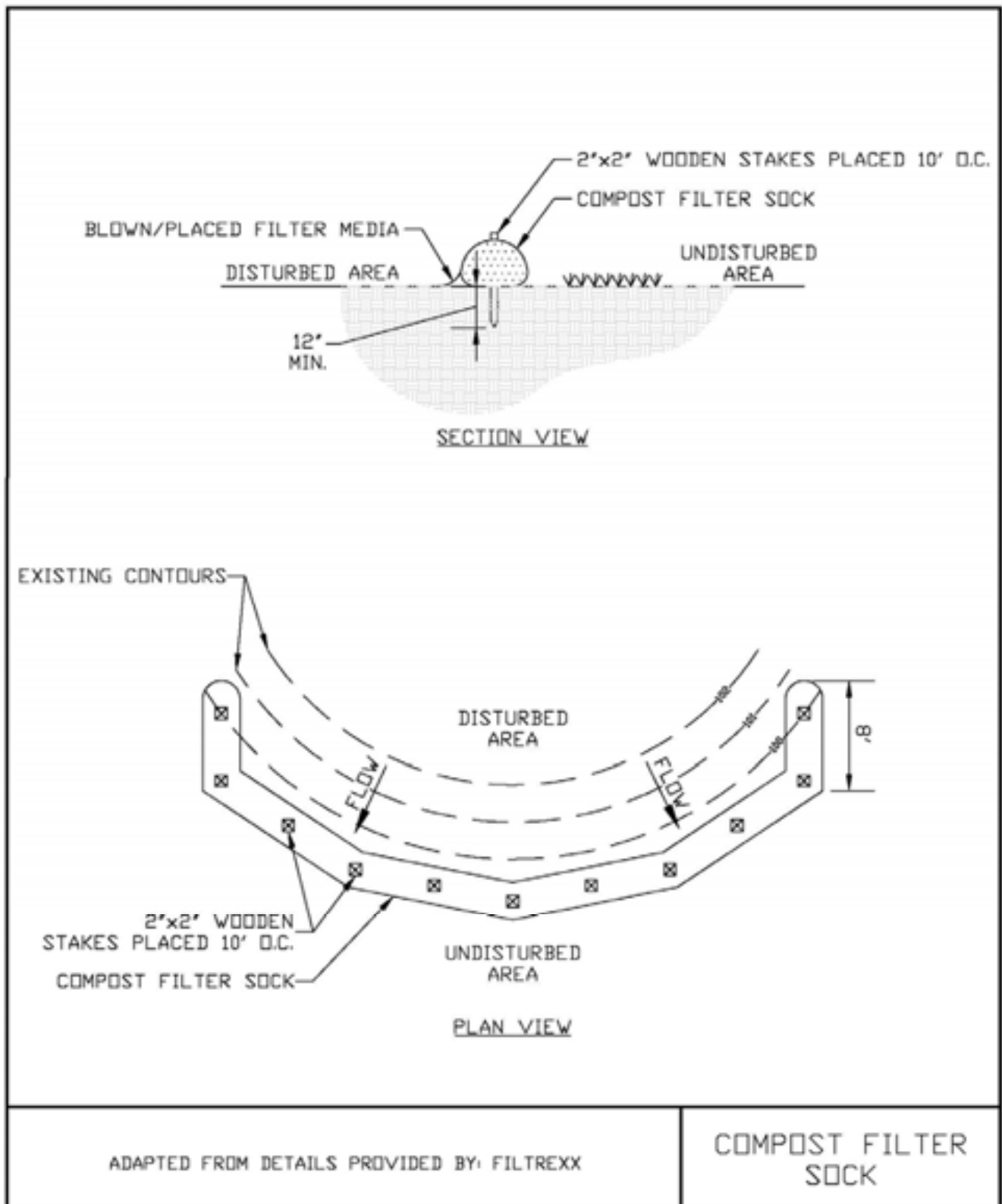
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



ATTACHMENT D-2

INSPECTION AND MAINTENANCE REPORT FORM

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Regular Inspector: _____ Rainfall Event Inspector: _____ Rainfall (inches): _____

Contractor Activities	OK	NO	N/A	Notes
Are construction onsite traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses?				
Are locations of temporary soil stock piles of construction materials in approved areas?				
Is there any evidence of spills and resulting cleanup procedures?				
General Erosion & Sediment Controls				
Are sediment and erosion BMPs installed in the proper location and according to the specifications set out in the SWM & ECP?				
Are all operational storm drain inlets protected from sediment inflow?				
Do any seeded or landscaped areas require maintenance, irrigation, fertilization, seeding or mulching?				
Is there any evidence that sediment is leaving the site?				
Is there any evidence of erosion or cut fill slopes?				
Perimeter Road Use				
Does much sediment get tracked on to the perimeter road?				
Is the gravel clean or is it filled with sediment?				
Does all traffic use the perimeter road to leave the site?				
Is maintenance or repair required for the perimeter road?				

Inspected by (Signature) _____

Date _____

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Inspector: _____

STABILIZATION MEASURES					
Area	Date Since Last Disturbed	Date of Next Disturbance	Stabilized? Yes/No	Stabilized with	Condition

Stabilization Required: _____

To be performed by: _____ On or before: _____

APPENDIX D

HEALTH AND SAFETY PLAN (INCLUDING COMMUNITY AIR MONITORING PLAN)

SITE HEALTH AND SAFETY PLAN for BROWNFIELD CLEANUP PROGRAM REMEDIAL ACTIVITIES

**OREGON ROAD SITE
OLEAN, NEW YORK**

Revised September 2020

T0311-019-001

Prepared for:
Homer Street Properties, LLC

Prepared By:



Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
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In Association With:



TurnKey Environmental Restoration, LLC
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**OREGON ROAD SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES**

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: _____ Thomas H. Forbes, P.E.

Project Manager: _____ Michael A. Lesakowski

Designated Site Safety and Health Officer: _____ Lori E. Riker

Acknowledgement:

I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**OREGON ROAD SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES**

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC employees (referred to jointly hereafter as “Benchmark-TurnKey”) during Remedial Action activities at the Oregon Road Site (Site) located in Olean, Cattaraugus County, New York. This HASP presents procedures for Benchmark-TurnKey employees who will be involved with remedial action field activities; it does not cover the activities of other contractors, subcontractors, or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark-TurnKey accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The Site consists of two parcels, located at the northwest corner of Oregon Road and Homer Street (Tax ID No. 94.001-2-13.2 and 94.001-2-13.8), totaling approximately +/- 24.57 acres, located in the Town of Olean, Cattaraugus County, New York. The Site is currently vacant with green areas and paved asphalt access road.

The Site was used for oil storage from at least the late 1800s, likely associated with the former Vacuum Oil and subsequently Standard Oil refiner in Olean. The tanks appear to have been removed in the 1960s. Historically, nearby adjacent properties were also developed and used in association with oil refining operations and petroleum storage. The Site is currently vacant land.

1.3 Known and Suspected Environmental Conditions

Previous investigations have confirmed that historic operation as an oil storage facility have impacted that Site, which will require remediation prior to redevelopment. Previous investigation findings include:

- On-Site soil/fill materials are impacted with arsenic and semi-volatile organic compounds (SVOC) tentatively identified compounds above (TICs) exceeding Part 375 Commercial Soil Cleanup Objectives (CSCOs). Per- and polyfluoroalkyl substances (PFAS) were identified on-site, concentrations proximate wells MW-12 and MW-13 were an order of magnitude higher than other locations. Synthetic precipitating leaching procedure (SPLP) concentrations at these two locations also exceeded the NYSDEC guidance levels.

The RI was performed in support of the BCP to determine the nature and extent of impacts from these known and suspect environmental conditions on this parcel. Findings of the RI include:

Underground Piping Assessment

Apparent abandoned underground petroleum piping was encountered in several test pits during the RI. Most of the piping was found on the northern and eastern portions of the Site; however, additional piping was found on the southern portion of the Site. Pipe diameters ranged between 4 and 8-inches.

Due to many of the encountered pipes being formerly cut off or capped with metal plating, most of the pipes were tapped and found to be empty. One sample of liquid pipe contents was collected for waste characterization and was not characteristically hazardous. The following compounds were detected: 1,2,4-trimethylbenzene (39 ug/L), benzene (4.88 ug/L), and cyclohexane (108 ug/L), methylcyclohexane (111 ug/L); and the liquid was not ignitable (flashpoint > 200 degrees F) or corrosive (pH = 5.78 SU)

Groundwater

During the historic and RI sampling event, petroleum-like odors were noted in monitoring wells MW-1 through MW-4, MW-6, MW-8, MW-9, and MW-11. Apparent petroleum product was observed floating on the water during drilling of historic temporary well MW-2. Petroleum impacts observed in the groundwater monitoring wells is reasonably attributable to the GCS present on-site.

VOC-TICs were detected up to 334 ug/L and SVOC-TICs were detected up to 3,946 ug/L indicating weather petroleum impacts. PFAS were detected at concentrations exceeding action levels at MW-10, MW-12, and MW-13.

1.4 Parameters of Interest

Based on the previous investigations, previous Site uses, and RI activities, constituents of potential concern (COPCs) in soil and groundwater at the Site include:

- **Surface, Near-Surface, Subsurface Soil/Fill** – GCS, arsenic, SVOCs, and PFAS.
- **Groundwater** – VOC-TICs, SVOC-TICs and PFAS.

1.5 Overview of Remedial Activities

Benchmark-TurnKey personnel will be on-site to observe and perform remedial activities. The field activities to be completed as part of the remedial are described below.

1. Removing and disposing/recycling subsurface piping. Extracting and properly disposing off-site the contents of the piping. Piping extending beyond the property line will be cut, capped, and located by GPS.
2. Excavating and disposing off-site GCS and SVOC-impacted soil/fill to meet SSALs.
3. Stabilizing PFAS-impacted surface soil in-situ to meet NYSDEC leachability guidance levels.
4. Installing an activated carbon barrier downgradient of well MW-12 to address PFAS-impacted groundwater.
5. Managing impacted groundwater and stormwater during remedial activities.
6. Reconstructing the portion of the on-site tributary that flows into Two Mile Creek proximate the GCS area and restoring it to either its current condition or a state that provides improved habitat.
7. Re-grading the Site to improve redevelopment opportunities and raising the on-site tributary to Two Mile Creek top-of-bank grades to reduce potential flooding.
8. Waste characterization sampling.
9. Post-excavation sampling.
10. Soil cover placement.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establish the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

Benchmark-TurnKey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark-TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark-TurnKey's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael A. Lesakowski***. The Project Manager has the responsibility and authority to direct all Benchmark-TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the

program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark-TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Ms. Lori Riker***. The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark-TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark-TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE;

reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Test Pit Contractor and Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark-TurnKey's HASP. Benchmark-TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non- Benchmark/TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark-TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark-TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation (NYSDEC)). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in impacts to Site soils and groundwater. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

