

DEPARTMENT OF ENERGY NAVAL REACTORS LABORATORY FIELD OFFICE POST OFFICE BOX 1069 SCHENECTADY, NEW YORK 12301-1069

> NRLFO:AMO-S:ESH:22-067 30 June 2022

Mrs. Lynn Winterberger Chief, RCRA Permitting Section New York State Department of Environmental Conservation 625 Broadway Albany, New York 12233

Dear Mrs. Winterberger:

KNOLLS ATOMIC POWER LABORATORY, KNOLLS LABORATORY AND KESSELRING SITE EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORTS; FOR APPROVAL

References:

- KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Knolls Laboratory, April 2021
- (b) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Kesselring Site, April 2021
- (c) NRLFO Letter NRFLO:AMO-S:ESH:22-050, dated 13 May 2022; Subject: Knolls Atomic Power Laboratory, Knolls Laboratory and Kesselring Site Emerging Contaminants Groundwater Monitoring Reports Schedule; For Information
- (d) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory, Emerging Contaminants Scope of Work (SOW)
- (e) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Kesselring Site, Emerging Contaminants Scope of Work (SOW)

In accordance with references (a) and (b), and the schedule provided in reference (c), transmitted herewith for New York State Department of Environmental Conservation (NYSDEC) approval are the Emerging Contaminants Groundwater Monitoring Reports (Monitoring Reports) for the Knolls Laboratory and Kesselring Site, Enclosures (1) and (2), respectively.

The Scopes of Work (SOWs) were implemented in accordance with references (a) and (b), as approved by NYSDEC by references (d) and (e). The SOWs were implemented in the fall of 2021 and consisted of an initial groundwater sampling phase and a supplemental sampling phase. The supplemental sampling phase was performed

based on the findings of the initial sampling phase and did not include the analysis for 1,4-dioxane, as it was not detected in any samples in the initial phase.

Criteria for comparing analytical results continue to evolve since the issuance of the SOWs. In consideration of the focus on per- and polyfluoroalkyl substances (PFAS) in drinking water, the analytical results for the two reports for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are compared to the current New York State Department of Health maximum contaminant level (MCL) of 10 parts per trillion (ppt) for each of these PFAS. In addition, the NYS Drinking Water Quality Council has recently recommended that the 10 ppt be adopted as the MCL for four additional PFAS based on overall persistence in the environment and toxicity similar to PFOS and PFOA. KAPL proactively included evaluation of these four PFAS in the Monitoring Reports. NRLFO and KAPL acknowledge the interim updated lifetime drinking water health advisories for PFOS and PFOA and final health advisories for hexafluoropropylene oxide (HFPO) and its ammonium salt (together referred to as "GenX chemicals") and perfluorobutane sulfonic acid (PFBS) recently issued by the U.S. Environmental Protection Agency (USEPA) at the time of publication of the Monitoring Reports and the potential for NYS water-guality criteria for PFOS, PFOA, and other PFAS to evolve further.

PFAS are present in groundwater at both Knolls Laboratory and Kesselring Site, including the Closed Landfill and Hogback Road Landfill at each Site, respectively. The highest PFAS concentrations are located in the interior of the developed portion of each site, and most concentrations decrease in downgradient groundwater to levels below 10 ppt. PFAS results at the Knolls Laboratory Closed Landfill and Kesselring Site Hogback Road Landfill are unremarkable with only one sample at Hogback Road Landfill above 10 ppt (PFOS: 13.6 ppt); concentrations in downgradient groundwater are less than 10 ppt. HFPO was not part of the SOW analytical suite, and PFBS is present in groundwater at both sites at concentrations below 5 ppt, which is less than the USEPA advisory level of 2,000 ppt.

Groundwater at the Knolls Laboratory is not used for drinking water and adjacent properties are serviced by municipal water provided by the Town of Niskayuna Consolidated Water District #11, which receives water from wells located upgradient of the Site in the Town of Rotterdam and the Niskayuna well field located approximately 1.8 miles east and downgradient of the Site. Both well fields are located near the Mohawk River and are hydrogeologically separated from the Site. The Latham Colonie Water District intake from the Mohawk River is approximately 6.3 miles downstream of the Knolls Laboratory. Groundwater in the developed portion of the Kesselring Site is not used for drinking water, and the Site's drinking water supply wells are approximately one mile away and are hydrogeologically separated from the Site. In addition, groundwater discharges to the Glowegee Creek, which acts as a hydrogeologic barrier to off-site migration of PFAS from the developed portion of the site. At the Hogback 3

Road Landfill, groundwater also flows into the Glowegee Creek and the nearest private downgradient well is approximately one-third mile from the landfill.

Consistent with previous transmittals, you are being provided with one hardcopy each of the Monitoring Report for the Knolls Laboratory and the Kesselring Site. Others on distribution will receive electronic copies of Enclosures (1) and (2) via email. In accordance with references (a) and (b), the separate electronic data deliverable associated with the groundwater monitoring will be submitted directly from Ramboll to NYSDEC. In addition, an electronic copy of the NYSDEC Analytical Service Protocol Category B data packages will be uploaded by Ramboll to the NYSDEC file transfer service.

Should you have any questions or need additional information, please contact me at (518) 395-6366.

Sincerely,

for

D. Ă. DELWICHE Program Manager Environment, Safety, and Health

Enclosures

Electronic copy to: Mr. Daniel Evans, NYSDEC Mr. Kevin Wood, NYSDEC Mr. Brian Maglienti, NYSDEC Mrs. Lynn Winterberger, NYSDEC Mr. Adolph Everett, EPA Mr. Andrew Park, EPA Mr. Clifford Ng, EPA Ms. Carlos Colombani, EPA Ms. Sara Bogardus, NYSDOH Enclosure (1)

Emerging Contaminants Groundwater Monitoring Report for the Knolls Laboratory Emerging Contaminants Groundwater Monitoring Report for the Knolls Laboratory

Knolls Atomic Power Laboratory Knolls Laboratory Niskayuna, New York

June 2022

Prepared by

Fluor Marine Propulsion, LLC Knolls Atomic Power Laboratory Niskayuna, New York Operated for the United States Department of Energy

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List of Acronyms and Abbreviations

amsl	Above Mean Sea Level
CVOC	Chlorinated Volatile Organic Compound
FTS	Fluorotelomer Sulfonate
HDPE	High Density Polyethylene
KAPL	Knolls Atomic Power Laboratory
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PFAS	Per- and Polyfluoroalkyl Substances
PFDA	Perfluorodecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PPE	Personal Protective Equipment
ppt	Parts Per Trillion
QA	Quality Assurance
QC	Quality Control
SOW	Scope of Work
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

A Scope of Work (SOW), reference (1), was implemented to evaluate groundwater at the Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory (Site) in Niskayuna, New York for the presence of emerging contaminants, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, as identified by the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). The SOW was prepared in accordance with the reference (2) NYSDEC Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs. The SOW was provided to NYSDEC via email on April 6, 2021. Following resolution of NYSDEC and New York State Department of Health (NYSDOH) comments, NYSDEC approved the SOW by reference (3) on September 2, 2021. The SOW fieldwork was implemented in the fall of 2021.

The SOW specified that a Monitoring Report would be prepared to document the findings of the fieldwork. This Monitoring Report includes a site description, emerging contaminants groundwater analytical data summary and assessment, and conclusions.

1.1 Emerging Contaminants Groundwater Sampling Implementation Summary

The SOW was implemented in two phases - the Initial Phase that implemented the SOW and a Supplemental Phase that was performed based on the results of the Initial Phase and discussions with NYSDEC and NYSDOH. The objective of the SOW was to evaluate for the presence of emerging contaminants in groundwater at the Site.

The Initial Phase consisted of groundwater sample collection from the developed area of the Site which included four Hillside Area wells, one Former High Yard Area (HYA) well, and five Q3 Yard Wells. The initial phase also involved sampling in the Site's undeveloped area which includes: two Land Disposal Area (LDA) wells and three Closed Landfill wells. The Supplemental Phase consisted of groundwater sample collection from six Q3 Yard wells. An implementation summary is provided on Table 1.

2.0 SITE DESCRIPTION

As shown on Figure 1, the Site is located in the Town of Niskayuna, Schenectady County, New York, on the south bank of the Mohawk River. The Site is comprised of approximately 170 acres, most of which are located on a bluff approximately 115 to 120 feet above the Mohawk River surface (referred to as the upper level). Along the northern margin of the Site, the land surface slopes steeply to a natural bench (referred to as the lower level) approximately 15 to 20 feet above the river surface. The Site fronts approximately 4,200 feet of the Mohawk River. The Site is bounded to the north by the Mohawk River; to the east by a mixture of open land, parks, and the Town of Niskayuna closed municipal landfill; to the south by a low-density suburban residential area; and to the west by the General Electric Global Research Center.

Construction of the Site began in 1948 and Site operations began in 1949. The principal function of the Site is research and development in the design and operation of Naval nuclear propulsion plants. Facilities at the Site include administrative offices, machine shops, a sewage pumping station, wastewater treatment facilities, a boiler house, oil storage facilities, cooling towers, waste storage facilities, and chemistry, physics, and metallurgical laboratories. The developed area of the Site consists of buildings and support facilities that occupy approximately 60 acres of the property. The remainder of the Site (approximately 110 acres) is largely undeveloped and consists of woods and fields.

The Site's Closed Landfill, Solid Waste Management Unit-001, as shown on Figures 2 and 7, was closed in 1993 in accordance New York Codes, Rules and Regulations Part 360 Solid Waste Management regulations and a closure plan that was approved by NYSDEC in 1991. Since that time groundwater monitoring has been performed utilizing a network of wells at the landfill.

In May 2021, NYSDEC Division of Materials Management, issued their reference (4) Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, with emphasis on emerging contaminants. The Comprehensive Plan included the Inactive Landfill Initiative Program to assess potential impacts that inactive landfills may have on public drinking water supplies. The Closed Landfill was identified in this program as an "Initiate Investigation in 2024" List Site.

2.1 Environmental Setting

The Site is located in the Mohawk River Valley within the Hudson-Mohawk Lowlands Geomorphic Province. Ground elevations at the Site range from approximately 220 feet above mean sea level (amsl) at the lower level to approximately 330 feet amsl at the upper level. Elevations in the undeveloped area are comparable to the developed area. Ground elevations at the Closed Landfill range from 260 feet amsl to 310 feet amsl.

2.2 Geology

Bedrock underlying the Site consists of essentially horizontal shales and sandstones of the Upper-Middle Ordovician aged Schenectady Formation. The Schenectady Formation is comprised of a series of alternating beds of graywacke, sandstone, siltstone and shale about 2,000 feet thick, dipping gently to the west and southwest. These rocks are characteristically non-porous and impermeable, and form poor aquifers. The Schenectady Formation is underlain by the Canajoharie shale, which is a dark gray to black, thinly bedded fissile shale. Depth to bedrock at the Site generally ranges between 10 and 70 feet below grade, with shallower depths occurring along the lower level and deeper depths more central to the Site. Rock outcrops are visible on both banks of the Mohawk River in the vicinity of the Site.

The bedrock at the Site is overlain mainly by glacial deposits, most of which consist of thick (up to 70 feet) glacial till. Directly overlying the bedrock is the Mohawk Till, a grayish-blue, dense, compact till, commonly referred to as the gray till. The gray till extends from the bedrock typically to within 10 to 15 feet of the ground surface, where the gray till transitions into a yellowish-brown till commonly referred to as the brown till. Evidence suggests that the brown till is the weathered surface of the gray till and not a separate depositional sequence. Occasional lenses of graded material, usually fine to medium sand, exist within the till. Based on drilling records, it is believed that these lenses are small in size and isolated from one another. The gray till is almost entirely impermeable except for the occasional lenses of fine sand which are capable of transmitting small quantities of water. However, the water is rapidly depleted from these small isolated sand lenses with little or no recharge. The brown till also is relatively impermeable; however, perched water at the brown till/gray till contact indicates that water does infiltrate into and percolate through the brown till.

Glacial lake (lacustrine) silts and clays and discontinuous ice-contact deposits (sand and gravel) are found on top of the till mostly in the southern and southeast portions of the Site property.

The silt and clay deposits also are relatively impermeable. The ice-contact deposits are capable of transmitting water, but their limited extent diminishes the potential for yielding useable water volumes.

2.3 Groundwater

The groundwater resources at the Site are limited due to the limited extent of sand and gravel deposits and the low permeability of the silt and clay deposits and bedrock. Consequently, there are no principal or primary bedrock or overburden aquifers underlying the Site for development as commercial or public water supplies.

The overall direction of groundwater flow at the Site is predominantly northeast toward the Mohawk River. Based on the relatively low permeability of the bedrock and overlying glacial till at the Site, groundwater movement, overall, is generally relatively slow. Local variations in groundwater flow direction and velocities occur within less compact and more permeable material associated with natural geologic deposits, fill areas, and backfill along utility trenches and building foundations across the Site.

2.4 Drinking Water Supply and Niskayuna Well Field Evaluation

Groundwater at the Site is not used for drinking water. Drinking water for the Site and adjacent properties is provided by the Town of Niskayuna Consolidated Water District #11, which receives water from wells located upgradient of the Site in the Town of Rotterdam and the Niskayuna well field located approximately 1.8 miles east and downgradient of the Site. Both well fields are located near the Mohawk River and are hydrogeologically separated from the Site. The Latham Colonie Water District intake from the Mohawk River is approximately 6.3 miles downstream of the Site.

The reference (5) Hydrogeologic Evaluation of the Niskayuna Well Field, conducted by Dunn Geoscience Corporation (Dunn) in 1984 provided Niskayuna with hydrogeologic data, an evaluation of the data, and also recommendations to increase the usable life of the well field. The report states that the Niskayuna aquifer for which the well field is located within, is bounded to the southwest by impermeable shale, and till exists in the upland areas surrounding the aquifer. The evaluation concluded that recharge to the well field is from precipitation associated with the highlands to the southwest and from the Mohawk River. Dunn concluded that the aquifer is a leaky artesian system, getting most of its recharge from the Mohawk River, and the point of recharge is assumed to be some distance from the well field, most likely down gradient of the well field.

3.0 SCOPE OF WORK IMPLEMENTATION

As shown on Table 1, groundwater samples were collected from 16 developed area wells (D3D6-B16, D3D6-MW40, D3D6-MW45, D3D6-MW51, HYA-MW6R, Q3-MW03, Q3-MW19, Q3-MW23, Q3-MW26, Q3-MW34, Q3-MW99, Q3-MW103, Q3-MW104, Q3-MW121, Q3-MW122, and Q3-MW187), and five undeveloped area wells (LDA-LMW-103, LDA-LMW-142, NTH-1A, NTH-2A, and NTH-5A). Sampling locations are shown on Figures 2 through 7.

For the Initial Phase of sampling, groundwater samples were submitted to the Eurofins TestAmerica Laboratory in Sacramento, California for the analysis of PFAS in accordance with modified USEPA Method 537 and to the Eurofins TestAmerica Laboratory in Edison, New Jersey for analysis of 1,4-dioxane by USEPA Method 8270 selected ion monitoring. Both analytical laboratories are NYSDOH Environmental Laboratory Approval Program certified for the methods. For the Supplemental Phase of sampling, groundwater samples were analyzed only for PFAS, as 1,4-Dioxane was not detected in the Initial Phase of sampling and determined not to be a constituent of concern. NYSDEC Analytical Service Protocol Category B data packages were generated by TestAmerica and validated by an independent data validator. The data validation report is provided in Appendix A.

3.1 Groundwater Sampling Locations

Groundwater sampling locations in the developed area and undeveloped area, with the exception of the Closed Landfill, were determined based on an evaluation of past uses of potential emerging contaminants containing items, available groundwater chlorinated volatile organic compound (CVOC) analytical results for potential 1,4-dioxane indicator CVOCs and local groundwater flow patterns. Closed Landfill sample locations were determined based on available CVOC analytical results and local groundwater flow patterns. This detailed evaluation and sampling location rationale is described in the approved reference (1) SOW. Supplemental sampling locations were determined based on the initial sampling results and discussions with NYSDEC and NYSDOH.

3.2 Sample Collection and Handling

Prior to conducting groundwater sampling activities, monitoring well headspace was screened for organic vapors with a photoionization detector immediately upon opening the well. Any existing dedicated groundwater sampling equipment within the selected wells was removed prior to the start of the sampling to minimize the potential for anomalies in the emerging

contaminants analytical data. The depth to groundwater was then measured in the monitoring well and compared to a previously determined total well depth to calculate the volume of water to be purged during sampling activities. The water levels were obtained by using an electronic water level indicator probe graduated in 0.01-foot increments.

Groundwater monitoring wells were purged by removing three well volumes of water. In slowly recharging monitoring wells, the well was purged to dryness for a minimum of one well volume. Monitoring well purging and sampling was conducted using a peristaltic pump with dedicated high density polyethylene (HDPE) tubing for each well.

Groundwater purging and sampling was conducted while appropriate personal protective equipment (PPE) was donned by sampling personnel as described in the SOW.

Water quality parameters including temperature, conductivity, pH, oxidation-reduction potential, turbidity and dissolved oxygen were measured after each well volume purged. Visual observations were also noted at the start and end of purging; however, no odors or sheens were observed. Well purging information is provided in the field data forms in Appendix B.

Following purging activities, groundwater samples were collected for laboratory analysis. All sampling was performed in accordance with the SOW. Prior to each sample collection, a new pair of nitrile gloves were donned by sampling personnel. The groundwater sample for PFAS analysis was collected first by direct filling the HDPE laboratory-provided containers. The sample for 1,4-dioxane analysis was collected after the PFAS sample collection (including collection of any Quality Assurance/Quality Control (QA/QC) samples for PFAS analysis). The 1,4-dioxane samples were direct-filled into laboratory-provided containers. QA/QC samples including duplicates, matrix spikes/matrix spike duplicates, field reagent blanks, and equipment blanks were collected at the frequency and following the procedures as specified in the SOW. After collection, and sample analysis were placed on the sample container labels. The sample information was recorded on a laboratory provided chain of custody and placed with the sample containers in a cooler containing regular ice for transportation to the laboratory.

3.3 Equipment Decontamination

All non-dedicated sampling equipment (i.e., the water level indicator) was cleaned between each use. Equipment was cleaned using a spray bottle with laboratory provided water, followed by cleaning with a 1,4-dioxane free soap (i.e., Seventh Generation[™]) and laboratory provided water. Equipment was rinsed a second time with laboratory provided water and the equipment

was wiped with paper towels. Cleaning fluids were applied with a spray bottles and the minimal volume was absorbed with paper towels.

Investigation-derived waste including PPE, primarily nitrile gloves, and disposable sampling materials (e.g., tubing, paper towels) were managed as non-hazardous in accordance with Site waste management procedures.

4.0 EMERGING CONTAMINANTS RESULTS AND ASSESSMENT

Analytical results are provided on Tables 2 and 3. The data validation report is provided in Appendix A.

Analytical results are compared to the NYSDOH drinking water maximum contaminant level (MCL) of 10 parts per trillion (ppt) or nanograms per liter (ng/L) for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) and 1 part per billion or micrograms per liter (ug/L) for 1,4-dioxane; there are no established NYS regulatory criteria for the other PFAS. For perspective, the PFOS and PFOA results are also compared to the NYSDEC proposed ambient water guidance values of 2.7 ppt and 6.7 ppt, respectively. For information the data are additionally compared to criteria in the SOW that are now outdated. This includes the May 2016 USEPA lifetime health advisory of 70 ppt for PFOA and PFOS, individually and combined; and the former NYSDEC screening levels of no individual PFAS detected greater than 100 ppt (excluding PFOA and PFOS), and no individual monitoring well with a sum of PFAS detections (including PFOA and PFOS) greater than 500 ppt.

While there are currently no established regulatory criteria for the other PFAS, the NYS Drinking Water Quality Council has recommended a 10 ppt MCL for perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexanesulfonic acid (PFHxS). This recommendation is based on the overall persistence in the environment and toxicity of these PFAS which is similar to PFOS and PFOA as indicated in reference (6). These additional four PFAS were proactively evaluated relative to the recommended 10 ppt MCL, as it is anticipated that NYSDOH will adopt the recommendation as a drinking water MCL. The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the recommended 10 ppt MCL is provided in Table 4 and described herein.

4.1 Data Summary

4.1.1 1,4-Dioxane

1,4-Dioxane was not detected in any of the emerging contaminant groundwater samples. As a result, 1,4-dioxane was not analyzed for in the supplemental samples. The analytical results are presented on Tables 2 and 3.

4.1.2 PFAS – Developed Area

Various combinations of individual PFAS, including PFOS and PFOA, were detected in 17 groundwater samples (15 samples and 2 duplicate samples) collected from the developed area wells. The groundwater analytical results are presented in Table 2. PFOS and PFOA

concentrations in samples collected from developed area wells are shown on Figures 3 through 5. The figure for the Hillside Area does not show D3D6-B16; however, this well, in relation to the other Hillside Area wells, is shown on Figure 2.

Hillside Area

Various combinations of PFAS were detected in four of five groundwater samples. PFAS were not detected in the most downgradient location, D3D6-B16. PFOA concentrations in Hillside Area wells range from 2.01 ppt to 12.2 ppt; with the most elevated PFOA concentration noted in D3D6-MW40, which is the upgradient location. Groundwater flows to the north, preferentially along the storm sewer in this area. There is one PFOA exceedance of the MCL of 10 ppt in D3D6-MW40 as shown on Figure 3. PFOS concentrations in Hillside Area wells range from 1.94 ppt to 13.9 ppt with the most elevated concentration noted in the sample collected from D3D6-MW40. There is one PFOS exceedance of the MCL of 10 ppt in D3D6-MW40. There is one PFOS exceedance of the MCL of 10 ppt in D3D6-MW40. The frequency of PFOS and PFOA results in the developed area compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5.

6:2 Fluorotelomer Sulfonate (FTS) and 8:2 FTS were not detected in any Hillside Area groundwater samples.

PFHpA was detected in four Hillside Area samples at concentrations ranging from 1.32 ppt to 3.83 ppt. PFNA was detected in four groundwater samples at concentrations ranging from 0.8 ppt to 5.92 ppt. PFDA was detected in three groundwater samples at concentrations ranging from 0.33 ppt to 10.5 ppt. The recommended MCL of 10 ppt was exceeded in the sample collected from D3D6-MW40. PFHxS was detected in the sample collected from D3D6-MW40. PFHxS was detected in the sample collected from D3D6-MW40. PFHxS was detected in the groundwater sample collected from D3D6-MW40 at a concentration of 0.65 ppt. The most elevated concentrations of PFHpA, PFNA, PFDA, and PFHxS were detected in the groundwater sample collected from D3D6-MW40. The frequency of the four PFAS detected in the developed area and undeveloped area and a comparison to the recommended MCL is provided in Table 4.

High Yard Area

Multiple PFAS were detected in the single groundwater sample collected from High Yard Area well MW-6R. PFOA was detected in MW-6R at a concentration of 8.88 ppt. PFOS was detected in MW-6R at a concentration of 9.46 ppt as shown on Figure 4. PFOA and PFOS are both less than the NYSDOH MCL of 10 ppt.

6:2 FTS and 8:2 FTS were not detected.

PFHpA, PFNA, and PFHxS were detected at concentrations of 1.54 ppt, 0.34 ppt, and 5.65 ppt, respectively, which are all below the recommended MCL of 10 ppt. PFDA was not detected.

Q3 Yard

Various combinations of PFAS were detected in the 12 Q3 Yard groundwater samples. In the Q3 Yard, PFOA concentrations range from 1.01 ppt to 34.6 ppt; with the most elevated concentration noted in upgradient well Q3-MW03. There were four samples with exceedances of the NYSDEC proposed guidance value for groundwater of 6.7 ppt and the NYSDOH drinking water MCL of 10 ppt for PFOA in the samples collected from Q3-MW03, Q3-MW19, Q3-MW34, and Q3-MW187 as shown on Figure 5.

PFOS concentrations range from 0.99 ppt to 71.7 ppt; with the most elevated concentration noted in Q3-MW03. This single detection of PFOS at 71.7 ppt, exceeds than the USEPA health advisory of 70 ppt; however, there are no PFOA concentrations greater than the health advisory. There were two samples with exceedances of the NYSDOH drinking water MCL of 10 ppt for PFOS in Q3-MW03 and Q3-MW34. PFOS and PFOA were not detected in downgradient well Q3-MW122. The frequency of PFOS and PFOA results in the developed area compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5. There are no samples with total PFAS concentrations in Q3 Yard groundwater above the NYSDEC redacted guidance criteria for PFAS of 500 ppt.

6:2 FTS was detected in the sample collected from Q3-MW99 at a concentration of 2.58 ppt.8:2 FTS was not detected in any Q3 Yard samples.

PFHpA was detected in all Q3 Yard samples with the exception of Q3-MW122, at concentrations up to 11 ppt; with one exceedance of the recommended MCL of 10 ppt in the sample collected from Q3-MW03. PFNA was detected in eight Q3 Yard samples at concentrations ranging from 0.25 ppt to 2.55 ppt; with the most elevated concentration detected in the sample collected from Q3-MW03. PFDA was detected in Q3 Yard groundwater samples collected from Q3-MW03 and Q3-MW19 at concentrations of 0.75 ppt and 1.22 ppt, respectively. PFHxS was detected in six Q3 Yard groundwater samples at concentrations ranging from 0.87 ppt to 6.98 ppt with the most elevated concentration detected in the sample collected from Q3-MW03. There are no exceedances of the recommended MCL of 10 ppt for PFNA, PFDA, and PFHxS. The frequency of the four PFAS detected in the developed area and undeveloped area and a comparison to the recommended MCL is provided in Table 4.

4.1.3 Developed Area Assessment

PFAS are present in developed area groundwater and the results do not indicate a PFAS source area. The most notable PFAS concentrations were in the samples collected from well Q3-MW03 in the Q3 Yard and D3D6-MW40 located in the Hillside Area. Generally, PFOA and PFOS decrease in concentration at the downgradient locations in the Q3 Yard with the exception of Q3-MW187. PFAS were not detected in the downgradient Hillside Area monitoring location, well D3D6-B16.

Overall, the presence of PFAS in developed area groundwater indicates there may have been some onsite source; however, currently there is no known source for the PFAS detections. The four PFAS that are proposed for addition to NYSDOH list of drinking water MCLs were detected in two wells at concentrations exceeding 10 ppt. Downgradient developed area groundwater samples, with the exception of Q3-MW187 (in which PFOA is slightly above the MCL), are all below 10 ppt.

4.1.4 PFAS – Undeveloped Area

Various combinations of PFAS, including PFOS and PFOA, were detected in four of the five groundwater samples collected from the undeveloped area wells. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from undeveloped area wells are shown on Figures 6 and 7.

LDA

Various combinations of PFAS were detected in the two groundwater samples collected from LMW103 and LMW142 in the LDA. Generally, the concentration and number of individual PFAS was greater in the sample collected from LMW103. PFOA was detected at concentrations of 2.19 ppt and 4.80 ppt in LMW142 and LMW103, respectively. PFOS was detected at a concentration of 2.28 ppt in LMW103 and not detected in LMW142. All results are below the applicable NYSDOH MCL and NYSDEC guidance values. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values are provided in Table 6.

Fluorotelomer compounds 6:2 FTS and 8:2 FTS were not detected.

PFHpA was detected at 1.46 ppt and 0.80 ppt in LMW103 and LMW142, respectively. PFNA was detected in LMW103 at a concentration of 0.88 ppt. PFHxS was detected at 0.65 ppt in LMW103. PFDA was not detected. All results were below the recommended MCL of 10 ppt.

The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the proposed 10 ppt MCL is provided in Table 4.

Closed Landfill

Various combinations of PFAS, including PFOS and PFOA, were detected in two of the three groundwater samples collected from the Closed Landfill. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from Closed Landfill wells are shown on Figure 7.

PFAS were not detected in upgradient well NTH-1A. PFOA was detected at concentrations of 0.92 ppt and 4.16 ppt in NTH-5A and NTH-2A, respectively. PFOS was detected in one sample at a concentration of 5.35 ppt in NTH-2A. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values are provided in Table 6.

Fluorotelomer compounds were not detected in the Closed Landfill groundwater samples.

PFHpA was detected in NTH-2A at a concentration of 1.06 ppt. PFNA, PFHxS, and PFDA were not detected in Closed Landfill samples. There are no exceedances of the proposed MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the proposed 10 ppt MCL is provided in Table 4.

4.1.5 Undeveloped Area Assessment

Overall, PFAS are present in downgradient Closed Landfill and LDA groundwater samples at low concentrations with no exceedances of the MCL. Additionally, the four PFAS that are recommended for addition to the NYSDOH list of drinking water MCLs do not exceed the recommended MCL of 10 ppt. Fluorotelomer compounds, which were starting to be produced in the 1970s (reference (7)), were not detected in undeveloped area samples. Furthermore, the lack of PFAS derived from fluorotelomerization manufacturing processes, a more dominant process in the production of select PFAS in the early 2000s, correlates with the early 1990s landfill closure and the end of known LDA disposal operations in the mid to late 1970s.

5.0 CONCLUSION

1,4-Dioxane was not detected in any of the groundwater samples and is not considered a constituent of concern. PFAS are present in groundwater in the developed area and undeveloped area. A definitive source has not been identified for PFAS in groundwater at the Knolls Laboratory. The PFAS are generally attributed to a myriad of products and materials containing PFAS that may have been used onsite. Based on the composition detected, PFAS appear to be associated with electrochemical fluorination and would therefore be attributable to historical sources. The PFAS present in the undeveloped area are consistent with legacy PFAS formulations, which correlates with the closure of the landfill in the early 1990s and the end of known LDA disposal operations in the mid to late 1970s. Overall, the PFAS concentrations decrease in downgradient groundwater to levels below the drinking water MCL. Furthermore, groundwater at the Site is not used for drinking water and adjacent properties are serviced by the Town of Niskayuna well field, which is Niskayuna's drinking water source, and is hydrogeologically separated from the Site.

Due to the evolving nature of regulatory requirements associated with PFAS, any future additional characterization will be performed based on discussions and alignment with NYSDEC and NYSDOH.