1. **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

2. Petroleum Hydrocarbons:

- **2-Butonone (MEK) (CAS #78-93-3)** is a colorless fairly volatile liquid with a pleasant pungent odor. Acute inhalation exposure to MEK in humans results in irritation to the eyes, nose, and throat. Limited information is available on the chronic (long-term) effects of MEK in humans; chronic inhalation studies in animals have reported slight neurological, liver, kidney, and respiratory effects.
- **1,3,5-Trimethylbenzene (CAS #108-67-8)** is a colorless, odorless flammable liquid. The substance is irritating to the eyes, the skin and the respiratory tract. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system.
- **Isopropylbenzene (CAS #98-82-8)** is a colorless, gasoline-like odor flammable liquid. Acute exposure typically results in irritation of the eyes, mucous membranes and upper respiratory tract. Can be absorbed through the skin. Possible central nervous system depressant. Symptoms may include irritation, dizziness, nausea, lack of coordination and narcosis.
- **N-Propylbenzene (CAS #103-65-1)** is a colorless to pale yellow flammable liquid. Inhalation or contact may irritate or burn skin and eyes. In case fire, smoke-vapor may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation.
- **Benzene (CAS #71-43-2)** is a clear, colorless, highly flammable and volatile liquid with a sweet gasoline-like odor. Exposure to benzene causes neurological symptoms and affects the bone marrow causing aplastic anemia, excessive bleeding and damage to the immune system. Benzene is a known human carcinogen and is linked to an increased risk of developing lymphatic and hematopoietic cancers, acute myelogenous leukemia, as well as chronic lymphocytic leukemia.
- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.
- **Toluene (CAS #108-88-3)** is a common component of paint thinners and automobile fuel. Acute exposure predominantly results in central nervous system depression. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may cause removal of lipids from the skin, resulting in dry, fissured dermatitis.
- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may also cause removal of lipids from the skin, producing

dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

3. **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.
4. **Per- and Polyfluoroalkyl Substances (PFAS)** are a family of human-made chemicals that are found in a wide range of products used by consumers and industry. PFAS have been used in a variety of applications including stain- and water-resistant fabrics and carpeting, cleaning products, paints, and fire-fighting foams. While the science surrounding potential health effects of PFAS is developing, current evidence suggests that the bioaccumulation of certain PFAS may cause serious health conditions.

With respect to the anticipated remedial activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 8.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 8.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 13.0).

3.2 Physical Hazards

Remedial field activities at the Oregon Road Site may present the following physical hazards:

- Physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- Heat/cold stress to employees during the summer/winter months (see Section 11).
- Slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during remedial operations and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

Personnel performing remedial activities at the Site (such as, but not limited to, equipment operators and general laborers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark-TurnKey's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.
- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.

- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to Site visitors and other non- Benchmark-TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark-TurnKey employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for Benchmark-TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark-TurnKey. Health Works is located in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark-TurnKey Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 years age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty

on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark-TurnKey will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

Benchmark-TurnKey employees shall conform to the following safe work practices during on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark-TurnKey occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- Personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the “buddy” system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.
- Employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark-TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark-TurnKey personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than two feet.

7.0 COVID-19 SAFE WORK PROCEDURES

All Benchmark -TurnKey employees shall conform to the following daily protocols during all on-site work activities for the duration of the COVID-19 outbreak:

- Benchmark/TurnKey personnel shall complete and electronically submit to the corporate Health and Safety Director and/or his designee the daily health assessment form included as Attachment D. Any positive responses shall require evaluation prior to reporting for work.
- Visitors shall complete a paper copy of the health assessment form included in Attachment D prior to accessing the work area or field trailer. The form shall be completed in advance when possible; otherwise it shall be completed in the visitors personal vehicle or outside the work area with instruction that any positive responses require evaluation by Benchmark's corporate Health and Safety Director prior to allowing access to the Site. A visitor sign-in sheet will be filled out and maintained, with visitor health assessment forms, in the field trailer.
- Benchmark-TurnKey will ensure that there is an adequate supply of personal protective equipment (PPE), hand washing, and disinfecting chemicals at the Site. Supplies will be checked on a regular basis to avoid running out.
- All Benchmark-TurnKey employees must comply with the minimum 6-foot social distancing whenever possible. When this cannot be accomplished, PPE (masks; gloves and eye protection as needed) will be worn. Pre-shift or tailgate meetings will be held in a space large enough that employees can be 6 feet apart.
- For use in reducing exposure to COVID-19 the following face masks shall be used inside of equipment cabs and in the trailer:
 - Disposable surgical masks
 - KN-95
 - N-95
 - Self-made face mask provided it covers the nose and mouth
- All shared spaces, tools and equipment will be disinfected at a minimum of once per shift or at the beginning and end of each shift or before equipment or space is shared by another employee. Heavy equipment and vehicles

should also be disinfected at a minimum of the same frequency. This includes steering wheels, door handles, and all controls. Disinfection can be accomplished with a variety of different chemicals. Disinfectant wipes (ex. Chlorox wipes) or spray (ex. Lysol) are acceptable as is 70% alcohol or bleach solution (1/4 cup bleach to 1-gallon water). Nitrile gloves and safety glasses are required during the handling of disinfection chemicals. At no time is it permitted to mix cleaning chemicals. Only one cleaner is to be used at a time. The CDC guidance on cleaning hard, non-porous surfaces is included below:

- Follow labeled instructions on all containers.
 - Clean surface with soap and water to remove all visible debris and stains.
 - Rinse surface with clean water and wipe with clean towel.
 - Apply the disinfectant. To effectively kill the virus, make sure the surface stays wet with the disinfectant for at least 10 minutes before wiping with a clean towel.
 - Rinse with water and allow surface to air dry.
 - Remove gloves and discard.
 - Wash hands after removing gloves and handling any contaminated material, trash, or waste.
- Social distancing practices will be followed, and masks will be worn at all times if more than one person is inside the field trailer. A portable restroom will be set up on-site for Benchmark-TurnKey employee use. All surfaces in the field trailer and portable restroom will be disinfected at a minimum of once per shift or at the beginning and end of each shift or before equipment or space is shared by another employee.

8.0 PERSONAL PROTECTIVE EQUIPMENT

8.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in

conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

8.2 Protection Ensembles

8.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing. The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

8.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device.

The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded. Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

8.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen. Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.

- Hardhat.
- Optional gloves; escape mask; face shield.

8.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3. These requirements must be followed in addition to the COVID-19 PPE requirements as discussed in Section 7.0.

9.0 EXPOSURE MONITORING

9.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data. Weekly CAMP summary tables will be provided to the NYSDOH project manager on a weekly basis. Both the Department and NYSDOH project managers will be notified of any CAMP exceedances that required corrections actions or shut down of work within one business day.

9.1.1 On-Site Work Zone Monitoring

Benchmark-TurnKey personnel will conduct routine, real-time air monitoring during intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photoionization detector (PID) and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark-TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

Due to the proximity of the GCS excavation to the off-site residential properties, a permanent CAMP station will be located along this portion of the site boundary. The contractor will have an odor and dust suppressant on-site and ready for use during excavation and backfilling activities as soon as odors or particulates are detected.

9.1.2 Off-Site Community Air Monitoring

In addition to on-Site monitoring within the work zone(s), continuous monitoring at the downwind portion of the Site perimeter will be conducted for volatile organic

compounds and particulates. Upwind volatile organic compounds will be monitored at the start of each workday and periodically throughout the day. Upwind monitoring for particulates will be continuous while intrusive activities are ongoing. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined in the Generic Community Air Monitoring Plan and attached as Appendix C. Ground intrusive activities include soil/piping excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

9.2 Monitoring Action Levels

9.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark-TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (i.e., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark-TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not

suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.
- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m³ - Continue field operations.
- 50-150 mg/m³ - Don dust/particulate mask or equivalent
- Greater than 150 mg/m³ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. Instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

9.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 9.2.1 for Benchmark-TurnKey personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix C):

o ORGANIC VAPOR PERIMETER MONITORING:

- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.

- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
- If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review.

o **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

- If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.
2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

o **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

o **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

- Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed $150 \text{ ug}/\text{m}^3$ above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than $150 \text{ ug}/\text{m}^3$ above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ ug}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

10.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

10.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a “harmful quantity” of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40

CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

10.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment H2 of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

10.3 Spill Response

For spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.

- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of “speedy dry” granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

10.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 10.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

11.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark-TurnKey employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark-TurnKey field personnel for symptoms of heat/cold stress.

11.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.
- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark-TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

11.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
 1. **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.
 2. **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
 3. **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.
- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
 1. Shivering
 2. Apathy (i.e., a change to an indifferent or uncaring mood)
 3. Unconsciousness
 4. Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1. Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
2. Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
3. Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
 - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
 - At a workers request.
 - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
 - As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

12.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- **Exclusion Zone ("Hot Zone"):** The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. Personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 8.
- **Contamination Reduction Zone:** The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.
- **Support Zone:** The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to investigation and construction activities involving disruption or handling of Site soils or groundwater:

- **Exclusion Zone:** 50 foot radius from the outer limit of the sampling/construction activity.
- **Contaminant Reduction Zone:** 100 foot radius from the outer limit of the sampling/construction activity.
- **Support Zone:** Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark-TurnKey workers and their level of protection. The zone boundaries may be

changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

13.0 DECONTAMINATION

13.1 Decontamination for Benchmark-TurnKey Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. Benchmark-TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

13.2 Decontamination for Medical Emergencies

In the event of a minor, non-life-threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered “Immediately Dangerous to Life or Health.”

13.3 Decontamination of Field Equipment

The Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark-TurnKey personnel will conduct decontamination of tools used for sample collection purposes. It is expected that tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove visible foreign matter.
- Wash with detergent.
- Rinse parts with distilled-deionized water.
- Allow to air dry.
- Wrap parts in aluminum foil or polyethylene.

14.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark-TurnKey employees is not anticipated to be necessary to complete the remedial activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark-TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark-TurnKey's corporate Health and Safety Director. Benchmark-TurnKey employees shall not enter a confined space without these procedures and permits in place.

15.0 FIRE PREVENTION AND PROTECTION

15.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

15.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

15.3 Flammable and Combustible Substances

Storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. Tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

15.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

16.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented within Appendix A as Figure 1.

17.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation*. May 2010.

TABLES

TABLE 1
TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

OREGON ROAD SITE
OLEAN, NEW YORK

Parameter	Synonyms	CAS No.	Code	Concentration Limits ¹		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
2-Butanone	Methyl Ethyl Ketone, MEK	78-93-3	none	200	200	3000
1,2,4-Trimethylbenzene	Methylzylene	95-63-6	none	25	25	ND
1,3,5-Trimethylbenzene	Trimethyl benzene	108-67-8	none	25	25	ND
Isopropylbenzene	Cumene, 2-Phenylpropane	98-82-8	none	50	50	900
N-Propylbenzene	Propyl Benzene	103-65-1	none	--	--	ND
Benzene	Benzol, Phenyl hydride	71-43-2	Ca	1	0.5	500
Ethylbenzene	Ethylbenzol, Phenylethane	100-41-4	none	100	100	800
Toluene	Methyl benzene, Methyl benzol	108-88-3	C-300	200	50	500
Xylene, Total	o-, m-, p-isomers	1330-20-7	none	100	100	900
Semi-volatile Organic Compounds (SVOCs) ² : ppm						
Acenaphthene	none	83-32-9	none	--	--	--
Acenaphthylene	none	208-96-8	none	--	--	--
Anthracene	none	120-12-7	none	--	--	--
Benzo(a)anthracene	none	56-55-3	none	--	--	--
Benzo(a)pyrene	none	50-32-8	none	--	--	--
Benzo(b)fluoranthene	none	205-99-2	none	--	--	--
Benzo(ghi)perylene	none	191-24-2	none	--	--	--
Benzo(k)fluoranthene	none	207-08-9	none	--	--	--
Chrysene	none	218-01-9	none	--	--	--
Dibenz(a,h)anthracene	none	53-70-3	none	--	--	--
Fluoranthene	none	206-44-0	none	--	--	--
Fluorene	none	86-73-7	none	--	--	--
Indeno(1,2,3-cd)pyrene	none	193-39-5	none	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	none	10	10	250
Phenanthrene	none	85-01-8	none	--	--	--
Pyrene	none	129-00-0	none	--	--	--
Inorganic Compounds ² : mg/m ³						
Arsenic	none	7440-38-2	Ca	0.01	0.01	5

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. "--" = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.