6.0 **REFERENCES**

- 1) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Knolls Laboratory, April 2021
- 2) NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory, Emerging Contaminants (EC) Scope of Work (SOW)
- 4) NYSDEC. 2021. Division of Materials Management. New York State Inactive Landfill Initiative, Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, May 2021
- Dunn Geoscience Corporation, 1984. Hydrogeologic Evaluation of the Niskayuna Well Field, Town of Niskayuna, New York, October 1984
- 6) NYS Drinking Water Quality Council (DWQC). 2022. Emerging PFAS Health based Drinking Water Values and Maximum Contaminant Levels [PowerPoint Slides], Sadie Wheeler, Ph.D., March 10, 2022, Minute 35 <u>https://totalwebcasting.com/view/?func=VOFF&id=nysdoh&date=2022-05-02&seq=1</u>
- 7) ITRC. 2020. History and Use of Per-and Polyfluoroalkyl Substances (PFAS), April 2020

Tables

Table 1Implementation Summary

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory – Knolls Laboratory Niskayuna, New York

Initial Sampling Phase September 27, 2021 - October 1, 2021	Groundwater Sampling				
September 27, 2021 - October 1, 2021	 Four Hillside Area Wells Sampled D3D6-B16, D3D6-MW40, D3D6-MW45, D3D6-MW51, One Field Reagent Blank One High Yard Area Well Sampled HYA-MW6R One Field Reagent Blank Five Q3 Yard Wells Sampled Q3-MW03, Q3-MW19, Q3-MW23, Q3-MW34, Q3-MW103 One Field Reagent Blank Two Land Disposal Area Wells Sampled LDA-LMW103, LDA-LMW142 One Field Reagent Blank Three Closed Landfill Wells Sampled NTH-1A, NTH-2A, NTH-5A One Field Reagent Blank 				
Supplemental Sampling Phase December 7, 2021 - December 8, 2021	Groundwater Sampling • Six Q3 Yard Wells Sampled o Q3-MW26, Q3-MW99, Q3-MW104 Q3-MW121, Q3-MW122, Q3-MW187 o Two Field Reagent Blanks				
 Notes: PFAS = Per- and polyfluoroalkyl substances; USEPA = United States Environmental Protection Agency 1. Emerging Contaminants groundwater samples analyzed for 21 PFAS by modified USEPA Method 537 and 1,4-dioxane by USEPA Method 8270 Selected Ion Monitoring (SIM). 2. Supplemental groundwater samples analyzed for PFAS only by modified USEPA Method 537. 3. PFAS analysis performed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California. 1,4-dioxane analysis performed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey. 4. All necessary Quality Assurance / Quality Control samples collected in accordance with the Scope of Work. 					

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

Area			Hillside Area				
Location ID			D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51
Sample ID			KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121
Sample Date			9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	1.88 U	0.34 J	1.12 J	1.07 J	0.70 J
Perfluorobutanoic acid (PFBA)	NV	NV	4.71 U	4.69 J	6.01	6.04	4.92
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.88 U	6.12	1.96 U	1.89 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.88 U	10.5	0.33 J	1.89 U	0.74 J
Perfluorododecanoic acid (PFDoA)	NV	NV	1.88 U	5.84	1.96 U	1.89 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	1.88 U	3.83	1.89 J	1.64 J	1.32 J
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	1.88 U	0.65 J	1.96 U	1.89 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	NV	1.88 U	3.98	3.00	2.56	2.06
Perfluorononanoic acid (PFNA)	NV	NV	1.88 U	5.92	0.80 J	0.84 J	2.11
Perfluorooctanesulfonic acid (PFOS)	2.7	10	1.88 U	<u>13.9 *</u>	1.94 J	1.89 U	6.52 *
Perfluorooctanoic acid (PFOA)	6.7	10	1.88 U	<u>12.2 *</u>	2.13	2.01	2.89
Perfluoropentanoic acid (PFPeA)	NV	NV	1.88 U	5.72	5.58	4.70	2.82
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.88 U	6.32	1.96 U	1.89 U	1.96 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (μg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected,

and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica

Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards

and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

Area			High Yard Area	Q3 Yard Area			
	Location ID			Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34
Sample ID			KL-EC-MW-6R-093021	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021
		Sample Date	9/30/2021	9/30/2021	9/28/2021	9/28/2021	9/30/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	1.38 EMPC	3.77	4.18	0.75 J	0.96 J
Perfluorobutanoic acid (PFBA)	NV	NV	3.80 J	15.9	7.80	9.08	8.41
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.90 U	0.75 J	1.22 J	1.88 U	1.89 U
Perfluorododecanoic acid (PFDoA)	NV	NV	1.90 U	1.87 U	0.85 J	1.88 U	1.89 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.90 U	1.98	1.82 U	1.88 U	1.89 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	1.54 J	11.0	3.28	4.01	4.47
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	5.65	6.98	3.34	0.87 J	2.74
Perfluorohexanoic acid (PFHxA)	NV	NV	2.22	13.7	6.21	7.58	8.72
Perfluorononanoic acid (PFNA)	NV	NV	0.34 J	2.55	1.77 J	1.94	1.98
Perfluorooctanesulfonic acid (PFOS)	2.7	10	9.46 *	<u>71.7 *</u>	6.70 *	6.77 *	<u>24.0 *</u>
Perfluorooctanoic acid (PFOA)	6.7	10	8.88 *	<u>34.6 *</u>	<u>10.2 *</u>	7.33 *	<u>12.8 *</u>
Perfluoropentanoic acid (PFPeA)	NV	NV	2.72	9.01	4.95	9.12	13.2
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.90 U	1.87 U	0.66 J	1.88 U	1.89 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.39 J	1.87 U	1.82 U	1.88 U	1.89 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (μg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica

Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards

and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

Area			Q3 Yard Area				
	Location ID			Q3-MW26	Q3-MW99	Q3-MW104	Q3-MW121
Sample ID			KL-EC-Q3-MW103-100121	KL-EC-Q3-MW26-120721	KL-EC-Q3-MW99-120821	KL-EC-Q3-MW104-120721	KL-EC-Q3-MW121-120721
		Sample Date	10/1/2021	12/7/2021	12/8/2021	12/7/2021	12/7/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.74 U	4.59 U	2.58 J	4.64 U	4.65 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	1.90 U	0.34 J	0.79 J	1.86 U	1.86 U
Perfluorobutanoic acid (PFBA)	NV	NV	7.62	6.94	4.27 J	3.58 J	4.65 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorododecanoic acid (PFDoA)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	0.22 J	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	2.12	0.50 J	1.66 J	0.54 J	0.34 J
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	1.90 U	1.31 J	0.92 J	1.86 U	1.86 U
Perfluorohexanoic acid (PFHxA)	NV	NV	3.14	1.04 J	3.25 EMPC	1.13 J	0.78 J
Perfluorononanoic acid (PFNA)	NV	NV	1.35 EMPC	0.27 J	1.08 J	0.25 J	1.86 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10	3.64 *	1.75 J	1.97 J	0.99 J	1.97
Perfluorooctanoic acid (PFOA)	6.7	10	5.78	2.00	2.02 J	1.38 J	1.23 J
Perfluoropentanoic acid (PFPeA)	NV	NV	6.49	1.87	3.72	1.39 J	0.81 J
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.90 UJ	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
1,4-Dioxane	0.35	1.0	0.20 UJ				

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (μg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected,

and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica

Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards

and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

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	A			a Q3 Yard Area			
		Location ID	Q3-MW121	Q3-MW122	Q3-MW187		
		Sample ID	KL-EC-X02-120721	KL-EC-Q3-MW122-120721	KL-EC-Q3-MW187-120821		
		Sample Date	12/7/2021	12/7/2021	12/8/2021		
	Proposed Guidance Drinking Water						
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.67 U	4.65 U	4.49 U		
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.87 U	1.86 U	1.79 U		
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.67 U	4.65 U	4.49 U		
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.67 U	4.65 U	4.49 U		
Perfluorobutanesulfonic acid (PFBS)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorobutanoic acid (PFBA)	NV	NV	4.67 U	2.27 J	10.1		
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorodecanoic acid (PFDA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorododecanoic acid (PFDoA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluoroheptanoic acid (PFHpA)	NV	NV	0.27 J	1.86 U	1.10 J		
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorohexanoic acid (PFHxA)	NV	NV	0.65 J	1.86 U	3.35		
Perfluorononanoic acid (PFNA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorooctanesulfonic acid (PFOS)	2.7	10	1.71 J	1.86 U	1.79 U		
Perfluorooctanoic acid (PFOA)	6.7	10	1.01 J	1.86 U	<u>15.7 *</u>		
Perfluoropentanoic acid (PFPeA)	NV	NV	0.82 J	1.86 U	4.56		
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.87 U	1.86 U	1.79 U		
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.87 U	1.86 U	1.79 U		
1,4-Dioxane	0.35	1.0					

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate.

"---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537.

1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 3

Undeveloped Area Sample Results

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Land Disposal Area		Closed Landfill				
	Area						
Location ID			LDA-LMW103	LDA-LMW142	NTH-1A	NTH-2A	NTH-5A
Sample ID			KL-EC-LMW-103-092821	KL-EC-LMW-142-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721
	1	Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	0.72 J	0.57 J	1.99 U	0.87 J	0.45 J
Perfluorobutanoic acid (PFBA)	NV	NV	52.3	16.2	4.98 U	4.88 J	5.24 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorodecanoic acid (PFDA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorododecanoic acid (PFDoA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	1.46 J	0.80 EMPC	1.99 U	1.06 J	2.10 U
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	0.65 J	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorohexanoic acid (PFHxA)	NV	NV	2.62	1.25 J	1.99 U	1.62 J	2.10 U
Perfluorononanoic acid (PFNA)	NV	NV	0.88 J	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10	2.28	1.91 U	1.99 U	5.35 *	2.10 U
Perfluorooctanoic acid (PFOA)	6.7	10	4.80	2.19	1.99 U	4.16	0.92 J
Perfluoropentanoic acid (PFPeA)	NV	NV	3.29	4.14	1.99 U	1.96 J	2.10 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (ng/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 4PFHpA, PFNA, PFDA, PFHxS Detection SummaryDeveloped Area and Undeveloped Area

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory – Knolls Laboratory Niskayuna, New York

Analyte	Area	Number of Detections per Number of Samples Analyzed	Range of Detections (ng/L)	Number of Samples > Recommended NYS DW MCL (10 ng/L)
	Developed Area	16/18	0.27 J to 11.0	1/18
PFHpA	Undeveloped Area	3/5	0.80 EMPC to 1.46 J	0/5
PFNA	Developed Area	14/18	0.25 J to 5.92	0/18
PFNA	Undeveloped Area	1/5	0.88 J	0/5
	Developed Area	5/18	0.33 J to 10.5	1/18
PFDA	Undeveloped Area	0/5	Not Detected	0/5
PFHxS	Developed Area	8/18	0.65 J to 6.98	0/18
	Undeveloped Area	1/5	0.65 J	0/5

Notes: 1. ng/L= nanograms per liter; NYS = New York State; DW = Drinking Water; MCL = Maximum Contaminant Level; PFHpA = Perfluoroheptanoic acid;

PFNA = Perfluorononanoic acid; PFDA = Perfluorodecanoic acid;

PFHxS = Perfluorohexanesulfonic acid; J = analyte detected at an estimated concentration;

EMPC = indicates the result is estimated maximum possible concentration

2. Proposed NYS DW MCL values are from the NYS Drinking Water Quality Council March 10, 2022 meeting.

Table 5PFOS and PFOA Detection SummaryDeveloped Area

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory – Knolls Laboratory Niskayuna, New York

Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
<u>PFOA</u>	Site Area	1.01 J to 34.6	7/18	5/18
NYS GW GV: 6.7 ng/L	Hillside Area	2.01 to 12.2	1/5	1/5
NYS DW MCL: 10 ng/L	High Yard Area	8.88	1/1	0/1
	Q3 Yard	1.01 J to 34.6	5/12	4/12
PFOS	Site Area	0.99 J to 71.7	8/18	3/18
NYS GW GV: 2.7 ng/L	Hillside Area	1.94 J to 13.9	2/5	1/5
NYS DW MCL: 10 ng/L	High Yard Area	9.46	1/1	0/1
	Q3 Yard	0.99 J to 71.7	5/12	2/12

Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

> 2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 6PFOS and PFOA Detection SummaryUndeveloped Area

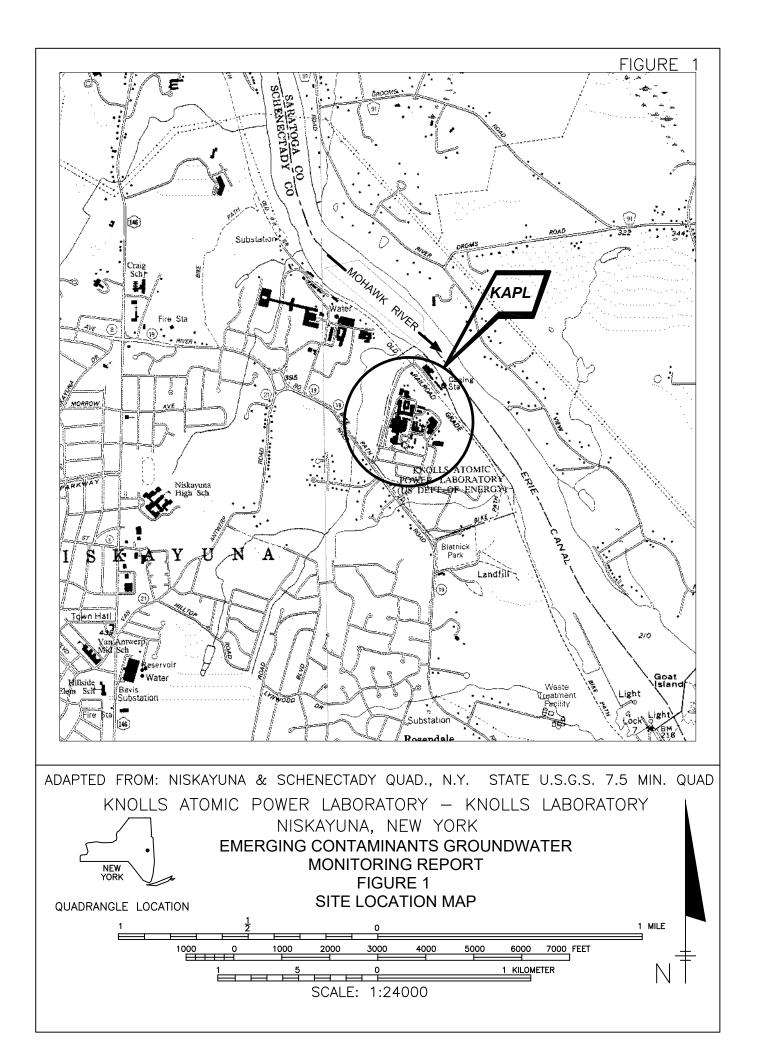
Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory – Knolls Laboratory Niskayuna, New York

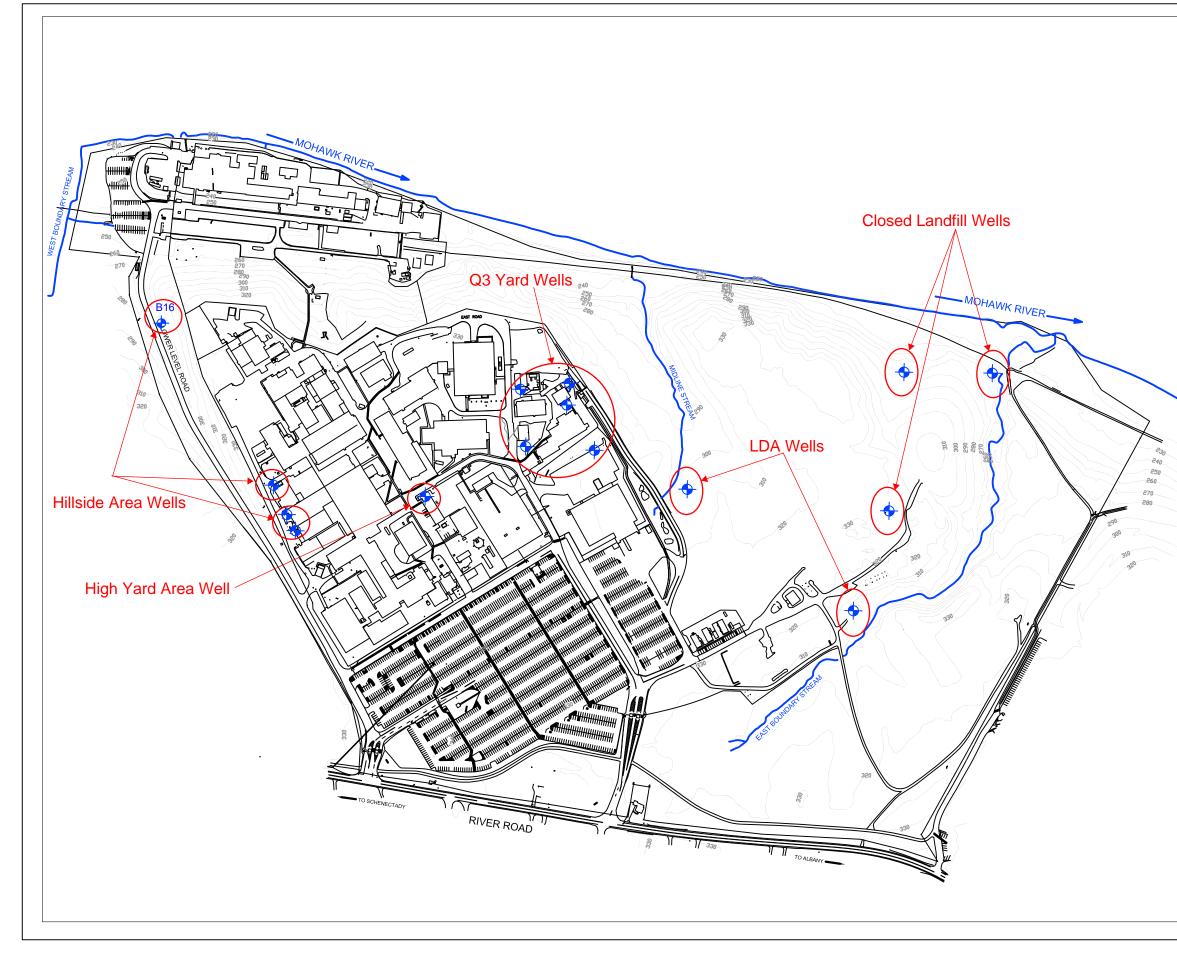
Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	0.92 J to 4.16	0/3	0/3
	Land Disposal Area	2.19 to 4.80	0/2	0/2
PFOS NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	5.35	1/3	0/3
	Land Disposal Area	2.28	0/2	0/2

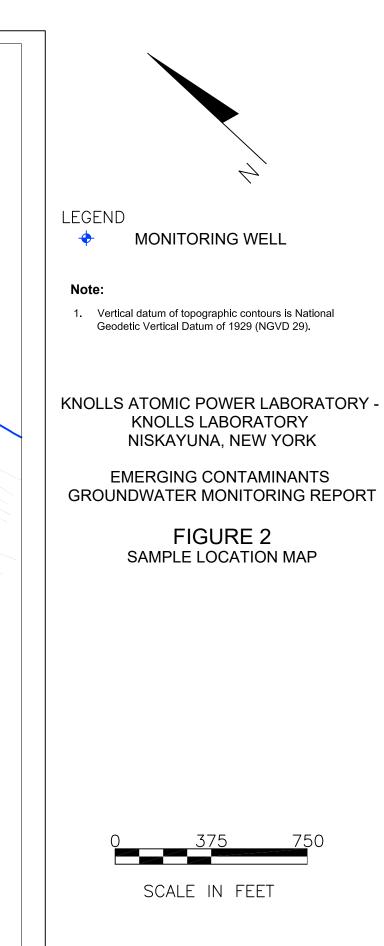
Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

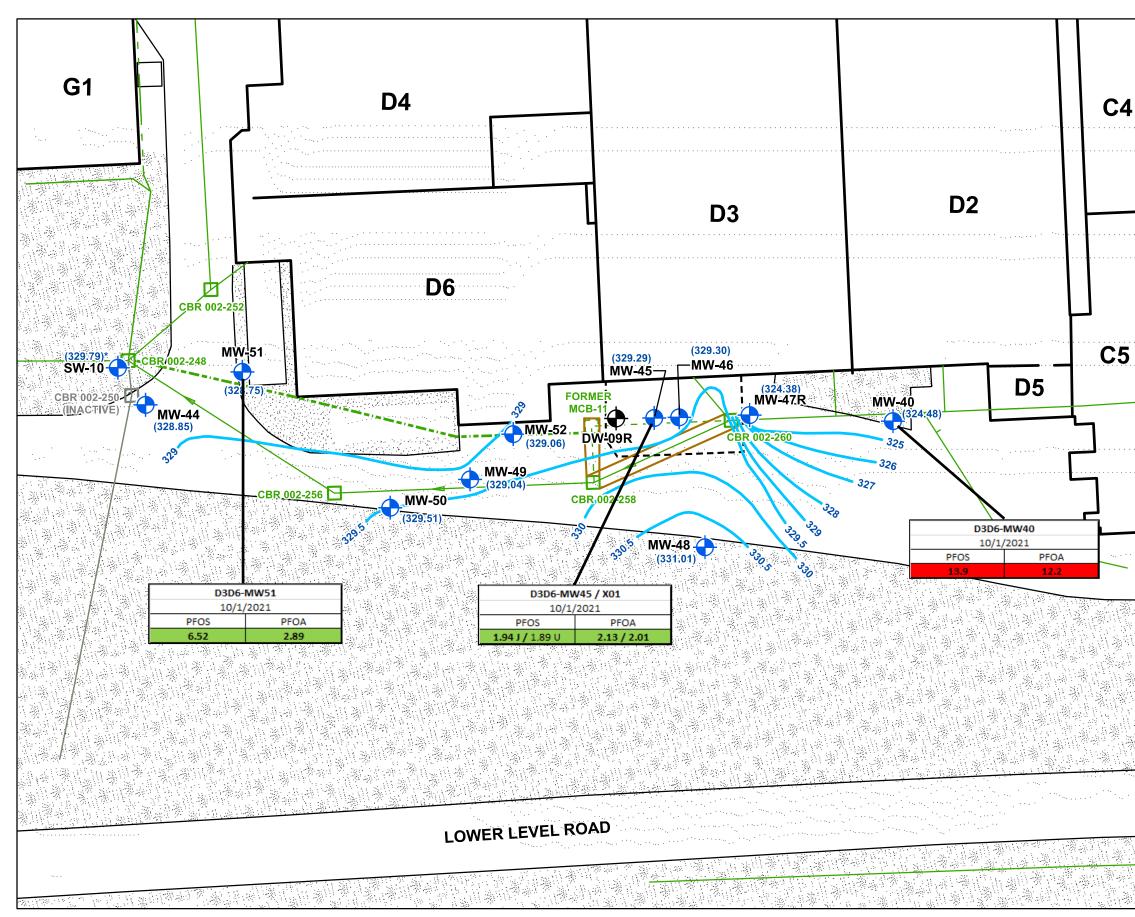
> 2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Figures









Source: Figure adapted from the Interim Corrective Measure Report for the Hillside Area (AOC-001) G1-D4 Alleyway, Attachment 1, D3D6 Area Groundwater Flow Assessment, Figure 10, December 2019





Monitoring Well Location

Monitoring Well Location - Damaged

- (331.01) Water Elevation Measured on September 18, 2019
 - Groundwater Elevation Contour with 0.5-Foot Interval
 - Storm Sewer Line
- Catch Basin
- Flowable Fill Boundary
- Abandoned Storm Sewer Line or Catch Basin
- 24-inch Bell and Spigot Concrete Storm Sewer Pipe Segment Removed in 1996
- ---- Foundation Drain
- --- ICM Excavation Area Limit
- Grass Cover
- Gravel Cover

Notes:

 Results are in nanograms per liter (ng/L)."U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration.
 Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

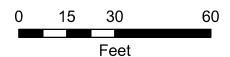
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

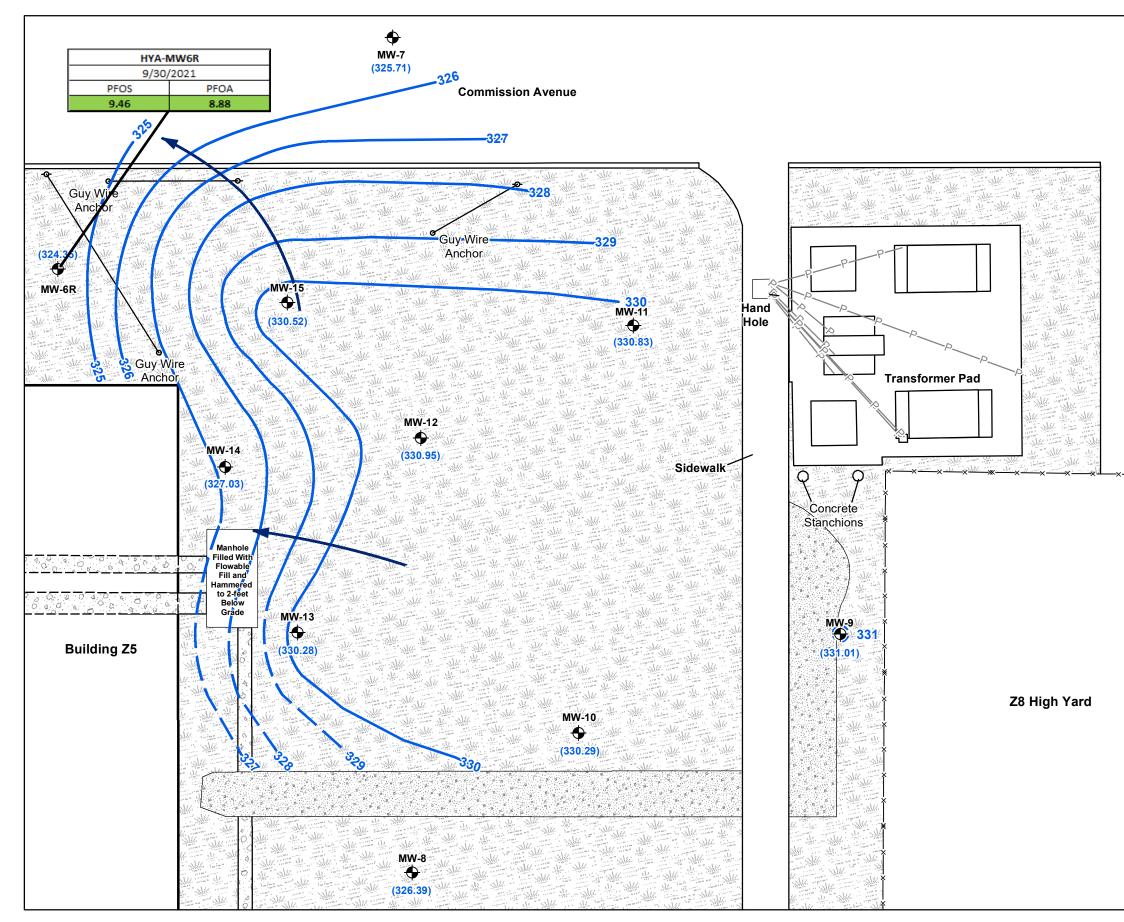
- Red box = PFAS above criteria
- Green box = PFAS below criteria

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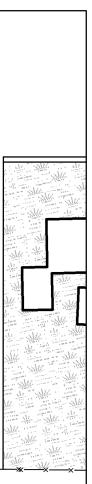
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 3 HILLSIDE AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER





Source: Figure adapted from Figure 8 from the Annual Groundwater Monitoring Report for the High Yard Area (SWMU-023), March 2020



Legend

- Monitoring Well Location
- (324.35) Groundwater Elevation Measured on December 10, 2019 (Feet Above Mean Sea Level)

N

- Groundwater Elevation Contour with 1-Foot Interval (Dashed where Inferred)
- Groundwater Flow Direction
- P-----P- Underground Power Line
- Groundwater Cut-Off Wall
- Conduit Duct Bank Encased in Concrete -Under Building
- Conduit Duct Bank Encased in Concrete
- Grass
- ×——× Security Fence
- -o- Utility Pole

Notes:

1. Results are in nanograms per liter (ng/L).

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

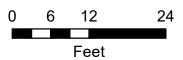
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