C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.

IDLH = Immediately Dangerous to Life or Health.

ND indicates that an IDLH has not been determined.

TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.

TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)

TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.

TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.

Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximum exposure concentration allowable for 8 hours per day @ 40 hours per week

TABLE 2
POTENTIAL ROUTES OF EXPOSURE TO THE
CONSTITUENTS OF POTENTIAL CONCERN

OREGON ROAD SITE
OLEAN, NEW YORK

Activity ¹	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Water
Remedial Action Tasks			
1. In-Situ Stabilization of PFAS impacted Soil/Fill	x	x	x
2. Removing and disposing/recycling subsurface piping	x	x	x
3. Excavation of SVOC-Impacted Soil/Fill, Off-Site Disposal, & Backfill	x	x	x
4. GCS Excavation and Off-Site Disposal, & Backfill (including associated creek excavation and reconstruction)	x	x	x
5. Post-Excavation Sampling	x	x	x
7. Waste Characterization Sampling	x	x	x

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 3
REQUIRED LEVELS OF PROTECTION FOR REMEDIAL TASKS

OREGON ROAD SITE
OLEAN, NEW YORK

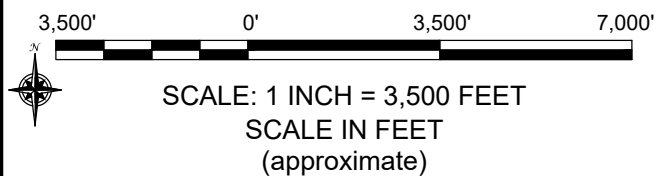
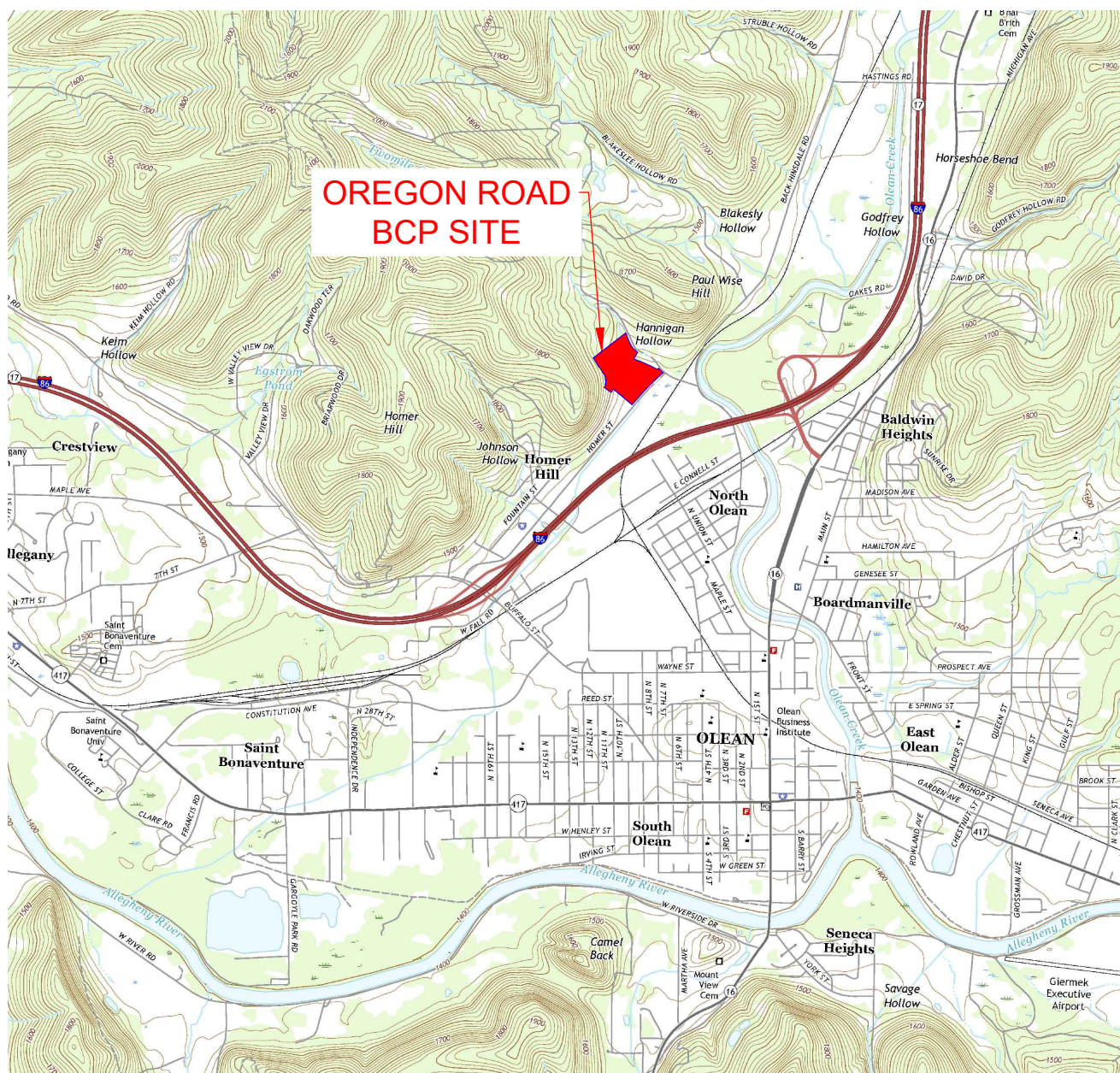
Activity	Respiratory Protection ¹	Clothing	Gloves ²	Boots ^{2,3}	Other Required PPE/ Modifications ^{2,4}
Remedial Action Tasks					
1. In-Situ Stabilization of PFAS impacted Soil/Fill	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Removing and disposing/recycling subsurface piping	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
3. Excavation of SVOC-Impacted Soil/Fill, Off-Site Disposal, & Backfill	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
4. GCS Excavation and Off-Site Disposal, & Backfill (including associated creek excavation and reconstruction)	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
5. Post-Excavation Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS
6. Waste Characterization Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS

Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equipped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present

FIGURES

FIGURE 1



QUADRANGLE LOCATION

NOTE: BASE MAP USGS OLEAN, NY QUADRANGLE 2016

SITE LOCATION & VICINITY MAP

HEALTH AND SAFETY PLAN

OREGON ROAD SITE
BCP SITE NO. C905045
OLEAN, NEW YORK

PREPARED FOR
HOMER STREET PROPERTIES, LLC



IN ASSOCIATION WITH



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0311-019-001

DATE: JUNE 2020

DRAFTED BY: RFL-CMC

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ATTACHMENT A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN for BROWNFIELD CLEANUP PROGRAM REMEDIAL ACTIVITIES

**OREGON ROAD SITE
OLEAN, NEW YORK**

May 2020

T0311-019-001

Prepared for:
Homer Street Properties, LLC

Prepared By:



Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0599

In Association With:



TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

**OREGON ROAD SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES
ATTACHMENT A: EMERGENCY RESPONSE PLAN**

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1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Remedial activities at the northwestern corner of Oregon Road and Homer Street in Olean, New York. This attachment of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	Heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: *Michael Lesakowski*

Work: (716) 856-0599

Mobile: (716) 818-3954

Corporate Health and Safety Director: *Thomas H. Forbes*

Work: (716) 856-0599

Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): *Lori Riker*

Work: (716) 856-0599

Mobile: (716) 844-1699

Alternate SSHO: *Nathan Munley*

Work: (716) 856-0635

Mobile: (716) 289-1072

OLEAN GENERAL HOSPITAL (ER):	(716) 373-2600
FIRE:	911
AMBULANCE:	911
OLEAN POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

Northwestern Corner of Homer Street and Oregon Road

Olean, New York 14760

Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure personnel entering the site understand an adequate method of internal communication. Unless personnel are otherwise informed, the following signals shall be used.

1. Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.
2. Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/ negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction SSHO to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (**Lori Riker** or **Nathan Munley**) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm

HEALTH & SAFETY PLAN
ATTACHMENT A: EMERGENCY RESPONSE PLAN

systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc.).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Hospital.
- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Erie County Medical Center (see Figure 1):

The following directions describe the best route from the Site to Erie County Medical Center located 1.2 miles away:

- Head **northeast** on **Homer Street** toward **Oregon Road**
- Turn **right** onto **Oregon Road**
- Turn **right** onto **River Street**
- Continue onto **E Forest Avenue**
- Turn **left** onto **N Union Street**
- At the traffic circle, take the **2nd exit** onto **Main Street**
- Olean General Hospital is located at **515 Main Street, Olean, New York**