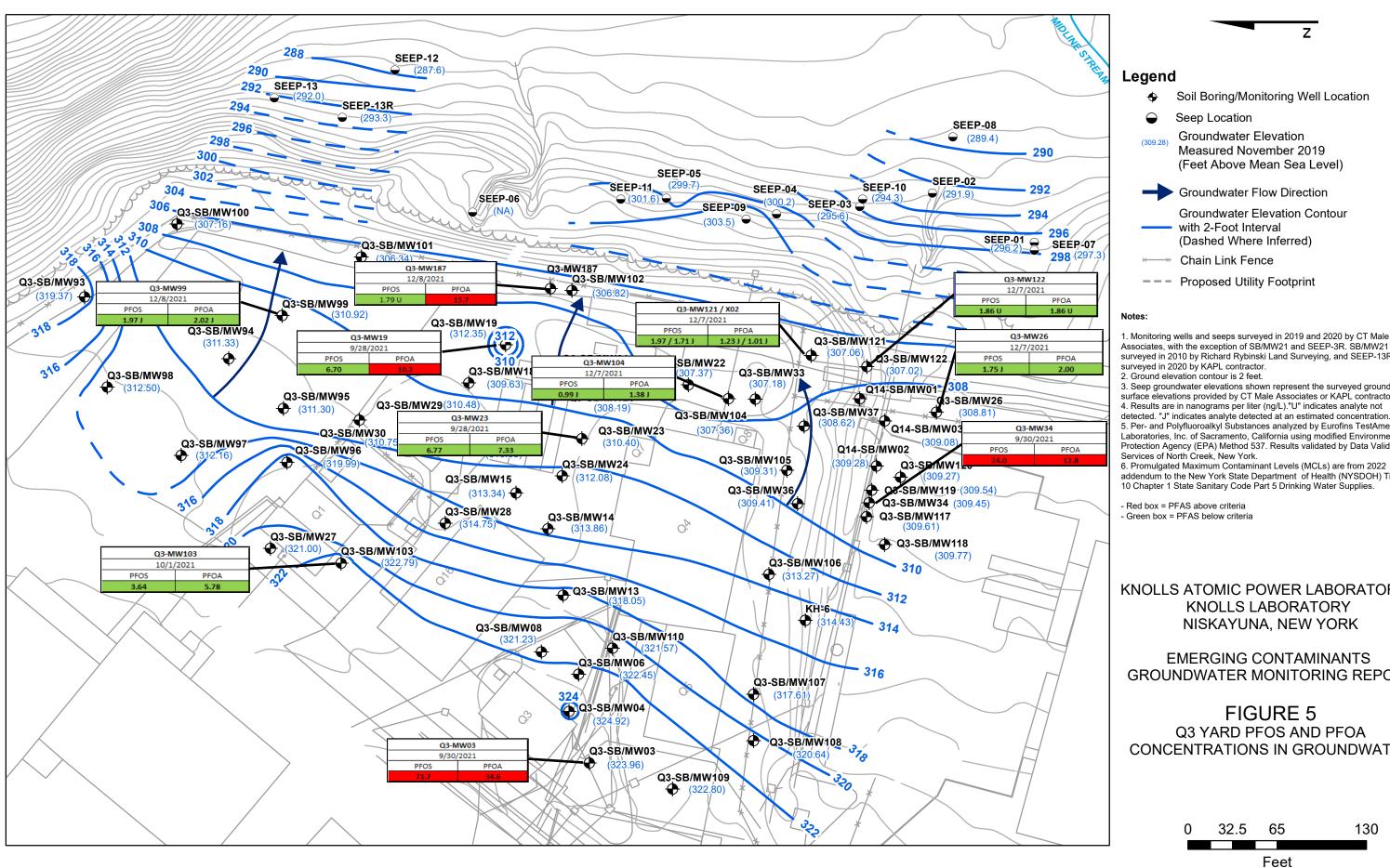
- Green box = PFAS below criteria

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EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 4 HIGH YARD AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER





Associates, with the exception of SB/MW21 and SEEP-3R. SB/MW21 surveyed in 2010 by Richard Rybinski Land Surveying, and SEEP-13R

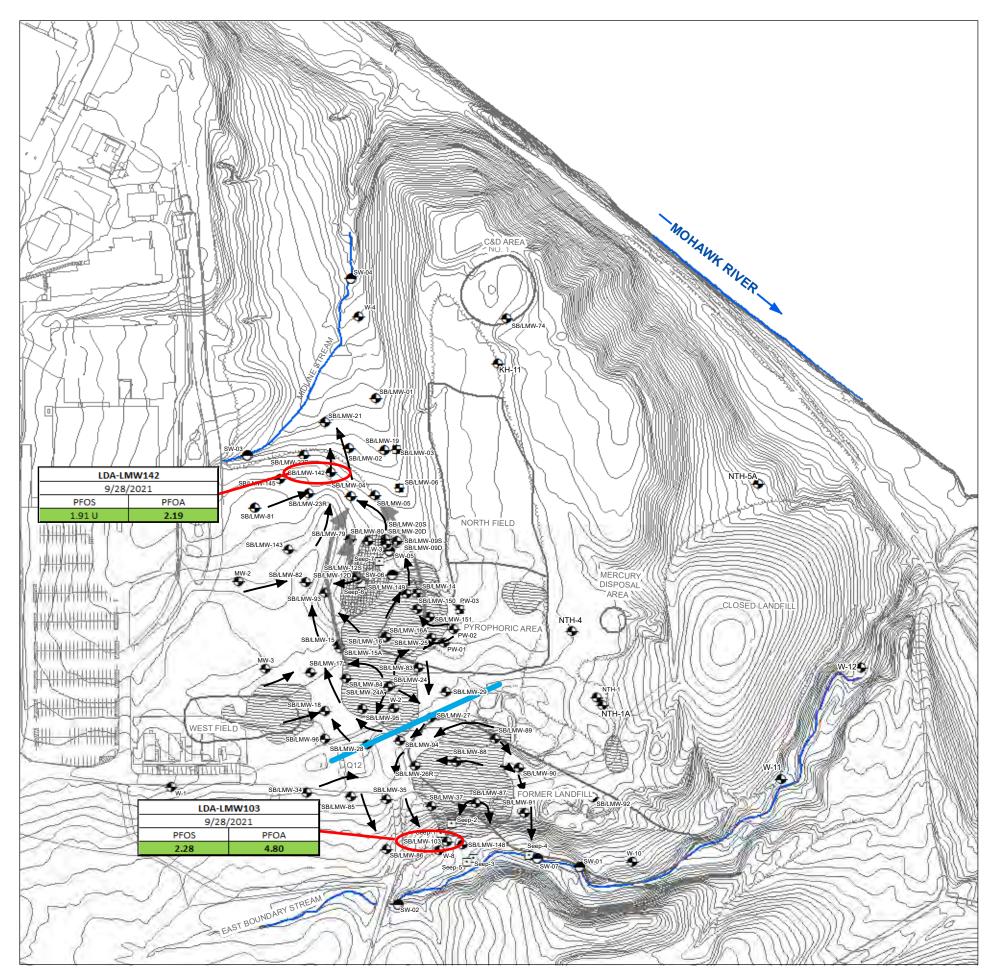
3. Seep groundwater elevations shown represent the surveyed ground surface elevations provided by CT Male Associates or KAPL contractor. 4. Results are in nanograms per liter (ng/L)."U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. 5. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation

6. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title

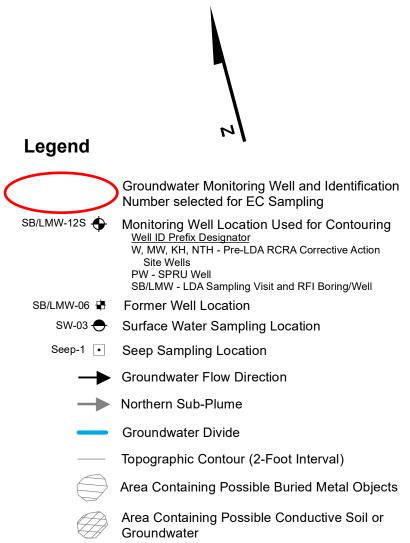
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GROUNDWATER MONITORING REPORT

CONCENTRATIONS IN GROUNDWATER



Source: This figure is adapted from KAPL Land Disposal Area Focused Corrective Measures Study Report, May 2018, Figure 6



Notes:

 Results are in nanograms per liter (ng/L)."U" indicates analyte not detected.
 Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Green box = PFAS below criteria

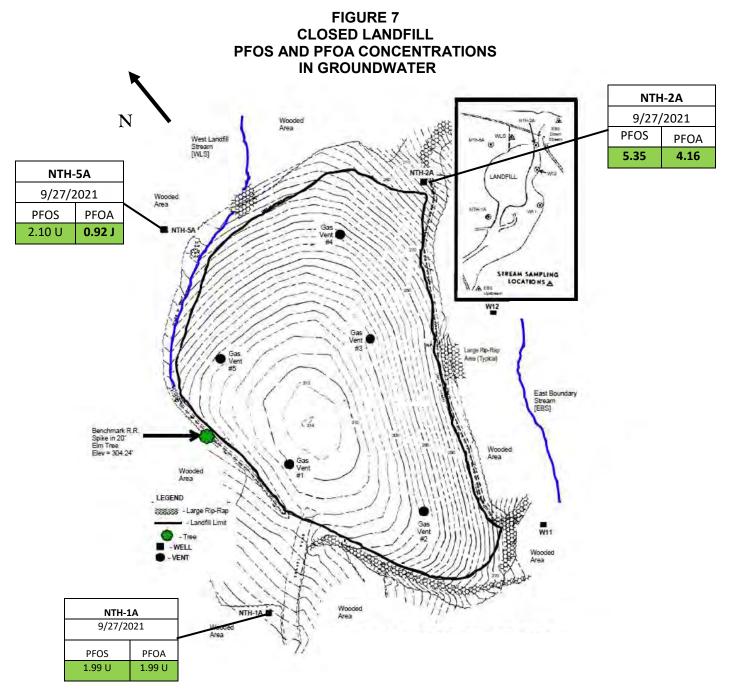
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EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 6 LAND DISPOSAL AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER



KNOLLS ATOMIC POWER LABORATORY – KNOLLS LABORATORY, NISKAYUNA, NEW YORK EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT



Source: Figure adapted from Figure 1 of the Annual 2020 Post-Closure Landfill Monitoring Report for KAPL – Knolls Laboratory, August 2020

Notes:

1. Results are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected an estimated concentration.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Green box = PFAS below criteria

Appendix A Data Validation Report

Data Validation Services

120 Cobble Creek Road P.O. Box 208 North Creek, NY 12853

> Phone 518-251-4429 harry@frontiernet.net

April 26, 2022

Marc Flanagan FMP-KAPL P. O. Box 1072 Schenectady, NY 12301

- RE: Knolls Atomic Power Laboratory (KAPL), Knolls Laboratory (KL) Site Emerging Contaminants (EC) Sampling Scope of Work Implementation Analytical Data Packages
 - Eurofins TestAmerica Laboratories Report Nos. 200-60278-1 and 200-61275-1

Dear Mr. Flanagan:

Review has been completed for the data packages generated by Eurofins TestAmerica Laboratories that pertain to aqueous samples collected between 09/27/21 and 12/08/21 as part of the KAPL KL EC Sampling Scope of Work Implementation. In September/October 2021, fifteen samples, one field duplicate, and one equipment blank were analyzed for 1,4-dioxane and twenty-one per- and polyfluoroalkyl substances (PFAS). In December 2021, six samples, one field duplicate, and one equipment blank were analyzed for PFAS. Five rinse blanks collected in September/October 2021 and two rinse blanks collected in December 2021 were analyzed for PFAS. The samples were processed and analyzed by the United States Environmental Protection Agency (USEPA) SW846 method 8270E Selected Ion Monitoring (SIM) and a modified USEPA Method 537.

Data validation was performed with guidance from the following documents, with consideration of the specific project method requirements.

- Emerging Contaminants Scope of Work for the Knolls Laboratory, April 2021
- NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- USEPA. 2018. USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537, EPA 910-R-18-001, November 2018
- USEPA. 2017. USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

The following items were reviewed:

- Data Completeness
- Custody Documentation/Sample Condition
- Holding Times
- Surrogate, Isotopic Dilution, and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Correlations
- Field Duplicate Correlations
- Method/Equipment/Rinse Blanks
- Laboratory Control Samples (LCSs)

- Instrument Tunes
- Calibration Standard Responses
- Method Compliance
- Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted in compliance with project requirements and with adherence to quality criteria. Sample results are usable as reported or with minor qualification.

Validation data qualifier definitions, sample summaries, laboratory qualifier definitions/ glossaries, laboratory case narratives, and chains-of-custody are included in this report, and should be reviewed in conjunction with this text. Also attached is a data summary table displaying the sample results and the qualifications noted in this report.

PFAS compounds are identified by their common acronyms in this report. The data packages and data table reference both the technical names and the acronyms.

Field Duplicate Correlations

The blind field duplicate evaluations were performed for 1,4-dioxane and PFAS on KL-EC-MW-45-100121 and for PFAS on KL-EC-Q3-MW121-120721. The correlations meet validation guidelines.

1.4-Dioxane Analyses by USEPA Method 8270E SIM

The following samples were extracted beyond the allowable holding time due to laboratory oversight: KL-EC-MW-40-100121, KL-EC-MW-45-100121, KL-EC-MW-51-100121, KL-EC-Q3-MW103-100121, and KL-EC-X01-100121. The results 1,4-diooxane for those samples have been qualified as estimated in value, with a low bias.

The matrix spike accuracy and precision evaluation was performed on KL-EC-Q3-MW34-093021. Recoveries and correlations fall within validation guidelines.

Instrument tune compounds meet fragmentation requirements. Surrogate standard recoveries are within validation guidelines. LCS recoveries are within the required range. Internal standard recoveries are within required ranges. Blanks show no contamination.

Calibration standards show acceptable correlations.

PFAS Analyses by Modified USEPA Method 537

The results for the following analytes have been qualified as being Estimated Maximum Possible Concentrations (EMPCs) due to outlying ion ratios:

- PFHpA in KL-EC-LMW-142-092821
- PFBS in KL-EC-MW-6R-093021

- PFNA in KL-EC-Q3-MW103-100121
- PFHxA in KL-EC-Q3-MW99-120821

The matrix spike accuracy and precision evaluations were performed on KL-EC-Q3-MW34-093021 and KL-EC-Q3-MW26-120721. Recoveries and correlations fall within validation guidelines.

The result for PFTeA is qualified as estimated in KL-EC-Q3-MW103-100121 due to low recovery of the associated isotopic dilution standard. The bias is expected to be minimal.

Holding time requirements were met. LCS recoveries are within required ranges. Internal standard recoveries are within required ranges. Blanks show no contamination affecting sample reported results.

Calibration standards show responses within validation guidelines.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Attachments:

Validation Data Qualifier Definitions Sample Summaries Laboratory Definitions/Glossaries Laboratory Case Narratives Chains-of-Custody Data Summary Table

VALIDATION DATA QUALIFIER DEFINITIONS

- **U** The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
- J The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
- J- The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
- J+ The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
- **UJ** The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
- **NJ** The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
- **R** The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
- **EMPC** The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Sample Summary

Client: Ramboll US Corporation Project/Site: KAPL KL Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-60278-1	KL-EC-NTH-1A-092721	Water	09/27/21 11:25	09/28/21 11:13
200-60278-2	KL-EC-NTH-5A-092721	Water	09/27/21 14:25	09/28/21 11:13
200-60278-3	KL-EC-NTH-2A-092721	Water	09/27/21 15:45	09/28/21 11:13
200-60278-4	KL-EC-FRB01-092721	Water	09/27/21 15:30	09/28/21 11:13
200-60294-1	KL-EC-LMW-103-092821	Water	09/28/21 09:45	09/29/21 10:41
200-60294-2	KL-EC-LMW-142-092821	Water	09/28/21 11:10	09/29/21 10:41
200-60294-3	KL-EC-FRB02-092821	Water	09/28/21 11:20	09/29/21 10:41
200-60294-4	KL-EC-Q3-MW23-092821	Water	09/28/21 14:35	09/29/21 10:41
200-60294-5	KL-EC-Q3-MW19-092821	Water	09/28/21 15:50	09/29/21 10:41
200-60348-1	KL-EC-B-16-093021	Water	09/30/21 09:55	10/01/21 13:31
200-60348-2	KL-EC-Q3-MW03-093021	Water	09/30/21 11:50	10/01/21 13:31
200-60348-3	KL-EC-Q3-MW34-093021	Water	09/30/21 13:30	10/01/21 13:31
200-60348-4	KL-EC-MW-6R-093021	Water	09/30/21 14:30	10/01/21 13:31
200-60348-5	KL-EC-EBW01-093021	Water	09/30/21 15:20	10/01/21 13:31
200-60348-6	KL-EC-FRB03-093021	Water	09/30/21 11:55	10/01/21 13:31
200-60348-7	KL-EC-FRB04-093021	Water	09/30/21 14:40	10/01/21 13:31
200-60389-1	KL-EC-MW-45-100121	Water	10/01/21 10:35	10/04/21 08:25
200-60389-2	KL-EC-MW-51-100121	Water	10/01/21 11:40	10/04/21 08:25
200-60389-3	KL-EC-FRB05-100121	Water	10/01/21 11:45	10/04/21 08:25
200-60389-4	KL-EC-MW-40-100121	Water	10/01/21 12:35	10/04/21 08:25
200-60389-5	KL-EC-Q3-MW103-100121	Water	10/01/21 13:25	10/04/21 08:25
200-60389-6	KL-EC-X01-100121	Water	10/01/21 00:00	10/04/21 08:25

Client: Ramboll US Corporation Project/Site: KAPL KL Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-61275-1	KL-EC-Q3-MW26-120721	Water	12/07/21 10:40	12/07/21 16:58
200-61275-2	KL-EC-Q3-MW122-120721	Water	12/07/21 12:05	12/07/21 16:58
200-61275-3	KL-EC-Q3-MW121-120721	Water	12/07/21 13:30	12/07/21 16:58
200-61275-4	KL-EC-Q3-MW104-120721	Water	12/07/21 14:20	12/07/21 16:58
200-61275-5	KL-EC-EBW02-120721	Water	12/07/21 12:45	12/07/21 16:58
200-61275-6	KL-EC-FRB06-120721	Water	12/07/21 12:50	12/07/21 16:58
200-61275-7	KL-EC-X02-120721	Water	12/07/21 00:00	12/07/21 16:58
200-61295-1	KL-EC-Q3-MW99-120821	Water	12/08/21 10:30	12/08/21 16:26
200-61295-2	KL-EC-FRB07-120821	Water	12/08/21 10:40	12/08/21 16:26
200-61295-3	KL-EC-Q3-MW187-120821	Water	12/08/21 12:10	12/08/21 16:26

Laboratory Definitions/Glossaries

Client: Ramboll US Corporation Project/Site: KAPL KL Emerging Contaminant Testing

Qualifiers

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
F1	MS and/or MSD recovery exceeds control limits.
Н	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.
LCMS	
Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
0	

Glossary

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

Client: Ramboll US Corporation Project/Site: KAPL KL Emerging Contaminant Testing

Qualifiers

LCMS	
Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
<u>¤</u>	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
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RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Laboratory Case Narratives

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL Emerging Contaminant Testing

Report Number: 200-60278-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY

The report being provided is a revision of the original report sent on 11/1/2021. The report (revision 1) is being revised due to: Revision to correct method reference in the narrative from 8270D SIM to 8270E SIM.

RECEIPT

The samples were received on 09/28/2021, 09/29/2021, 10/01/2021 and 10/04/2021; the samples arrived in good condition.

1,4-DIOXANE

Samples KL-EC-NTH-1A-092721, KL-EC-LMW-103-092821, KL-EC-B-16-093021, KL-EC-MW-45-100121, KL-EC-NTH-5A-092721, KL-EC-LMW-142-092821, KL-EC-Q3-MW03-093021, KL-EC-MW-51-100121, KL-EC-NTH-2A-092721, KL-EC-Q3-MW34-093021, KL-EC-Q3-MW23-092821, KL-EC-MW-6R-093021, KL-EC-MW-40-100121, KL-EC-Q3-MW19-092821, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121 and KL-EC-X01-100121 were analyzed for 1,4-Dioxane in accordance with 8270E SIM. The samples were prepared on 09/30/2021, 10/03/2021, 10/06/2021 and 10/11/2021 and analyzed on 10/01/2021, 10/03/2021, 10/06/2021, 10/07/2021 and 10/11/2021 and analyzed on 10/01/2021, 10/03/2021, 10/06/2021, 10/07/2021 and 10/13/2021.

1,4-Dioxane exceeded the RPD limit for LCSD 460-804807/5-A. Refer to the QC report for details.

1,4-Dioxane failed the recovery criteria low for the MS of sample KL-EC-Q3-MW34-093021MS in batch 460-805421.

Samples KL-EC-MW-45-100121 (200-60389-1), KL-EC-MW-51-100121 (200-60389-2), KL-EC-MW-40-100121 (200-60389-4), KL-EC-Q3-MW103-100121 (200-60389-5) and KL-EC-X01-100121 (200-60389-6) were extracted out of holding time due to an internal tracking error .

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

PERFLUORINATED HYDROCARBONS

Samples KL-EC-NTH-1A-092721, KL-EC-LMW-103-092821, KL-EC-B-16-093021, KL-EC-MW-45-100121, KL-EC-NTH-5A-092721, KL-EC-LMW-142-092821, KL-EC-Q3-MW03-093021, KL-EC-MW-51-100121, KL-EC-NTH-2A-092721, KL-EC-FRB02-092821, KL-EC-Q3-MW34-093021, KL-EC-FRB05-100121, KL-EC-FRB01-092721, KL-EC-Q3-MW23-092821, KL-EC-MW-6R-093021, KL-EC-MW-40-100121, KL-EC-Q3-MW19-092821, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121, KL-EC-FRB03-093021, KL-EC-SC-MW-40-100121, KL-EC-Q3-MW19-092821, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121, KL-EC-FRB03-093021, KL-EC-SC-MW-40-100121, KL-EC-FRB04-093021, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121, KL-EC-FRB03-093021, KL-EC-X01-100121 and KL-EC-FRB04-093021 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 10/01/2021, 10/04/2021, 10/05/2021 and 10/12/2021 and analyzed on 10/02/2021, 10/07/2021, 10/08/2021 and 10/13/2021.

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte: KL-EC-MW-6R-093021 (200-60348-4).

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the results may have a high bias. However, analyst judgment was used to positively identify the analyte.

KL-EC-LMW-142-092821 (200-60294-2)

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: KL-EC-Q3-MW103-100121 (200-60389-5). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater

than 10:1, which is achieved for all IDA in the sample.

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgement was used to positively identify the analyte. KL-EC-Q3-MW103-100121 (200-60389-5)

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

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL Emerging Contaminant Testing

Report Number: 200-61275-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

<u>RECEIPT</u>

The samples were received on 12/07/2021; the samples arrived in good condition, properly preserved and on ice.

PERFLUORINATED HYDROCARBONS

Samples KL-EC-Q3-MW26-120721, KL-EC-Q3-MW122-120721, KL-EC-Q3-MW121-120721, KL-EC-Q3-MW104-120721, KL-EC-FRB06-120721 and KL-EC-X02-120721 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 12/10/2021 and analyzed on 12/12/2021.

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

Chains-of-Custody

#224 Intact: Paul D'Annibale, Amy Spooner-Stevens dress: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203 one: (518) 724-7272 rail: Paul D'Annibale@ramboll.com oject: KAPL - KL Emerging Contaminants Sampling cation: Knolls Site, Niskayuna, N.Y. oject #: 1940101245	Sampler(s): R Signature) Laboratory: FestAmerica Laboratory 680 Riverside Pkwy West Sacramento, CA, 95605 Atto: Kathryn Kelly	analysis (PF Package R NYSDEC)	ime: m sample colle	ection to				Sarah Tr Journ Yeu Analys Preservanves: (see ke	uy is Required	Lab Use Only Project Number:
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Email: Paul.D'Annibale@raniboll.com Amy.Spixoner Stevens@ramboll.com			NYSDFC Foll ASP Cat B Data Package with a std 10-business day T-VC, prelim analytical results provided in Kelly in prior tables						CSEPA						Lab ID:		
Project: KAPL - KI. Emerging Contaminants Sampling	Tim: Ka	abran Kella							ō.								
Location: Knolls Suc, Niskayuna, N.Y. Project #: 1940101245	Phone: 802-923-	-1021		iat: EQuIS 4 EC EDD ref		Number of Containers	apriete C	,	Compounds) l Method 537								
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2 KL-EC-03-MW03-093021		09/30/21	1150	Ν	WG	2	6	N	Х								
1 KL-EC-FRB03-093021		09/30/21	1155	FB	WQ	2	G	N	X							_	
+ KL-EC-Q3-MW34-093021		09/30/21	1330	N	WG	2	6	N	X		200-6	0348	Chain	of Cu	stody	_	
5 KL-EC-03-MW34-093021-MS		09/30/21	1330	MS	WQ	2	G	N	X		-	_	1		_		
· KL-EC-Q3-MW34-093021-MS	D	09/30/21	1330	ms	WQ	2	6	N	Х								
7 KI-EC-MW-6R-093021		09/30/21	1430	N	WG	2	G	N	X								
* KL-EC-FRB04-093021		09/30/21	1440	FB	WQ	2	G	N	X								
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Contact: Paul D'Annibale, Amy Spooner-Stevens Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	TestAmerica I		analysis (1,4		. 1011-10				reservative	s: (see	key at	botte	om)				
Phone: (518) 724-7272	777 New Dur Edison, NJ 08								8270 a						J	ob Number:	
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com			NYSDEC Full ASP Cat B Data Package with a std 10-business day			LASP Cat B Dat									Ī	Lab ID:	
Project: KAPL - KL Emerging Contaminants Sampling	Attn: Kathryn	n Kelly	TAT, prelim analytical results provided in pivot tables						Method								
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2 KL-EC-Q3-MW03-093021	0	9/30/21	1150	N	WG	2	G	N	X							2	
3 KL-EC-Q3-MW34-093021	0	A/30/21	1330	N	WG	2	G	N	X				ody			3	
4 KL-EC-Q3-MW34-093021-M	15 01	9/30/21	1330	MS	NQ	2	G	N	X				Custo			9	
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Contact: Paul D'Annibale, Amy Spooner-Stevens	Test Ameri	ca Laboratory	analysis (Pl	u sample colle AS)	ction to			Preservative	s: [see key a	bottom		
ddress: 94 New Karner Road, Ste. 106, Albany, N.S. 12203	880 Rivers							U				Job Number:
Phone: (518) 724-7272	West Sacra	imento, CA, 95605		Package Requirement:								
mail: Paul D'Annibale@camboll.com Any.Spooner Stevens@ramboll.com				full ASP Card h a sid-10-bie				VdHS				Lab ID:
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Project: KAPL - KL Emerging Contaminants Sampling .ocation: Knolls Site, Niskayuna, N.Y.	Attn: Kath	ryn Kelly	in pivor tab	C5		~		ls) by				urry
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2 KL-EC-MW-51-100/21		10/01/21	1140	N	NG	2	GN	X				
KL-EC-FRB05-100121		15/10/01	1145	FB	WO	2	GN	X				
A KL-EC-MW-40-100121		10/01/21	1235	N	WG	2	GN	X				
KL-EC-Q3-MW103-100121		10/01/21	1325	N	WG	1	GN				_	
KL-EC-FRB05-100121 KL-EC-MW-40-100121 KL-EC-Q3-MW103-100121 KL-EC-X01-100121		10/01/21		FD	WG	2	GN			 1 11 11 1 11 11 1	, , ,	
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Contact: Paul D'Annibale, Amy Spooner-Stevens		rica Laboratory	analysis (1,4						Preservativ	ves: (see	key at	t botte	мn)			
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203		Durham Rd NI 08817							0		_					Job Number:
Phone: (518) 724-7272	i Anson, :	aj uon -		equirement: full ASP Cat 1					8270							
Email: Paul D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com			Package wit	h a std 10-bu	tiness day				8 poq				A	lba	ar	Lab ID:
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2 KL-EC-MW-51-100121		10/01/21	1140	N	WG	2	G	N	X							
3 KL-EC-MW-40-100121		10/01/21	1235	N	WG	2	G	N	×							
3 KL-EC-MW-40-100121 + KL-EC-Q3-MW103-100121		10/01/21	1325	N	WG	1	G	N	×							
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of: EETA Sample Type: N = Normal cov. sample, FD = field duplicate, EB = Eq.		1700 mk TB = Too Black	MS = Lab A	Latris Soula	Other (Sneedy):	-		Time 1030	<u> </u>	
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Preservatives Code: 0 = none, 1 = 11CL, 2 = 11NO3, 3 = 112SO4, 4 =	NaOH, 5	$b = Zn$ Acetate, $b = M_0$	OII, 7 = N	0.0504, 8 =	other			_			

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Data Summary Table

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area			Hillside Area		
	Location ID	D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51
	Sample ID	KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121
	Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.88 U	0.34 J	1.12 J	1.07 J	0.70 J
Perfluorobutanoic acid (PFBA)	NV	4.71 U	4.69 J	6.01	6.04	4.92
Perfluorodecanesulfonic acid (PFDS)	NV	1.88 U	6.12	1.96 U	1.89 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	1.88 U	10.5	0.33 J	1.89 U	0.74 J
Perfluorododecanoic acid (PFDoA)	NV	1.88 U	5.84	1.96 U	1.89 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	1.88 U	3.83	1.89 J	1.64 J	1.32 J
Perfluorohexanesulfonic acid (PFHxS)	NV	1.88 U	0.65 J	1.96 U	1.89 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	1.88 U	3.98	3.00	2.56	2.06
Perfluorononanoic acid (PFNA)	NV	1.88 U	5.92	0.80 J	0.84 J	2.11
Perfluorooctanesulfonic acid (PFOS)	2.7	1.88 U	13.9 *	1.94 J	1.89 U	6.52 *
Perfluorooctanoic acid (PFOA)	6.7	1.88 U	12.2 *	2.13	2.01	2.89
Perfluoropentanoic acid (PFPeA)	NV	1.88 U	5.72	5.58	4.70	2.82
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.88 U	6.32	1.96 U	1.89 U	1.96 U
Perfluroroctanesulfonamide (FOSA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area	Hillsid	e Area	High Ya	Landfill Disposal Area	
	Location ID	Field Reagent Blank	Field Reagent Blank	HYA-MW6R	Field Reagent Blank	LDA-LMW103
	Sample ID	KL-EC-FRB03-093021	KL-EC-FRB05-100121	KL-EC-MW-6R-093021	KL-EC-FRB04-093021	KL-EC-LMW-103-092821
	Sample Date	9/30/2021	10/1/2021	9/30/2021	9/30/2021	9/28/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
Perfluorobutanesulfonic acid (PFBS)	NV	2.08 U	1.93 U	1.38 EMPC	1.97 U	0.72 J
Perfluorobutanoic acid (PFBA)	NV	5.20 U	4.81 U	3.80 J	4.93 U	52.3
Perfluorodecanesulfonic acid (PFDS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorodecanoic acid (PFDA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorododecanoic acid (PFDoA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroheptanoic acid (PFHpA)	NV	2.08 U	1.93 U	1.54 J	1.97 U	1.46 J
Perfluorohexanesulfonic acid (PFHxS)	NV	2.08 U	1.93 U	5.65	1.97 U	0.65 J
Perfluorohexanoic acid (PFHxA)	NV	2.08 U	1.93 U	2.22	1.97 U	2.62
Perfluorononanoic acid (PFNA)	NV	2.08 U	1.93 U	0.34 J	1.97 U	0.88 J
Perfluorooctanesulfonic acid (PFOS)	2.7	2.08 U	1.93 U	9.46 *	1.97 U	2.28
Perfluorooctanoic acid (PFOA)	6.7	2.08 U	1.93 U	8.88 *	1.97 U	4.80
Perfluoropentanoic acid (PFPeA)	NV	2.08 U	1.93 U	2.72	1.97 U	3.29
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluroroctanesulfonamide (FOSA)	NV	2.08 U	1.93 U	1.39 J	1.97 U	2.04 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area	Landfill Dis	posal Area	Closed Landfill Area				
	Location ID	LDA-LMW142	Field Reagent Blank	NTH-1A	NTH-2A	NTH-5A		
	Sample ID	KL-EC-LMW-142-092821	KL-EC-FRB02-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721		
	Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021		
	Proposed Guidance							
Chemical Name	Values							
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U		
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U		
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U		
Perfluorobutanesulfonic acid (PFBS)	NV	0.57 J	1.94 U	1.99 U	0.87 J	0.45 J		
Perfluorobutanoic acid (PFBA)	NV	16.2	4.85 U	4.98 U	4.88 J	5.24 U		
Perfluorodecanesulfonic acid (PFDS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluorodecanoic acid (PFDA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluorododecanoic acid (PFDoA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluoroheptanoic acid (PFHpA)	NV	0.80 EMPC	1.94 U	1.99 U	1.06 J	2.10 U		
Perfluorohexanesulfonic acid (PFHxS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluorohexanoic acid (PFHxA)	NV	1.25 J	1.94 U	1.99 U	1.62 J	2.10 U		
Perfluorononanoic acid (PFNA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluorooctanesulfonic acid (PFOS)	2.7	1.91 U	1.94 U	1.99 U	5.35 *	2.10 U		
Perfluorooctanoic acid (PFOA)	6.7	2.19	1.94 U	1.99 U	4.16	0.92 J		
Perfluoropentanoic acid (PFPeA)	NV	4.14	1.94 U	1.99 U	1.96 J	2.10 U		
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		
Perfluroroctanesulfonamide (FOSA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U		