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

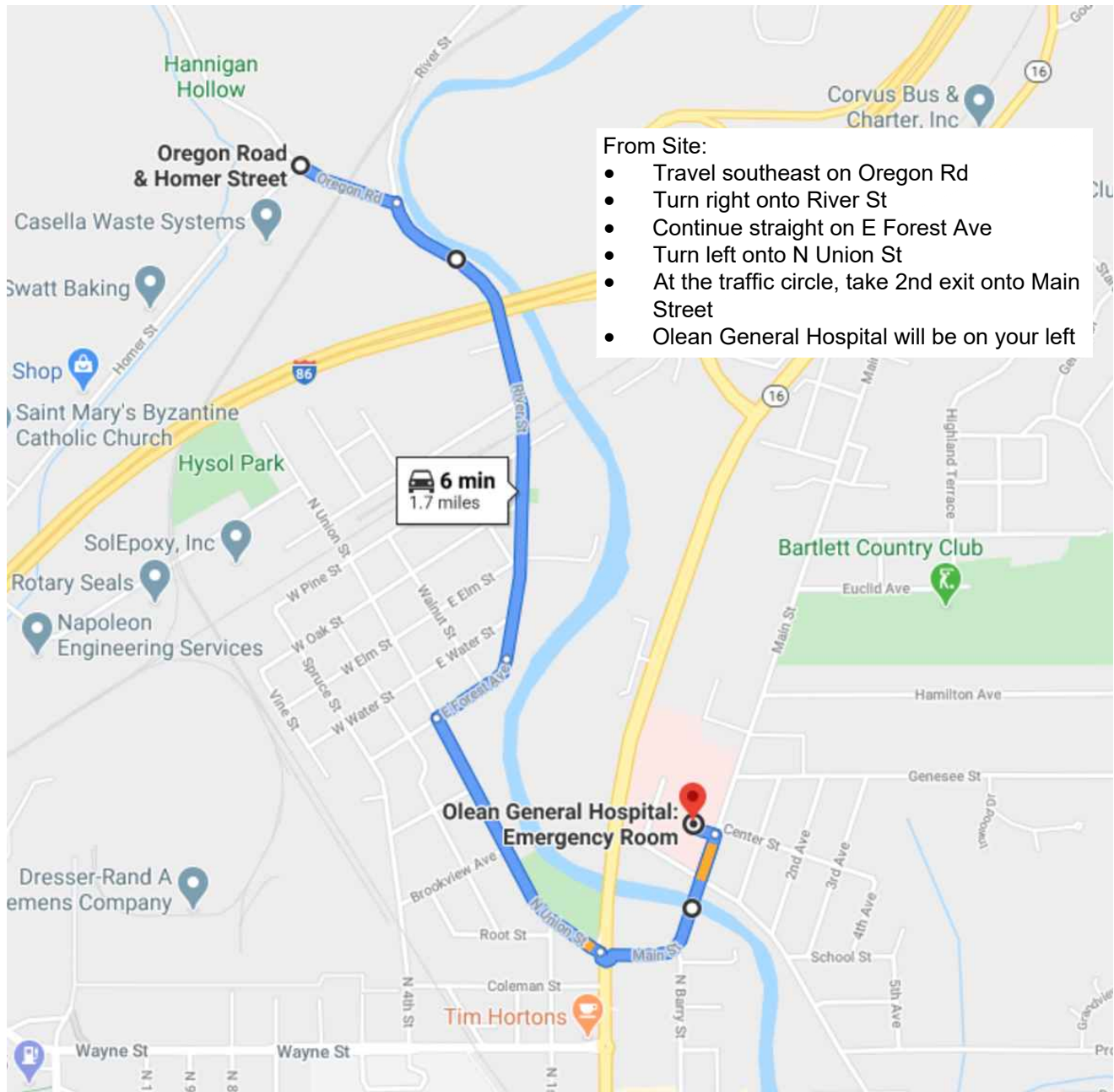
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

Persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

FIGURE A1



SCALE: 1 INCH = 1,000 FEET
SCALE IN FEET
(approximate)



2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0031-019-001

DATE: JUNE 2020

DRAFTED BY: CMC

HOSPITAL ROUTE MAP

HEALTH AND SAFETY PLAN

OREGON ROAD SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES, LLC

ATTACHMENT B

HOT WORK PERMIT FORM

PART 1 - INFORMATION

Issue Date:

Date Work to be Performed: Start:

Finish (permit terminated):

Performed By:

Work Area:

Object to be Worked On:

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:

Finish (permit terminated):

- | | | |
|--|-----|----|
| 1. Metal partition, wall, ceiling covered by combustible material? | yes | no |
| 2. Pipes, in contact with combustible material? | yes | no |
| 3. Explosive area? | yes | no |

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

PROTECTIVE ACTION		PROTECTIVE EQUIPMENT	
☐	Specific Risk Assessment Required	☐	Goggles/visor/welding screen
☐	Fire or spark barrier	☐	Apron/fireproof clothing
☐	Cover hot surfaces	☐	Welding gloves/gauntlets/other:
☐	Move movable fire hazards, specifically	☐	Wellintons/Knee pads
☐	Erect screen on barrier	☐	Ear protection: Ear muffs/Ear plugs
☐	Restrict Access	☐	B.A.: SCBA/Long Breather
☐	Wet the ground	☐	Respirator: Type:
☐	Ensure adequate ventilation	☐	Cartridge:
☐	Provide adequate supports	☐	Local Exhaust Ventilation
☐	Cover exposed drain/floor or wall cracks	☐	Extinguisher/Fire blanket
☐	Fire watch (must remain on duty during duration of permit)	☐	Personal flammable gas monitor
☐	Issue additional permit(s):	☐	

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Originating Employee:

Date:

Project Manager:

Date:

Part 2 Approval:

Date:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix C1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix C2

Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM₁₀) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
 - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m³ (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m³ continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM₁₀ at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m³ action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

ATTACHMENT D

DAILY HEALTH ASSESSMENT

Health Assessment Questionnaire

This form is to be submitted daily prior to starting work. It is a mandatory DOH requirement. Electronic signatures or employee initials are sufficient for electronic submittal. In the event this form cannot be filled out a statement must be submitted indicating that the answers of each question.

Part 1: Employee Information				
Name:				
Part 2: Self-Declaration				
1	Have you travelled domestically (outside of NY State) or internationally in the last 14 days? ☐ Yes ☐ No			
2	Have you been had close contact with anyone diagnosed with COVID-19 in the last 14 days? ☐ Yes ☐ No			
3	Have you been in contact with anyone who has travelled domestically or internationally in the last 14 days? ☐ Yes ☐ No			
4	Have you experienced any NEW cold or flu-like symptoms in the last 48 hours (to include fever greater than 100.4°F, cough, sore throat, respiratory illness, difficulty breathing, loss of taste or smell, muscle aches, nausea)? ☐ Yes ☐ No			
If the answer to any of these questions is "yes", you should return or remain at home and contact your supervisor immediately.				
Part 3: Acknowledgement				
Name (Print)	Signature	Date		

Part 4: Internal Assessment		
This form has been reviewed by:	Name:	Date:

APPENDIX E

USACE JOINT APPLICATION & PERMIT



JOINT APPLICATION FORM

For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water withdrawal.



New York
State

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of
Engineers (USACE)

APPLICATIONS TO	2. US Army Corps of Engineers	3. NYS Office of General Services	4. NYS Department of State
1. NYS Department of Environmental Conservation Check all permits that apply: ☐ Stream Disturbance ☐ Excavation and Fill in Navigable Waters ☐ Docks, Moorings or Platforms ☐ Dams and Impoundment Structures ☒ 401 Water Quality Certification ☐ Freshwater Wetlands ☐ Tidal Wetlands ☒ I am sending this application to this agency.	2. US Army Corps of Engineers Check all permits that apply: ☐ Section 404 Clean Water Act ☐ Section 10 Rivers and Harbors Act ☒ Nationwide Permit(s) - Identify Number(s): 38 Preconstruction Notification - ☒ Y / ☐ N ☒ I am sending this application to this agency.	3. NYS Office of General Services Check all permits that apply: ☐ State Owned Lands Under Water ☐ Utility Easement (pipelines, conduits, cables, etc.) ☐ Docks, Moorings or Platforms ☐ I am sending this application to this agency.	4. NYS Department of State Check if this applies: ☐ Coastal Consistency Concurrence ☐ I am sending this application to this agency.

5. Name of Applicant (use full name) Homer Street Properties, LLC	Applicant must be: ☒ Owner ☐ Operator ☐ Lessee (check all that apply)	6. Name of Facility or Property Owner (if different than Applicant) Oregon Road Site (BCP C905045)
Mailing Address 1 Blue Bird Square		Mailing Address Northwest corner of Oregon Road and Homer Street
Post Office City Olean		Post Office City Olean
State NY		State NY
Zip Code 14760	Taxpayer ID (If applicant is NOT an individual): 47-3783689	Zip Code 14760
Telephone (daytime) 716-244-0999	Email dbenson@benсонconstruction.com	Telephone (daytime) 716-244-0999
		Email dbenson@benсонconstruction.com

7. Contact / Agent Name Michael Lesakowski	8. Project / Facility Name Oregon Road Site	Property Tax Map Section / Block / Lot Number 94.001-2-13.2	
Company Name TurnKey Environmental Restoration, LLC	Project Location - Provide directions and distances to roads, bridges and bodies of waters: Site borders Homer Street and Oregon Road, Olean NY		
Mailing Address 2558 Hamburg Turnpike	Street Address, if applicable NA	Post Office City Olean	State NY
Post Office City Lackawanna	Town / Village / City Olean	County Cattaraugus	Zip Code 14760
State NY	Name of USGS Quadrangle Map Olean	Stream/Water Body Name tributary of Two Mile Creek	
Zip Code 14218	Location Coordinates: Enter NYTMs in kilometers, OR Latitude/Longitude		
Telephone (daytime) 716-856-0635	NYTM-E	NYTM-N	Latitude 42.1034283
Email MLesakowski@bm-tk.com			Longitude -78.4407856

For Agency Use Only

DEC Application Number:

USACE Number:

JOINT APPLICATION FORM - PAGE 2 OF 2
Submit this completed page as part of your Application.

9. **Project Description and Purpose:** Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

This permit is necessary to complete environmental remediation activities as part of the NYS Brownfield Cleanup Program (BCP) Oregon Road Site C905045. Part of the planned remediation will impact the tributary of Two Mile Creek that is present on-Site. Planned remedial activities will require the temporary damming and diversion of the tributary around the excavation work area, and excavation and offsite disposal of contaminated soil/fill that is present to the tributary bank(s).

Following completion of the remediation, the disturbed section of the creek will be restored. The attached work plan provides details the site conditions, remedial excavation, and planned restoration elements.

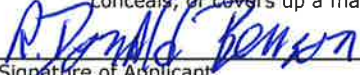
Proposed Use: ☐ Private ☐ Public ☒ Commercial	Proposed Start Date: Aug/Sep 2020	Estimated Completion Date: Oct/Nov 2020
Has Work Begun on Project? ☐ Yes ☒ No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? ☐ Yes ☒ No If Yes, please specify.		

10. List Previous Permit / Application Numbers (if any) and Dates:

11. Will this project require additional Federal, State, or Local Permits including zoning changes? ☒ Yes ☐ No If yes, please list:
NYSDEC 401 Water Quality Certification

12. **Signatures.** If applicant is not the owner, both must sign the application.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

	R. Donald Benson	Owner	
Signature of Applicant	Printed Name	Title	Date
Same as Applicant	Same as Applicant	Same as Applicant	
Signature of Owner	Printed Name	Title	Date
	Michael Lesakowski	Consultant	
Signature of Agent	Printed Name	Title	Date

For Agency Use Only

DETERMINATION OF NO PERMIT REQUIRED

Agency Project Number _____
_____ has determined that No Permit is required from this Agency for the project described in this application.
(Agency Name)

Agency Representative: Name (printed) _____ Title _____
Signature _____ Date _____



September 15, 2020

Department of the Army
Buffalo District, Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Re: Oregon Road Site C905045
Olean, New York
Joint Application Work Plan (revised)
DEC No. 9-0466-00065/00002

To Whom It May Concern:

On behalf of Homer Street Properties, LLC, Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration, LLC (Benchmark - TurnKey) has prepared this correspondence to provide details of the NYS Brownfield Cleanup Program (BCP) environmental remediation that requires this Joint Application.

1.0 Background

The Oregon Road BCP Site (C905045) is located at the northwest corner of Oregon Road and Homer Street in Olean, NY (see Figure 1). Historic petroleum refining operations have contaminated the Site and requires remediation.

Based on the completed Remedial Investigation Report (March 2020), petroleum contamination was identified along a portion of the southwestern bank of the tributary to Two Mile creek that is located on-Site (see Figures). In order to complete the planned remedial measures, excavation activities will impact the on-Site tributary. Therefore, we have prepared this Joint Application for permit to receive the necessary approvals to complete the remedial activities.