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area	Closed Landfill Area		Q3 Yaı	rd Area	
	Location ID	Field Reagent Blank	Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34
	Sample ID	KL-EC-FRB01-092721	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021
	Sample Date	9/27/2021	9/30/2021	9/28/2021	9/28/2021	9/30/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.59 U	3.77	4.18	0.75 J	0.96 J
Perfluorobutanoic acid (PFBA)	NV	3.98 U	15.9	7.80	9.08	8.41
Perfluorodecanesulfonic acid (PFDS)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluorodecanoic acid (PFDA)	NV	1.59 U	0.75 J	1.22 J	1.88 U	1.89 U
Perfluorododecanoic acid (PFDoA)	NV	1.59 U	1.87 U	0.85 J	1.88 U	1.89 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.59 U	1.98	1.82 U	1.88 U	1.89 U
Perfluoroheptanoic acid (PFHpA)	NV	1.59 U	11.0	3.28	4.01	4.47
Perfluorohexanesulfonic acid (PFHxS)	NV	1.59 U	6.98	3.34	0.87 J	2.74
Perfluorohexanoic acid (PFHxA)	NV	1.59 U	13.7	6.21	7.58	8.72
Perfluorononanoic acid (PFNA)	NV	1.59 U	2.55	1.77 J	1.94	1.98
Perfluorooctanesulfonic acid (PFOS)	2.7	1.59 U	71.7 *	6.70 *	6.77 *	24.0 *
Perfluorooctanoic acid (PFOA)	6.7	1.59 U	34.6 *	10.2 *	7.33 *	12.8 *
Perfluoropentanoic acid (PFPeA)	NV	1.59 U	9.01	4.95	9.12	13.2
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.59 U	1.87 U	0.66 J	1.88 U	1.89 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluroroctanesulfonamide (FOSA)	NV	1.20 J	1.87 U	1.82 U	1.88 U	1.89 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area			Q3 Yard Area		
	Location ID	Q3-MW103	Q3-MW26	Q3-MW99	Q3-MW104	Q3-MW121
	Sample ID	KL-EC-Q3-MW103-100121	KL-EC-Q3-MW26-120721	KL-EC-Q3-MW99-120821	KL-EC-Q3-MW104-120721	KL-EC-Q3-MW121-120721
	Sample Date	10/1/2021	12/7/2021	12/8/2021	12/7/2021	12/7/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.74 U	4.59 U	2.58 J	4.64 U	4.65 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.90 U	0.34 J	0.79 J	1.86 U	1.86 U
Perfluorobutanoic acid (PFBA)	NV	7.62	6.94	4.27 J	3.58 J	4.65 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorodecanoic acid (PFDA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorododecanoic acid (PFDoA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	0.22 J	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanoic acid (PFHpA)	NV	2.12	0.50 J	1.66 J	0.54 J	0.34 J
Perfluorohexanesulfonic acid (PFHxS)	NV	1.90 U	1.31 J	0.92 J	1.86 U	1.86 U
Perfluorohexanoic acid (PFHxA)	NV	3.14	1.04 J	3.25 EMPC	1.13 J	0.78 J
Perfluorononanoic acid (PFNA)	NV	1.35 EMPC	0.27 J	1.08 J	0.25 J	1.86 U
Perfluorooctanesulfonic acid (PFOS)	2.7	3.64 *	1.75 J	1.97 J	0.99 J	1.97
Perfluorooctanoic acid (PFOA)	6.7	5.78	2.00	2.02 J	1.38 J	1.23 J
Perfluoropentanoic acid (PFPeA)	NV	6.49	1.87	3.72	1.39 J	0.81 J
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.90 UJ	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluroroctanesulfonamide (FOSA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Table 1a Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area			Q3 Yard Area		
	Location ID	Q3-MW121	Q3-MW122	Q3-MW187	Field Reagent Blank	Field Reagent Blank
	Sample ID	KL-EC-X02-120721	KL-EC-Q3-MW122-120721	KL-EC-Q3-MW187-120821	KL-EC-FRB06-120721	KL-EC-FRB07-120821
	Sample Date	12/7/2021	12/7/2021	12/8/2021	12/7/2021	12/8/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorobutanoic acid (PFBA)	NV	4.67 U	2.27 J	10.1	4.83 U	4.56 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorodecanoic acid (PFDA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorododecanoic acid (PFDoA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroheptanoic acid (PFHpA)	NV	0.27 J	1.86 U	1.10 J	1.93 U	1.82 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorohexanoic acid (PFHxA)	NV	0.65 J	1.86 U	3.35	1.93 U	1.82 U
Perfluorononanoic acid (PFNA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.71 J	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorooctanoic acid (PFOA)	6.7	1.01 J	1.86 U	15.7 *	1.93 U	1.82 U
Perfluoropentanoic acid (PFPeA)	NV	0.82 J	1.86 U	4.56	1.93 U	1.82 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluroroctanesulfonamide (FOSA)	NV	1.87 U	1.86 U	1.79 U	1.93 U	1.82 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 1a Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area	Equipme	ent Blank
	Location ID	Equipment Blank	Equipment Blank
	Sample ID	KL-EC-EBW01-093021	KL-EC-EBW02-120721
	Sample Date	9/30/2021	12/7/2021
	Proposed Guidance		
Chemical Name	Values		
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.73 U	4.82 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.89 U	1.93 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.73 U	4.82 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.73 U	4.82 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.89 U	1.93 U
Perfluorobutanoic acid (PFBA)	NV	4.73 U	4.82 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.89 U	1.93 U
Perfluorodecanoic acid (PFDA)	NV	1.89 U	1.93 U
Perfluorododecanoic acid (PFDoA)	NV	1.89 U	1.93 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.89 U	1.93 U
Perfluoroheptanoic acid (PFHpA)	NV	1.89 U	1.93 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.89 U	1.93 U
Perfluorohexanoic acid (PFHxA)	NV	1.89 U	1.93 U
Perfluorononanoic acid (PFNA)	NV	1.89 U	1.93 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.89 U	1.93 U
Perfluorooctanoic acid (PFOA)	6.7	1.89 U	1.93 U
Perfluoropentanoic acid (PFPeA)	NV	1.89 U	1.93 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.89 U	1.93 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.89 U	1.93 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.89 U	1.93 U
Perfluroroctanesulfonamide (FOSA)	NV	1.89 U	1.93 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 1b Groundwater Sampling Results - 1,4-Dioxane

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Knolls Laboratory Niskayuna, New York

	Area			Hillside Area			High Yard Area
	Location ID	D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51	HYA-MW6R
	Sample ID	KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121	KL-EC-MW-6R-093021
	Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021	9/30/2021
	Proposed Guidance						
Chemical Name	Values						
1,4-Dioxane	0.35	0.20 U	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.20 U

	Area	Landfill Dis	posal Area		Closed Landfill Area	
	Location ID	LDA-LMW103	LDA-LMW142	NTH-1A	NTH-2A	NTH-5A
	Sample ID	KL-EC-LMW-103-092821	KL-EC-LMW-142-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721
	Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021
	Proposed Guidance					
Chemical Name	Values					
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

	Area			Q3 Yard Area			Equipment Blank
	Location ID	Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34	Q3-MW103	Equipment Blank
	Sample ID	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021	KL-EC-Q3-MW103-100121	KL-EC-EBW01-093021
	Sample Date	9/30/2021	9/28/2021	9/28/2021	9/30/2021	10/1/2021	9/30/2021
	Proposed Guidance						
Chemical Name	Values						
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 UJ	0.20 U

Notes: 1. Results in micrograms per liter (µg/L). "U" indicates analyte not detected. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Exceedances of proposed guidance values are marked with "*".

Appendix B Field Data Forms

Date	9-27-21	Personnel		RDH/SET			Weather	± 60, can
Site Name	KL EC Sampling	Evacuation	vacuation Method Peristaltic Pump				Well #	NTH-1A
Site Location		Sampling M	-			_	Project #	1940101245
		1 0				_		
Vell informa		24	7.0					
	Depth of Well *	20	82	-ft.	* Measurem	nents taken fr	Top of Wel	Casing
	Depth to Water *			_ft,		×	-	ective Casing
	Length of Water Column	18	,92	_ ft.		1	(Other, Spe	
						-		
	1" diameter wells = 0.041 x (l	_WC) =		gallons				
	2" diameter wells = 0.163 x (l		3.08	gailons				
	4" diameter wells = 0.653 x (l	_WC) =		gallons				
Vell evacuat	lian data:							
ven evacuar	ion data.	1			Well Vo	lumes	-	
		1	2	3	1			
	Start Time		1048	1103				
	End Time		1101	1114			-	-
	Gallons Purged		3.08	3.08				1
	Temp (C)		13.6	13.4		-	-	
	pH		7.02	7.11	1	-	-	-
	Spec. Conduc. (mS/cm)		1.30	1-28	-			
		022.04	89.7	47.0	1			
		1988.7	1-25	3.88		1		
	Turbidity (NTU)	4.07	2.08	2.52	1		1.	
	Probe type: Appearance at start: Appearance at end:	clean	- light	gray odo,	no ed		meter	
	Other Observations:	Headspace	PID reading	19 0.0 Pf	m			
	Amount of water removed: Depth to water before sampli	ng	<u>9</u> . 	24	_gallons ft. (below to	op of inner ca	sing)	
	Parameters Sampled For:		PFAS (21 Compounds) by Modified USEPA Method 537					
			1,4-Dio	ane by USE 8270 SI	EPA Method V	Sample Ti	me:	1125

ate	9-27-21	Personnel		RDH/SET			Weather	175°F, Sunny
ite Name	KL EC Sampling	Evacuation	Method	Peristaltic P	ump	2	Well #	NTH-2A
ite Location	Niskayuna, NY	Sampling M	ethod	Peristaltic P	Pump	7.0	Project #	1940101245
lell informat	tion:							
	Depth of Well *	22.		ft.	* Measurem	ents taken fr	-	
	Depth to Water *	9.1		ft_		X	Top of Wel	
	Length of Water Column	13.	32	-ft.			Other, Spe	ective Casing
-						<u></u>	J(Other, Spe	ecity)
	1" diameter wells = 0.041 x (l	W(C) =		gallons				
	2" diameter wells = $0.041 \times (10^{-1})$		2.13	gallons				
	4" diameter wells = $0.653 \times (10^{-1})$			gallons				
					_			
ell evacuati	ion data:							
			1.	I -	Well Vo	lumes	1	1
		1	2	3	-	-	-	-
	Start Time End Time		1521	1	1	-	-	
	Gallons Purged		1529	1				
	Temp (C		\backslash		1			
	ph		19-2	TU CO			T	
	Spec. Conduc. (mS/cm		S	4				
	ORP (mV			1 1	1			_
	DO (mg/L						1	
	Turbidity (NTU			V			A Province of	
	Turbiary (into	1-0						
					1. da			
	Probe type:		YSI Quatr			Turbidit	1 meter	
	Appearance at start:	(clear,	organic	odor	_		
	Appearance at end:		clear,	no od	er .			
	Other Observations:	Headspace	PID reading	990.0:0	m			
	Amount of water removed:		3	3.26	gallons			
	Depth to water before sampl	ing	NM			op of inner ca	sing)	
			-					
			PFAS (21	l Compounds) by Modified	d		
	Parameters Sampled For:		U	SEPA Method	d 537			
			1,4-Dio	xane by USE		Comolo Ti		1545
				8270 SIM		Sample Tir	ne:	1070

a.