Based on the NYSDEC Environmental Resource Mapper (Enviromapper), the onsite creek is a tributary to Two Mile creek, with identification of Regulation 802-238; Standard: C; Classification: C (see Figures). It should be noted that the current orientation of the creek varies slightly from the Enviromapper orientation downstream of the planned remedial area. Appendix A contains a photo log showing current site and creek conditions and photo orientation.

2.0 Remediation and Restoration Details

A Health and Safety Plan (HASP) including Community Air Monitoring Plan (CAMP) and Master Erosion Control Plan (MECP) have been prepared and submitted to the NYSDEC as part of the BCP Remedial Action Work Plan

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2558 Hamburg Turnpike, Suite 300 | Buffalo, NY 14218
phone: (716) 856-0599 | fax: (716) 856-0583

2.1 Temporary Damming and Water By-Pass of Creek

Active work areas along the tributary may be limited to minimize time excavations remain open. Temporary dams will be constructed across the creek to allow for water diversion, and remediation excavation activities to be completed. Details of the temporary dams are presented on Figure 4.

The temporary earthen dams will be constructed using clean imported soils and/or stone that meet the NYS DER-10 BCP Import Criteria. The NYSDEC BCP Project Manager will pre-approve the soil/stone to be used prior to import to the Site. Water will be continuously pumped to the downgradient dam during excavation and restoration activities. Once excavation activities are complete, the temporary dams will be removed, and those areas restored.

2.2 Soil/Fill Excavation

Following site preparation and installation of water diversion measures, grossly contaminated soils (GCS) remedial excavation activities will begin. Traditional excavation equipment, including excavators, bulldozers, rollers, and dump trucks will be used during the remediation and restoration activities.

Approximately 450 linear feet of the tributary will be disturbed during the remediation. Final volumes of excavated material and backfill materials will be based on the field results. Post-excavation soil samples will be collected per the NYS BCP requirements.

Excavated materials will be transported off-site for disposal at Waste Management's Chaffee landfill located in Chaffee, New York. Documentation of the disposal will be provided to the Department as part of the BCP reporting.

2.3 Backfill and Restoration

Once the remedial excavation is deemed complete, the tributary bed and bank restoration will be completed as shown on Figure 4. The goal is to restore the current orientation of the tributary (Figure 3).

In accordance with the DER-10 (BCP) requirements, after completion of remedial excavation, a demarcation layer and filter fabric layer will be placed on top of the the remaining in-place soil, and then a minimum of 12-inches of NYSDEC approved backfill material will be placed on top of the demarcation layer. Imported clean fill will be used in accordance with NYSDEC BCP requirements meeting the DER-10 import criteria and NYSDEC pre-approval.

Stone used in the tributary bed and bank restoration will be a minimum 12-inch layer of varying size 3-6-inch minus bank run gravel stone (see Figure 4). The varying size will allow for natural sedimentation and redistribution of material during high water flow events.

Stone and gravel used in the tributary restoration will be sourced from local virgin source quarries. Potential sources of stone include:

- Portville-Obi Stone – gravel quarry located in Portville, NY
- Giardini Brothers – Gargoyle Road Plant, Alleghany NY

- D&H Material – Local quarry, Delevan, NY.

Documentation of the planned stone material will be provided to the NYSDEC for import pre-approval per the BCP requirements.

Soil placed along and on top of the bank will meet 6NYCRR Part 375 Protection of Ecological Resources Soil Cleanup Objectives (SCOs). The ill soil used to restore the banks will contain sufficient topsoil organic content to support the quick establishment of the vegetation. As shown on Figure 4, the banks will be covered with a biodegradable erosion control blanket, seeded, and planted with riparian shrubs (e.g. streamco willow, red osier dogwood) for erosion control.

Plantings will be spaced approximately 5-feet on center. Plantings will be purchased from Meadowview Nursery located in Naples, New York. A riparian-northeast wildflower seed mix will be used along the creek bank.

Remedial excavation of the tributary will occur after completion of the mass remedial excavation. Backfilling and restoration will follow the excavation work to minimize the amount of time the excavation is open. Clean backfill will be maintained at a sufficient distance from the working face of the remedial excavation to prevent contact or mixing with potentially contaminated in-place soils.

3.0 Schedule

BCP remedial activities are planned to begin in October 2020, after approval of the BCP Remedial Action Work Plan (revised September 2020) and approved Joint Application (Fall 2020). Remediation impacting the tributary would be estimated to start in November-December 2020. Restoration of the tributary, including reconstruction, placement of bed and bank gravel, and top of bank soils would be completed in Spring 2021, and completion of planting plan and seeding of bank soils in late Spring/Summer 2021. Total tributary project timeline is less than 9-10 months (estimated).

Please contact me with any questions regarding this work.

Sincerely,

TurnKey Environmental Restoration, LLC



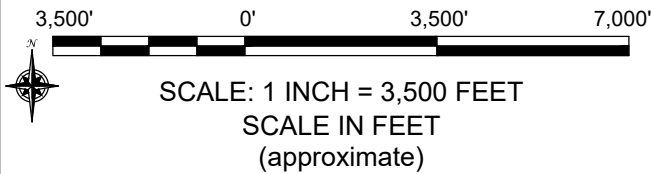
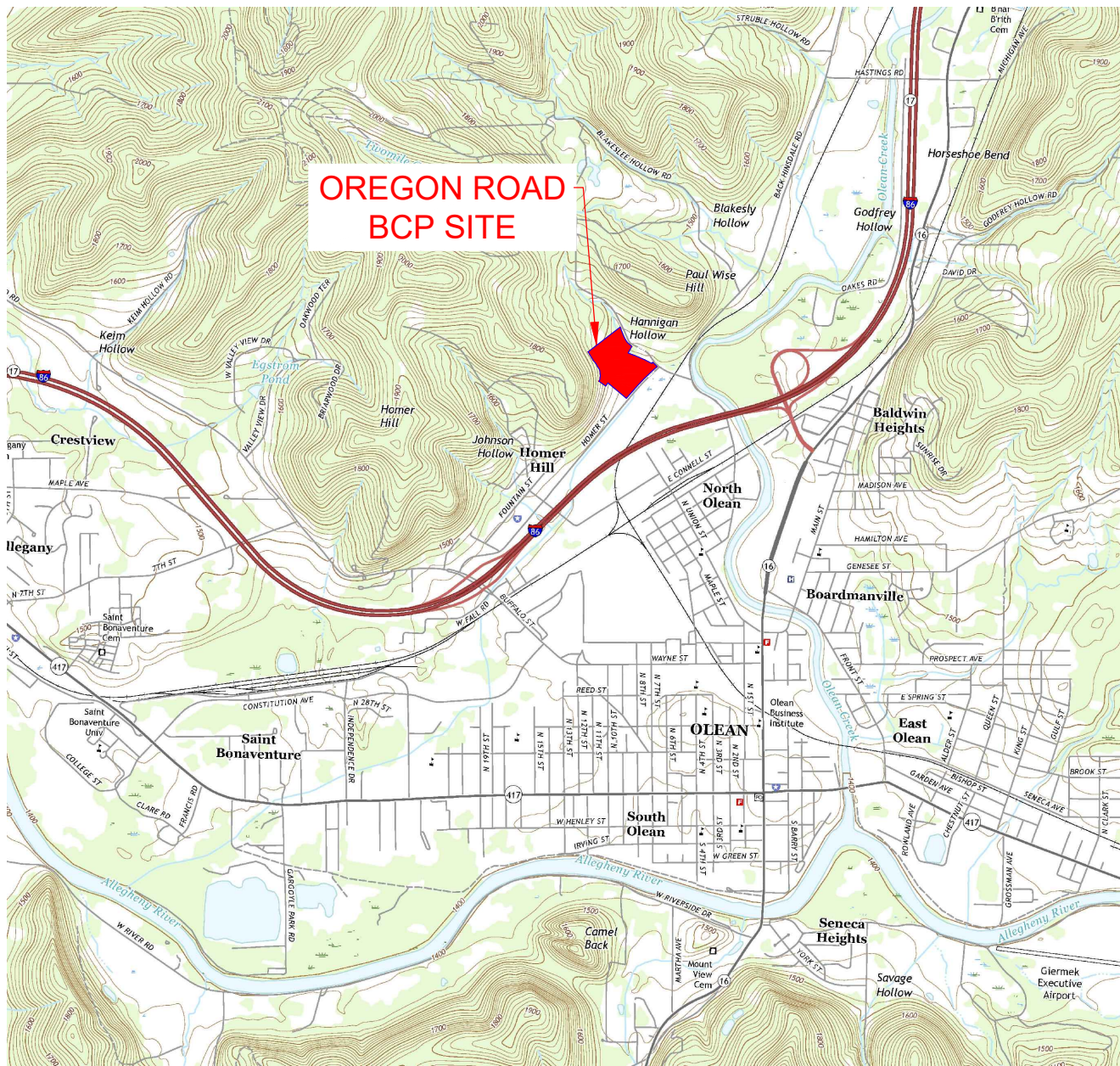
Michael A. Lesakowski
Sr. Project Manager/Principal

Enc.

cc: D. Benson (Homer Street Properties, LLC)
B. McPherson (NYSDEC)

FIGURES

FIGURE 1



NOTE: BASE MAP USGS OLEAN, NY QUADRANGLE 2016

QUADRANGLE LOCATION

SITE LOCATION & VICINITY MAP

USACE JOINT APPLICATION

OREGON ROAD SITE
BCP SITE NO. C905045
OLEAN, NEW YORK

PREPARED FOR
HOMER STREET PROPERTIES, LLC



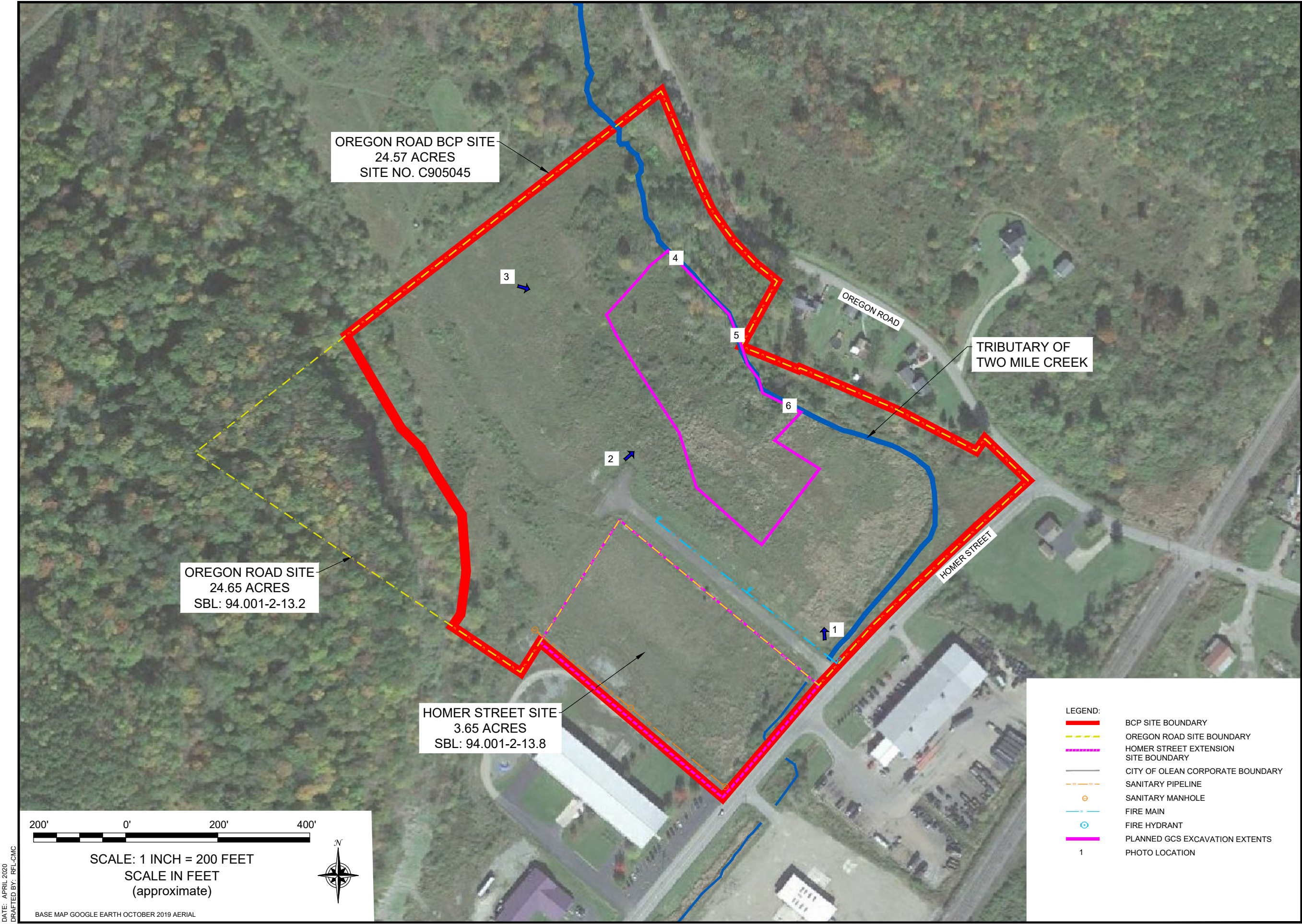
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0311-019-001

DATE: APRIL 2020

DRAFTED BY: RFL-CMC

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IN ASSOCIATION WITH



2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

SITE PLAN (AERIAL)

USACE JOINT APPLICATION PERMIT

OREGON ROAD SITE

OLEAN, NEW YORK

PREPARED FOR

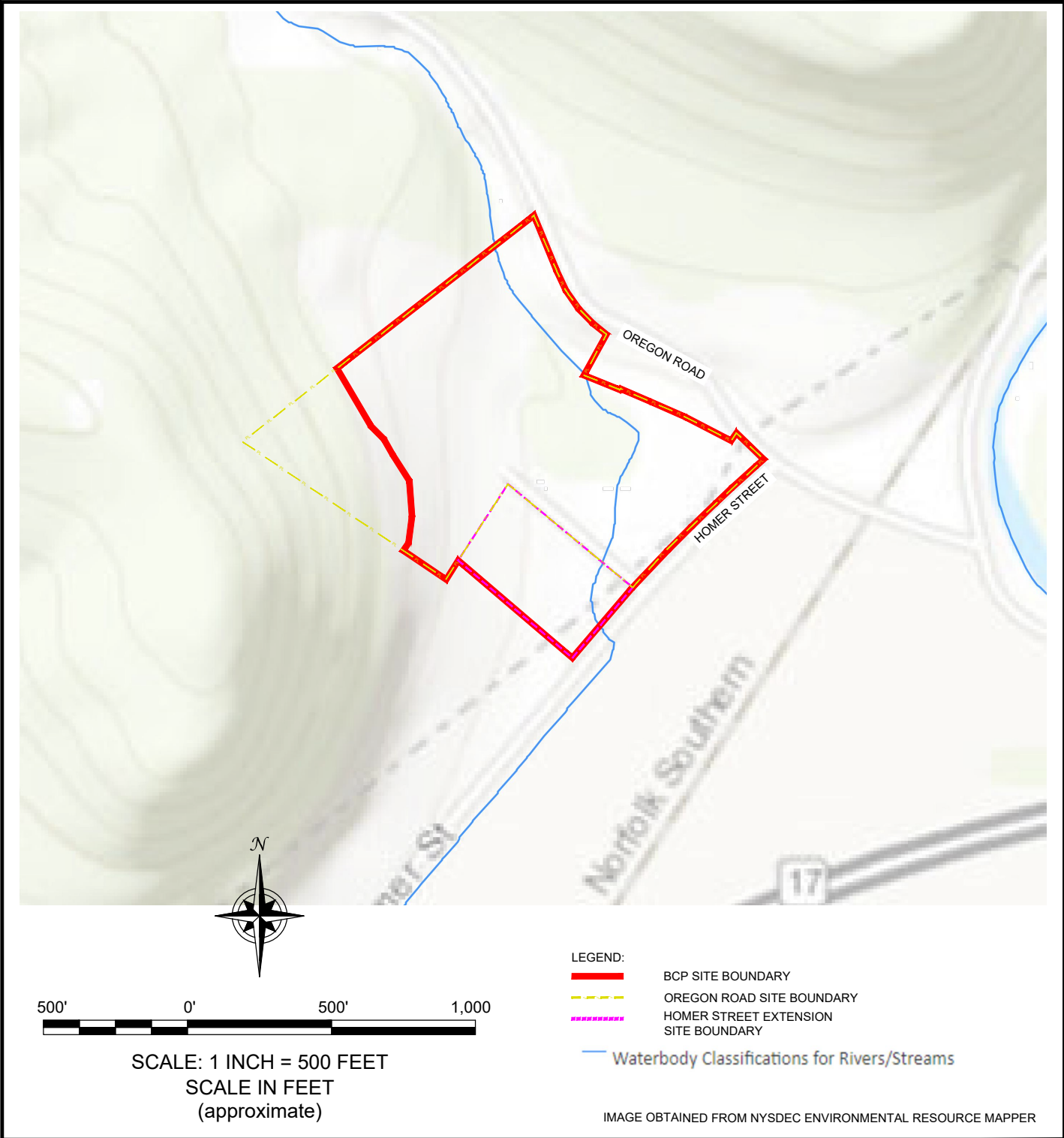
HOMER STREET PROPERTIES, LLC

FIGURE 2

JOB NO.: 0311-019-001

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FIGURE 3



PROJECT NO.: 0311-019-001

DATE: MAY 2020

DRAFTED BY: CMC

ENVIRO MAPPER

USACE JOINT APPLICATION

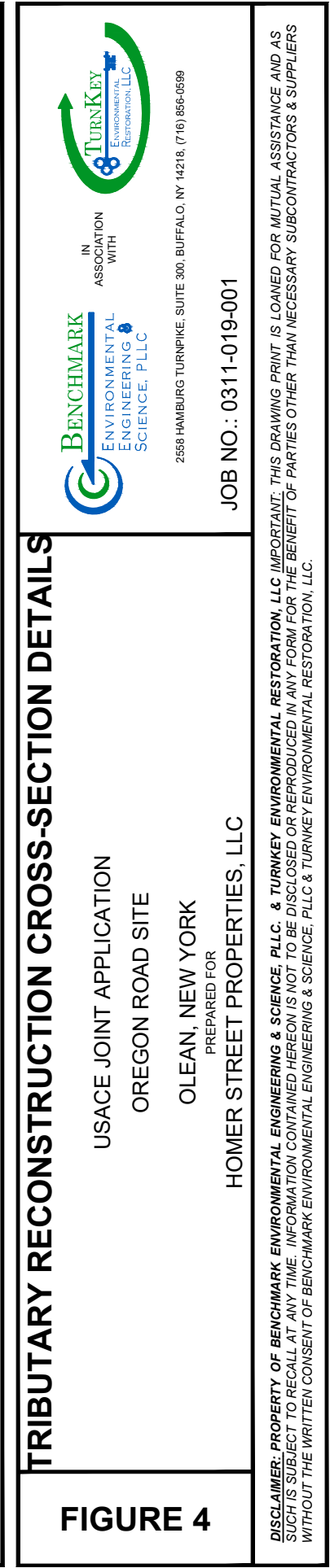
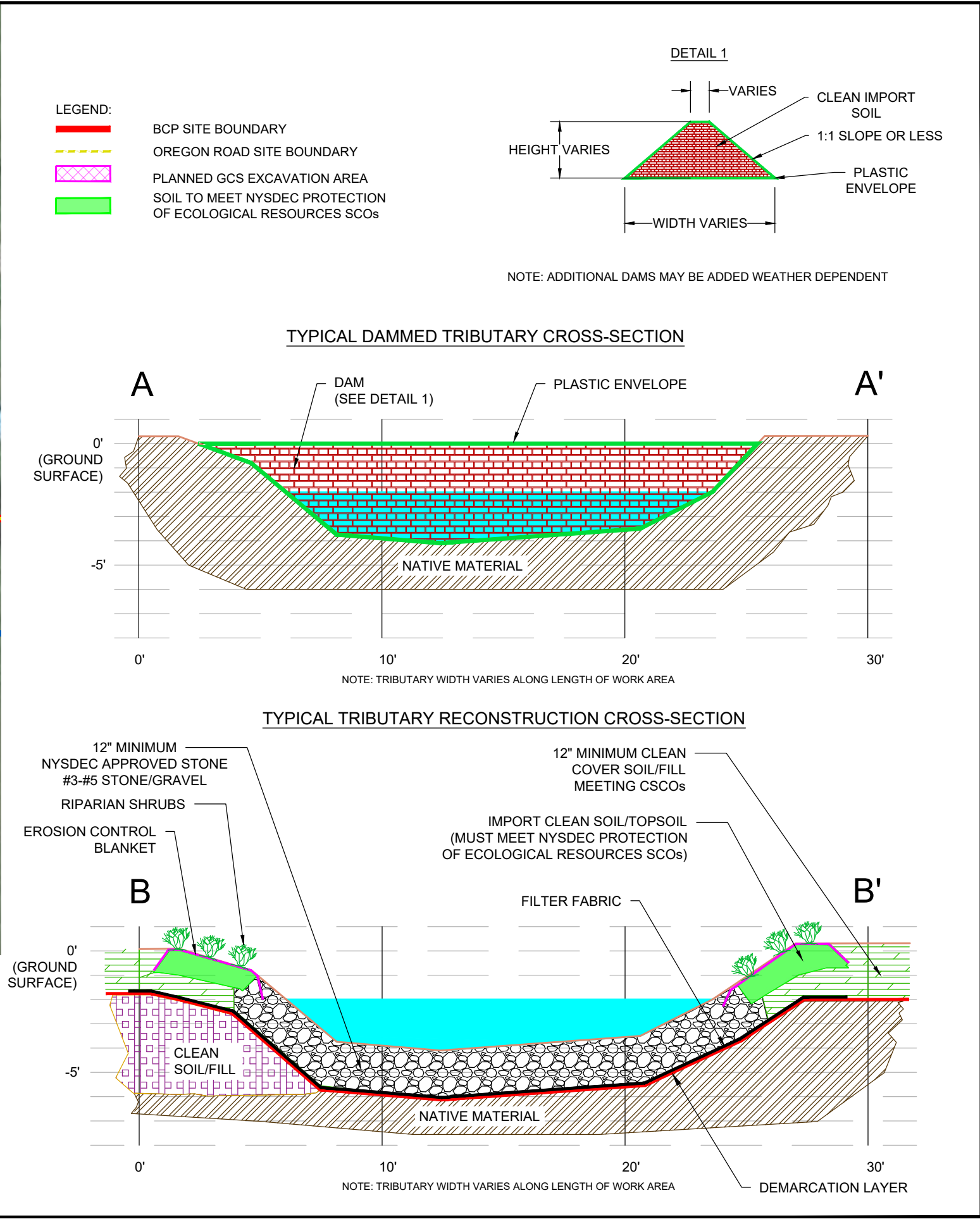
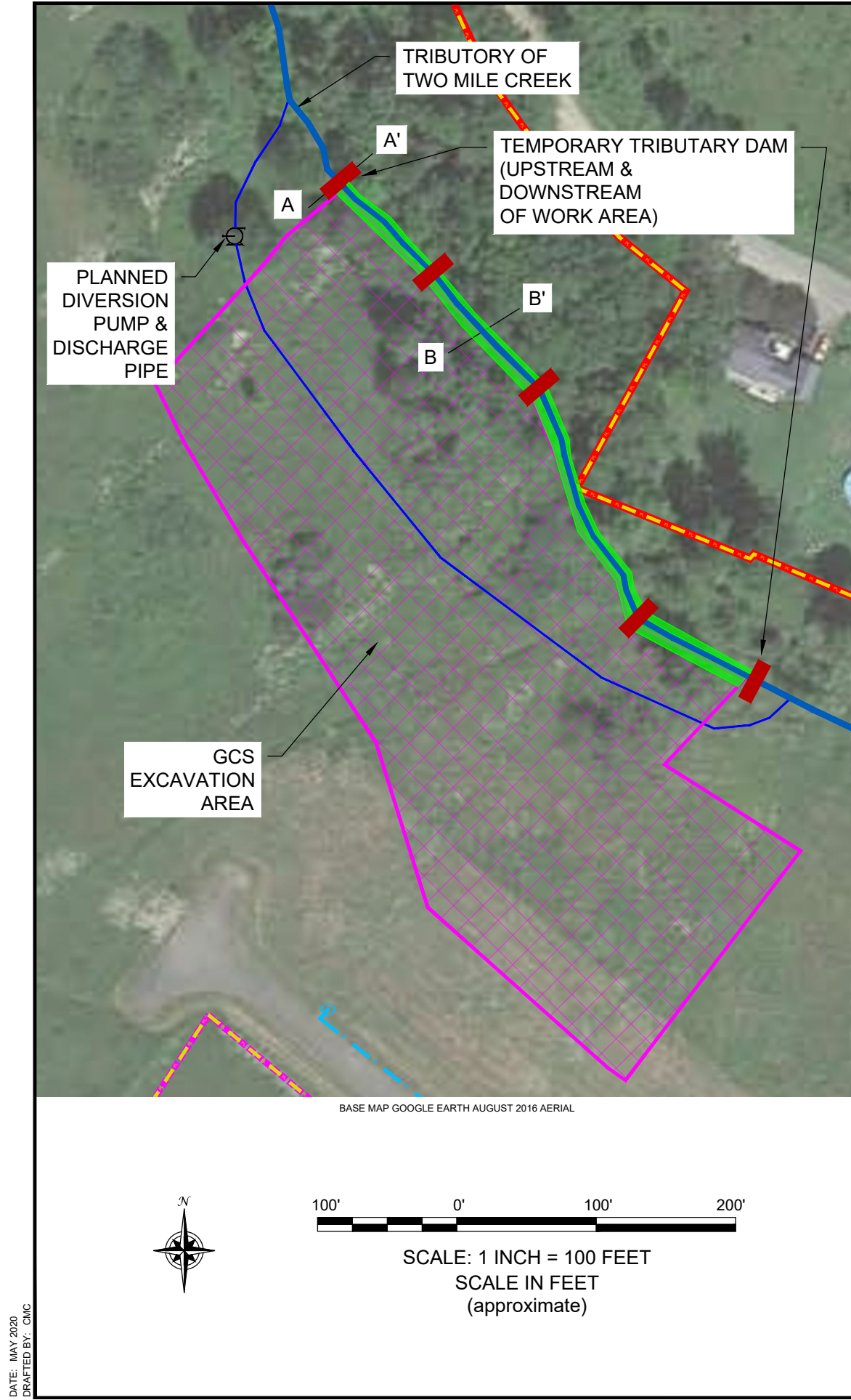
OREGON ROAD SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES, LLC

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APPENDIX A

PHOTOLOG

SITE PHOTOGRAPHS

Photo 1:



Photo 2:



Photo 3:



Photo 4:



- Photo 1: View of area to be excavated adjacent to tributary of Two Mile Creek (photo location 1, looking north)
- Photo 2: View of area to be excavated adjacent to tributary of Two Mile Creek (photo location 2, looking northeast).
- Photo 3: View of area to be excavated (photo location 3, looking southeast).
- Photo 4: View looking upstream of northern portion of creek to be disturbed (photo location 4)

**Oregon Road Site
Olean, New York**

Photo Date: May 22, 2020



SITE PHOTOGRAPHS

Photo 5:



Photo 6:



Photo 7:



Photo 8:



Photo 5: View looking downstream of northern portion of creek to be disturbed (photo location 4).

Photo 6: View of shrubbery adjacent to creek in middle section of creek to be disturbed (photo location 5).

Photo 7: View looking downstream (photo location 5)

Photo 8: View looking upstream (photo location 5)

**Oregon Road Site
Olean, New York**

Photo Date: May 22, 2020



SITE PHOTOGRAPHS

Photo 9:



Photo 10:



Photo 9: View looking downstream (photo location 6)

Photo 10: View looking upstream (photo location 6)

**Oregon Road Site
Olean, New York**

Photo Date: May 22, 2020



APPENDIX B

NYSDEC SHORT EAF

Short Environmental Assessment Form

Part 1 - Project Information

Instructions for Completing

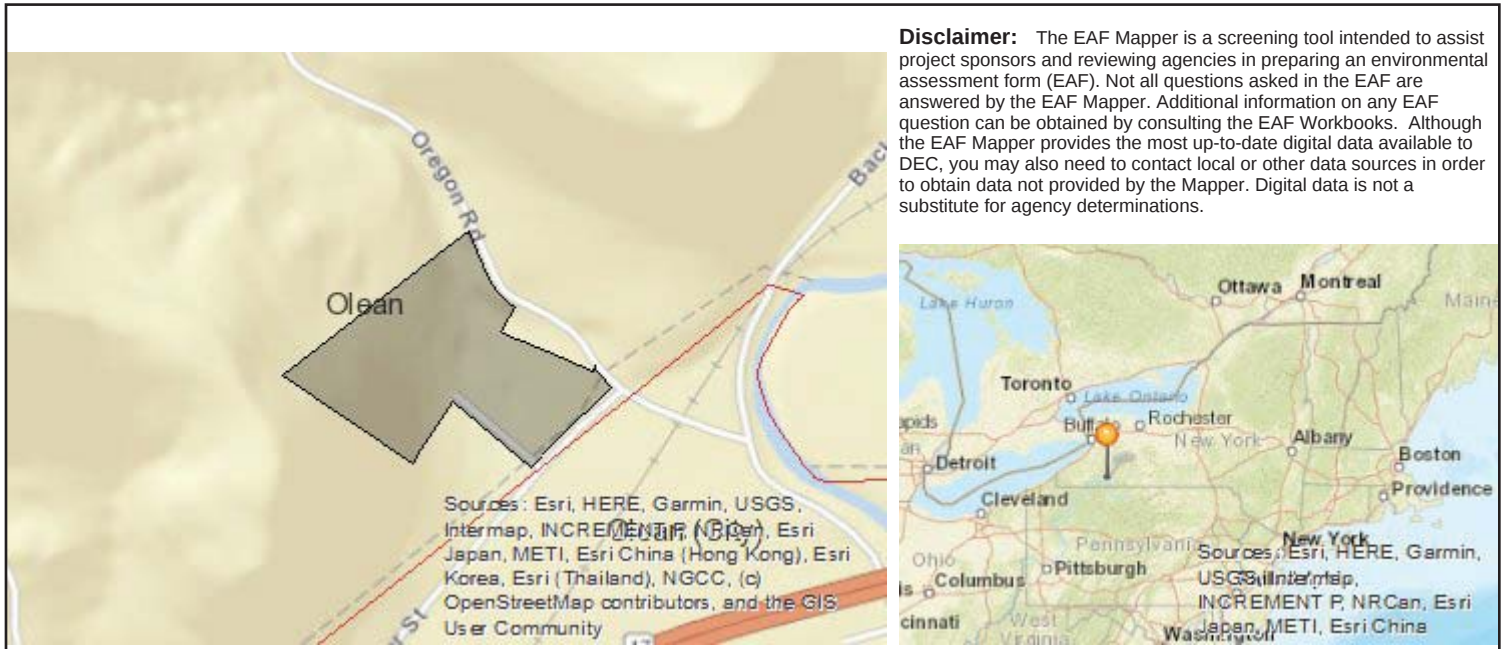
Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information			
Name of Action or Project: Oregon Road Site C905045 - BCP Remedial Action			
Project Location (describe, and attach a location map): Northwestern corner of Oregon Road and Homer Street (see figures 1 & 2)			
Brief Description of Proposed Action: Proposed remedial activities will be completed as part of the NYS Brownfield Cleanup Program (BCP) work at the Oregon Road Site C905045. Part of the planned remediation will include the excavation of contaminated soil along a portion of the western bank of the on-site tributary to Two Mile Creek. This portion of remedial work will require the temporary damming and diversion of the creek around the excavation work area. Following completion of the remediation, the creek will be restored. A Joint Application has been submitted, and the attached work plan details the site conditions, remedial excavation, and planned restoration elements.			
Name of Applicant or Sponsor: Homer Street Properties, LLC		Telephone: 716-244-0999 E-Mail: dbenson@bensonconstruction.com	
Address: 1 Blue Bird Square			
City/PO: Olean		State: New York	Zip Code: 14760
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO ☒	YES ☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: US Army Corps of Engineers (USACE) - Joint Application NYSDEC		NO ☐	YES ☒
3. a. Total acreage of the site of the proposed action? _____ 20.92 acres b. Total acreage to be physically disturbed? _____ ~0.35 acres c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ 24.57 acres			
4. Check all land uses that occur on, are adjoining or near the proposed action: 5. ☐ Urban ☒ Rural (non-agriculture) ☐ Industrial ☒ Commercial ☒ Residential (suburban) ☒ Forest ☐ Agriculture ☐ Aquatic ☐ Other(Specify): ☐ Parkland			

5. Is the proposed action,	NO	YES	N/A
a. A permitted use under the zoning regulations?	☐	☐	☒
b. Consistent with the adopted comprehensive plan?	☐	☐	☒
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO	YES	
	☐	☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	NO	YES	
If Yes, identify: _____	☒	☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO	YES	
	☒	☐	
b. Are public transportation services available at or near the site of the proposed action?	☒	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☒	☐	
9. Does the proposed action meet or exceed the state energy code requirements?	NO	YES	
If the proposed action will exceed requirements, describe design features and technologies:			
NA _____	☐	☐	
10. Will the proposed action connect to an existing public/private water supply?	NO	YES	
If No, describe method for providing potable water: _____	☒	☐	
The project does not require a water supply.			
11. Will the proposed action connect to existing wastewater utilities?	NO	YES	
If No, describe method for providing wastewater treatment: _____	☒	☐	
The project does not require a wastewater treatment facility.			
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	NO	YES	
	☒	☐	
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☒	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO	YES	
	☐	☒	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☐	☒	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____			
Remedial excavation activities will be completed along approximately 450 linear feet of the creek bank.			
Creek is identified on the NYSDEC Enviromapper as - Regulation 802-238; Standard: C; Classification: C			

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: ☐ Shoreline ☒ Forest ☒ Agricultural/grasslands ☐ Early mid-successional ☐ Wetland ☐ Urban ☐ Suburban		
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO	YES
	☒	☐
16. Is the project site located in the 100-year flood plan?	NO	YES
	☒	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	NO	YES
	☒	☐
a. Will storm water discharges flow to adjacent properties?	☒	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe:	☒	☐
Temporary disturbance of the creek bank is required to complete the planned remedial activities. Once remediation is complete, the creek will be restored.		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment:	NO	YES
A temporary dam and water diversion pump will be used to allow for remedial excavation to be completed safely. Once creek restoration is complete, they temporary dams will be removed.	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe:	NO	YES
	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	NO	YES
This action is part of the larger NYS BCP remediation of the Oregon Road Site C905045.	☐	☒
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE		
Applicant/sponsor/name: <u>R. Donald Benson</u> <i>Homer Street Properties, LLC</i> Date: <u>7/7/2020</u>		
Signature: <u>R. Donald Benson</u> Title: <u>Managing Member</u>		



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	No
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
Part 1 / Question 20 [Remediation Site]	Yes

APPENDIX F

PLUMESTOP® SDS & MANUFACTURERS DOCUMENTS

PlumeStop® Liquid Activated Carbon™ Technical Description

PlumeStop Liquid Activated Carbon is an innovative groundwater remediation technology designed to rapidly remove and permanently degrade groundwater contaminants. PlumeStop is composed of very fine particles of activated carbon (1-2µm) suspended in water through the use of unique organic polymer dispersion chemistry. Once in the subsurface, the material behaves as a colloidal biomatrix, binding to the aquifer matrix, rapidly removing contaminants from groundwater, and expediting permanent contaminant biodegradation.

This unique remediation technology accomplishes treatment with the use of highly dispersible, fast-acting, sorption-based technology, capturing and concentrating dissolved-phase contaminants within its matrix-like structure. Once contaminants are sorbed onto the regenerative matrix, biodegradation processes achieve complete remediation at an accelerated rate.



Distribution of PlumeStop in water

To see a list of treatable contaminants with the use of PlumeStop, view the [Range of Treatable Contaminants Guide](#).

Chemical Composition

- Water - CAS# 7732-18-5
- Colloidal Activated Carbon ≤2.5 - CAS# µm 7440-44-0
- Proprietary Additives

Properties

- Physical state: Liquid
- Form: Aqueous suspension
- Color: Black
- Odor: Odorless
- pH: 8 - 10

Storage and Handling Guidelines

Storage

Store in original tightly closed container
Store away from incompatible materials
Protect from freezing

Handling

Avoid contact with skin and eyes
Avoid prolonged exposure
Observe good industrial hygiene practices
Wash thoroughly after handling
Wear appropriate personal protective equipment

PlumeStop® Liquid Activated Carbon™ Technical Description

Applications

PlumeStop is easily applied into the subsurface through gravity-feed or low-pressure injection.

Health and Safety

Wash hands after handling. Dispose of waste and residues in accordance with local authority requirements. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: [PlumeStop SDS](#).



www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

1. Identification

Product identifier	PlumeSTOP®
Other means of identification	None.
Recommended use	Soil and Groundwater Remediation.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Company Name	RegenesiS
Address	1011 Calle Sombra San Clemente, CA 92673
Telephone	949-366-8000
E-mail	CustomerService@regenesiS.com
Emergency phone number	CHEMTREC® at 1-800-424-9300 (International)

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Water	7732-18-5	>75
Colloidal activated carbon ≤2.5 µm	7440-44-0	<25
Proprietary additives		≤2

Composition comments All concentrations are in percent by weight unless otherwise indicated.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed

Treat symptomatically.

General information

If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures**Suitable extinguishing media**

Carbon dioxide, alcohol-resistant foam, dry chemical, water spray, or water fog.

Unsuitable extinguishing media

None known.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed. Combustion products may include: carbon monoxide, carbon dioxide, sodium oxides, metal oxides.

Special protective equipment and precautions for firefighters

Use protective equipment appropriate for surrounding materials.

Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to keep fire-exposed containers cool.

General fire hazards

This material will not burn until the water has evaporated. Residue can burn. When dry may form combustible dust concentrations in air.

6. Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away. Avoid contact with spilled material. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions**7. Handling and storage****Precautions for safe handling**

Avoid contact with skin and eyes. Avoid prolonged exposure. Observe good industrial hygiene practices. Wash thoroughly after handling. Wear appropriate personal protective equipment (See Section 8).

Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Protect from freezing.

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-3 (29 CFR 1910.1000)**

Components	Type	Value	Form
Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)	TWA	2.5 mg/m3	Respirable.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear approved chemical safety goggles.
Skin protection	
Hand protection	Rubber, neoprene or PVC gloves are recommended. Wash hands after handling.
Other	Avoid contact with the skin. Wear suitable protective clothing.
Respiratory protection	Not normally needed. In case of insufficient ventilation, wear suitable respiratory equipment. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance**

Physical state	Liquid.
Form	Aqueous suspension.
Color	Black.
Odor	Odorless.
Odor threshold	Not available.
pH	8 - 10
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not flammable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1 - 1.2
Solubility(ies)	
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials. Keep from freezing.
Incompatible materials	Strong oxidizing agents. Water reactive materials.

Hazardous decomposition products Combustion may produce: carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation Prolonged inhalation may be harmful.
Skin contact Prolonged or repeated skin contact may result in minor irritation.
Eye contact Direct contact with eyes may cause temporary irritation.
Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Components	Species	Test Results
Colloidal activated carbon $\leq 2.5 \mu\text{m}$ (CAS 7440-44-0)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 8500 mg/m ³ , air
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg, (Female)

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.
Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil Expected to be temporarily highly mobile in soil.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations All components are listed on or exempt from the U.S. EPA TSCA Inventory List. This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Colloidal activated carbon $\leq 2.5 \mu\text{m}$ (CAS 7440-44-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

Not Listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	26-February-2015
Revision date	-
Version #	01
Further information	HMIS® is a registered trade and service mark of the American Coatings Association (ACA).
HMIS® ratings	Health: 0 Flammability: 0 Physical hazard: 0

NFPA ratings**Disclaimer**

Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

1. Identification

Product identifier	PlumeSTOP® Nutrients
Other means of identification	None.
Recommended use	Soil and Groundwater Remediation.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Company Name	RegenesiS
Address	1011 Calle Sombra San Clemente, CA 92673
Telephone	949-366-8000
E-mail	CustomerService@regenesiS.com
Emergency phone number	CHEMTREC® at 1-800-424-9300 (International)

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂). Apply extinguishing media carefully to avoid creating airborne dust.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers. Avoid dust formation.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. This product is miscible in water. Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Practice good housekeeping.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
PlumeSTOP® Nutrients (as dust)	PEL	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
PlumeSTOP® Nutrients (as dust)	TWA	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
PlumeSTOP® Nutrients (as dust)	TWA	3 mg/m ³	Respirable particles.
		10 mg/m ³	Inhalable particles.

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Local exhaust is suggested for use, where possible, in enclosed or confined spaces.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles). Unvented, tight fitting goggles should be worn in dusty areas.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Skin protection	
Other	Wear suitable protective clothing.
Respiratory protection	In case of inadequate ventilation, use MSHA/NIOSH approved dust respirator.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance**

Physical state	Solid.
Form	Powder.
Color	White.
Odor	Odorless.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	The product is non-combustible.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.

Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.

Solubility(ies)

Solubility (water)	Completely soluble.
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Partition coefficient (n-octanol/water)	Not available.
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Auto-ignition temperature	Not available.
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Decomposition temperature	Not available.
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Viscosity	Not available.
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Other information

Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
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Chemical stability	Material is stable under normal conditions.
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Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use. Ammonia fumes may be released upon heating.
Conditions to avoid	Contact with incompatible materials. Excessive heat.
Incompatible materials	Strong oxidizing agents. Bases.
Hazardous decomposition products	Ammonia fumes may be released upon heating.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics
Dusts may irritate the respiratory tract, skin and eyes.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.

Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	This product is completely water soluble and will disperse in soil.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information**DOT**

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information**US federal regulations**

This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Ammonium sulfate	7783-20-2	40-50

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations**US. Massachusetts RTK - Substance List**

Ammonium sulfate (CAS 7783-20-2)

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Ammonium sulfate (CAS 7783-20-2)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 07-January-2016

Revision date -

Version # 01

HMIS® ratings Health: 1
Flammability: 0
Physical hazard: 0

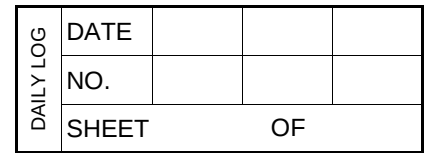
NFPA ratings

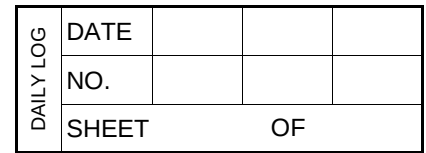
**Disclaimer**

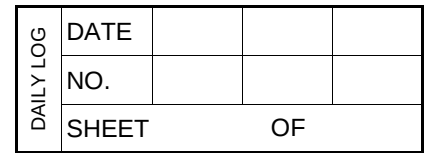
Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

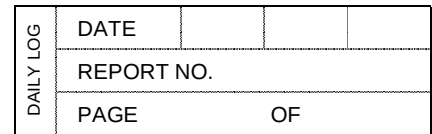
APPENDIX G

PROJECT DOCUMENTATION FORMS

[illegible]

[illegible]

[illegible]



PROBLEM IDENTIFICATION REPORT

WEATHER CONDITIONS:

Precipitation:

Problem Identification Report

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

Date: _____

CORRECTIVE MEASURES REPORT

Project: _____

Job No: _____

WEATHER CONDITIONS:

Location: _____

Ambient Air Temp. - A.M.: _____

CQA Monitor(s): _____

Ambient Air Temp. - P.M.: _____

Client: _____

Wind Direction: _____

Contractor: _____

Wind Speed: _____

Contractor's Supervisor: _____

Precipitation: _____

Corrective Measures Undertaken (reference Problem Identification Report No.)

Retesting Location:

Suggested Method of Minimizing Re-Occurrence:

Approvals (initial):

CQA Engineer: _____

Project Manager: _____

Signed:

CQA Representative

APPENDIX H

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