Site Name Site Location	KL EC Sampling							
		Evacuation Method Sampling Method		Peristaltic Pump Peristaltic Pump			Well #	NTH-5A
	Niskayuna, NY						Project #	1940101245
Vell informat	tion:		_					
	Depth of Well *	16.		ft.	* Measureme	ents taken i		
	Depth to Water *	5.		ft.		x	Top of Wel	
	Length of Water Column		78	ft.		-	Top of Prot (Other, Spe	ective Casing ecify)
		M(C) -	_	collogo	0			
	1" diameter wells = $0.041 \times (L)$		1.92	gallons gallons				
	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L		1.76	gallons				
				30				
Vell evacuat	ion data:							
					Well Volu	imes	-	1
		1	2	3			-	-
	Start Time	1350	1359	1408		-	-	-
	End Time Gallons Purged	1357	1.92	1.92		-	1	
	Temp (C)	15.5	15.5	15 4	1			1
	pH	6.72	6.59	6.54	1	1	1	7
	Spec. Conduc. (mS/cm)	0.76	0.69	0.68				
	ORP (mV)	72.1	71.7	73.5			1	1
	DO (mg/L)	0.0	1.95	2.51				1
	Turbidity (NTU)		1.80	2.97			-	
	Turbidity (110)	1.01	1 (3.4.	6.				
	Probe type: Appearance at start: Appearance at end: Other Observations:	le	ar, no	odor		rurb: a	dity me	kr
	Amount of water removed: Depth to water before sampli	ng:	5. NM	76	gallons ft. (below top	of inner c	asing)	
	Parameters Sampled For:		ับร	Compounds EPA Method ane by USER 8270 SIM	537	Sample T	ime:	1425

Date Site Name Site Location	9-28-21 KL EC Sampling Niskayuna, NY	Personnel Evacuation Sampling M		RDH/SET Peristaltic Peristaltic	Pump		Weather Well # Project #	±60 ^{°F} , (bb LMW-103 1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column I_{5} drameter $= 0.092 \times 1^{\circ}$ 1" diameter wells = 0.041 x (I	0. 7	.63 00 54 .09 > 0.65	ft. ft. ft. gallons	* Measurem	nents taken fi	Top of Wel	ective Casing
	2" diameter wells = 0.163 x (l 4" diameter wells = 0.653 x (l			gallons gallons				
Well evacuat	tion data:	1						
		1	2	3	Well Vo	lumes	1	1
	Start Time	0934	N N	Ň			6	
	End Time		1	1	1	1.000	1	1
	Gallons Purged			1				
1.1	Temp (C)		19	28-21				
	pH		1 CE	1A				
	Spec. Conduc. (mS/cm)	The second second	10	(5)				
	ORP (mV)			1		1.		
	DO (mg/L)							
	Turbidity (NTU)		1		V			1
	Probe type: Appearance at start: Appearance at end: Other Observations:	light (Just :	radaic	c ode		meter-	
	Amount of water removed: Depth to water before sampli	ing:	NM	1.65	gallons ft. (below to ds) by Modified	op of inner ca	sing)	
	Parameters Sampled For:		Ĺ	JSEPA Meth	od 537 EPA Method	Sample Ti	me:	0945
			1,4-Dio			Sample Ti	me:	0945

Date Site Name Site Location	e Name KL EC Sampling Ev		Method ethod	RDH/SET Peristaltic P Peristaltic P			Weather Well # Project #	±60°F、しの LMW-142 1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column 1.25" Arcreff = 0.041 × (L 2" diameter wells = 0.163 × (L 4" diameter wells = 0.653 × (L	wc) = .wc) =	78 57 .21 	ft. ft. ft. gallons gallons gallons	* Measurem	ents taken fr	Top of Wel	ective Casing
Vell evacuat	ion data:							
					Well Vol	lumes	1	1
	Start Time	1 1045	2	3 1055	(1000	-	
	End Time	1047	1053	1059	1	-		
	Gallons Purged		0.78	0.78	1			
	Temp (C)		10.9	10.9	1		12	
	pH		7.07	7.06	1 <u></u>			
	Spec. Conduc. (mS/cm)		1-95	1.95	(1	1	-
	ORP (mV)		54.0	58.5	1000			
	DO (mg/L)		6-06	6.07		1		
	Turbidity (NTU)	7.77	3.33	3.23	-			-
	Probe type: Appearance at start: Appearance at end: Other Observations:	<u>Cle</u> C Headspace	lear, no	o do	she	ht sui		.r
	Amount of water removed: Depth to water before sampli	ng:	2. 	34	gallons ft. (below to	p of inner ca	sing)	
	Parameters Sampled For:		ົບຮ	Compounds SEPA Method ane by USEI 8270 SIM	PA Method	l Sample Tir		1110

Date	9-28-21	Personnel		RDH/SET		Weather	+65°F, cloud
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic Pump		Well #	Q3-MW23
Site Location	the second se	Sampling M	ethod	Peristaltic Pump		Project #	1940101245
Nell informa	tion:		_				
	Depth of Well *	2	2.22	ft. * Mea	asurements taken fr	om	
	Depth to Water *	14	5.45	ft.	x	Top of Wel	l Casing
	Length of Water Column	6	0,77	ft.		-	ective Casing
					a line and	(Other, Spe	ecify)
	1" diameter wells = 0.041 x (L	W(C) =	0.28	gallons			
	2" diameter wells = $0.041 \times (L$		0.20	_gallons			
	4" diameter wells = $0.653 \times (L$	·		_gallons			
		,					
Vell evacuat	ion data:						
		1	2	3	ell Volumes	1	1
	Start Time	1409	1418	14-24			
	End Time	1416	1421	1427			
	Gallons Purged		0.28	0.28		1	
	Temp (C)	15-8	15-1	15.2			
	pH		6.58	6.59			
	Spec. Conduc. (mS/cm)	3.09	3.32	3.53			
	ORP (mV)	67.3	61.5	58-1		-	
	DO (mg/L)	0.79	0.31	0.38			-
	Turbidity (NTU)	1148	36.4	26.8			
	Probe type: Appearance at start: Appearance at end: Other Observations: Amount of water removed: Depth to water before samplin Parameters Sampled For:		PID reading	0 ador : 0,0ppm .84 gallo	ns elow top of inner ca lodified	sing)	1435

Date	9-28-21	Personnel	ersonnel RDH/SET				Weather ± 60°F,C			
Site Name	KL EC Sampling	Evacuation I	Vethod	Peristaltic Pump			Well #	Q3-MW19		
		Sampling M	ethod	Peristaltic P		Project # 1940101245				
Well informa	tion	-								
	Depth of Well *	2	0.40	ft.	* Measuremen	its taken from	n			
	Depth to Water *	1	1.38	ft.		x	Top of Well	Casing		
	Length of Water Column		9.02	ft.	-			ective Casing		
							(Other, Spe	city)		
	1" diameter wells = 0.041 x (L	WC) =	0.37	gallons						
	2" diameter wells = 0.163 x (L			gallons						
	4" diameter wells = 0.653 x (L	WC) =	÷	gallons						
Well evacuat	tion data:		_	_	-					
AAGII GAGCUGI					Well Volum	nes				
		1	2	3						
	Start Time	1306	1310	1314	1					
	End Time		1312	1316		_	-	-		
	Gallons Purged		0.37	0.37				-		
	Temp (C)	15.3	14-6	7.11						
	Spec. Conduc. (mS/cm)		0.91	0.83						
	ORP (mV)	32.9	45.0	53.7						
	DO (mg/L)		0.82	1.86			1			
	Turbidity (NTU)		94.5	17.6						
	Care and the second second									
	Brobo tuno:		VSI Quatro	+ 10000	He Turb	id the	Mater			
	Probe type: Appearance at start:	clea		odor	HC IVIL	10.14	reier			
	Appearance at end:	clea	r, no	ador						
				1.41.2						
	Other Observations:	Headspace	PID reading:	0.000	n		-			
	Amount of water removed:		1.	11	gallons					
	Depth to water before samplir	na:	NM	11	ft. (below top of	of inner casir	ng)			
			-							
) by Modified					
	Parameters Sampled For:			EPA Method						
			1,4-Diox	ane by USEI 8270 SIM		Sample Time	e:	1550		
				5270 ONV						
	NOTES: WPIL O	urard r	in af	p. 310	well	volume	Allo	w well		

Date	9-30-21	Personnel		RDH/SET	RDH/SET		Weather	\$60°F area	
Site Name	KL EC Sampling	Evacuation N	Vethod	Peristaltic P	ump	2	Well #	B-16	
	Niskayuna, NY	Sampling Me		Peristaltic P			Project #	1940101245	
Sile Location	-Niakayuna, Ni	oumping in	Stried			•			
Vell informa	ation:								
	Depth of Well *		1.80	ft.	* Measurem	1	Top of Well	Casing	
	Depth to Water *	<u> </u>	.70	ft. - ft.		x	-	ective Casing	
	Length of Water Column	ð	. 70	-it. -			(Other, Spe		
							1.		
	1" diameter wells = 0 041 x (l			gallons					
	2" diameter wells = 0.163 x (l		1.42	gallons					
	4" diameter wells = 0.653 x (l	_WC) =		gallons					
Well evacua	tion data:					-			
nen oraoua			_		Well Vol	umes			
		1	2	3				-	
	Start Time		0932	0938			-		
	End Time Gallons Purged		1.42	1-42					
	Temp (C		15.0	15.0	-		1		
	ph	1 (A) (A)	7.14	7.14		1	1.		
	Spec. Conduc. (mS/cm)		2.78	2.81		1			
	ORP (mV		2.9	-3.4		2	1		
	DO (mg/L)		0.22	0.16)	1.4.C		
	Turbidity (NTU		2.77	1.69	<u> </u>				
	Probe type: Appearance at start: Appearance at end:	Clea	ar no	odor		oidity	meter		
	Other Observations	Headspace	PID reading	0.000	<u>с</u>				
	Amount of water removed: Depth to water before sampli	ng:	<u>Ц.</u> 	26	gallons ft. (below to	p of inner ca	sing)		
	Parameters Sampled For:		ับร	SEPA Method				1075	
			1,4-0108	ane by USEI 8270 SIM		Sample Tir	ne:	0955	

ate	9-30-21	Personnel		RDH/SET			Weather	=65 F. O.K
lite Name	KL EC Sampling	Evacuation	Method	Peristaltic F	Pump		Well #	Q3-MW03
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic F	Pump		Project #	1940101245
Vell informa	tion:	- Init	- 0					
			39	_ft.	* Measurem	ents taken fr	-	
	Depth to Water *	6	12	-ft		X	Top of Wel	
	Length of Water Column	8	.Lt	_ft_		1	Other, Spe	ective Casing ecify)
			0.34	gallons				
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L			_gallons				
	4" diameter wells = $0.653 \times (L$			gallons				
Vell evacuat	ion data:							
	· · · · · · · · · · · · · · · · · · ·	4	12	3	Well Vol	umes	T	T
	Start Time	1132	1136	1139	-			
	End Time	1133	1137	1141			1	
	Gallons Purged		0.34	0.34		10000		1
	Temp (C)	18-6	18.6	18.7				
	рН	7.05	7.12	7.19				
	Spec. Conduc. (mS/cm)	7.30	4.09	1.95		÷		1
	ORP (mV)	66.2	65.6	63.8	1			
	DO (mg/L)	1.94	3.07	1.93			1	
	Turbidity (NTU)	99.0	60.6	35.4				
	Probe type: Appearance at start: Appearance at end: Other Observations: Amount of water removed: Depth to water before samplin Parameters Sampled For:	Headspace	PID reading	00000000000000000000000000000000000000	_gallons _ft. (below to s) by Modified d 537 PA Method	p of inner cas	sing)	1150
	NOTES:							

Date	9-30-21	Personnel		RDH/SET			Weather	±65°F, oren
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic F	Pump		Well #	Q3-MW34
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic F	Pump	-	Project #	1940101245
Well informa	tion:							
	Depth of Well *	16	.82	- ft.	* Measurem	ents taken fr		
	Depth to Water *		5.01	- ft.		X	Top of Well	
	Length of Water Column	((. 81	_ ^{ft.}			Top of Prot (Other, Spe	ective Casing ecify)
	1" diameter wells = 0.041 x (l	WC) =	D.48	gallons				
	2" diameter wells = $0.163 \times (L$	•	<u>_</u>	gallons				
	4" diameter wells = 0.653 x (L	•		gallons				
Nell evacuat	ion data:							
					Well Vo	umes		1
	0 T	1	2	3				
	Start Time End Time		1314	1317				
	Gallons Purged		0.48	0.48				
	Temp (C)	1	16.7	16.7				
	pH		7.26	7.23				
	Spec. Conduc. (mS/cm)		3.56	3.88				
	ORP (mV)		82.2	81.9				
	DO (mg/L)		0.25	0.18				
	Turbidity (NTU)		36.4	36.1				
	Probe type: Appearance at start: Appearance at end: Other Observations: Amount of water removed: Depth to water before samplin Parameters Sampled For:	Light	PID reading:	P RDH	gallons ft. (below to) by Modified		<u>weler</u>	
			1,4-Diox	ane by USEF 8270 SIM	PA Method	Sample Tin	ne:	1330

Date	9-30-21	Personnel		RDH/SET	_	-1	Weather	=65°F, over
Site Name	KL EC Sampling	Evacuation I	Method	Peristaltic	Pump	_	Well #	MW-6R
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic	Pump	-	Project #	1940101245
Well informa								
	Depth of Well *		.00	ft.	* Measure	ments taken		Oracian
	Depth to Water *		91	ft.		X	Top of Well	
	Length of Water Column	i0	01	ft.		-	(Other, Spe	ective Casing cify)
	1" diameter wells = 0.041 x (L	W(C) =	N-41	gallons				
	2" diameter wells = $0.163 \times (L$			gallons				
	4" diameter wells = 0.653 x (L		÷	gallons				
				_				
Well evacuat	ion data:				Well Vo	olumes		
		1	2	3			1	
	Start Time	1414	1	1		1		
	End Time	1416	1	1		-		
	Gallons Purged	0.41	1	1				
	Temp (C)	16.6	(37)	1		-	-	
	pH	7.25	13	(3)	-	-	-	
	Spec. Conduc. (mS/cm)	1.40		7		-	-	-
	ORP (mV)	-91.2		+ 1	-		-	
	DO (mg/L)	0.87		1	-	-	-	
	Turbidity (NTU)	77.0	-		1	-	-	
	Probe type:						1 meter	
	Appearance at start:	Light		4,00	odor	-		
	Appearance at end:	Light gra	ay, no odo	RDH'	1/2/21			
	Other Observations:	Headspace F	PID reading	: 0.0 pp	2			
	Amount of water removed:			0.41	gallons			
	Depth to water before samplin		NM	0.1	•	op of inner ca	asina)	
		10						
	-			Compounds		d		
	Parameters Sampled For:			SEPA Metho				
			1,4-Dio	xane by USE 8270 SIM		Sample Ti	me:	1430
-			-	0:		20 40.00		
	NOTES: Well P	D. All	1.1	ther re	Mound	one to con	The second second second second second	lume.
	-111000	TUR	10 VE	inge	Pier	IN Jai	mping.	

Date	9-30-21	Personnel		RDH/SET			Weather	160°F, 000
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic F	Pump	31	Well #	Q3-MW103
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic F	Pump	2	Project #	1940101245
						2		
Vell informa	ation: Depth of Weil *	10	.39	ft.	* Measurer	nents taken fr	om	
	Depth to Water *		.50	- 11. ft.	Ineasurei	x	Top of Well	Casing
	Length of Water Column		89	ft.			-	ective Casing
	5			-		1.	Other, Spe	
			A (2					
	1" diameter wells = 0.041 x (l 2" diameter wells = 0.163 x (l		0.16	_gallons gallons				
	4" diameter wells = $0.653 \times (100)$			gallons				
				- guildrie				
Vell evacuat	tion data:	-						
			1.		Well Vo	lumes	1	1
	Start Time	1	2	3		1	-	
	End Time	1	1058		-	-	-	-
	Gallons Purged		0.12	10				
	Temp (C)	0	20.6	1				
	pH		7.64	91301	21		1	
	Spec. Conduc. (mS/cm)	9.10	11.07	(R)			1	
	ORP (mV)	55.1	54.8	2				-
	DO (mg/L)	0.49	0.26					
	Turbidity (NTU)	1070	643				1	
	Probe type: Appearance at start: Appearance at end: Other Observations;	Light Light Headspace P	t bro	n-gray	9/30/2 Dige	to odar	lotte Turl	sidy mete
	Amount of water removed: Depth to water before sampling	ng	0 NM		gallons ft. (below to	op of inner cas	ing)	
	Parameters Sampled For:		US	Compounds) EPA Method	537	1		10-1-21
			1,4-0108	ane by USEP 8270 SIM	A wethod	Sample Tim	ie:	1325
			1	1		1 75		ici umes.
	NOTES: 1.101	rand	In a	191 56	nnann	Cn /	IL PIL	11009
	NOTES: Well Allow	arged	to rec	thinge	prior	to sa	malina.	101143.

ate ite Name ite Location	10-1-21 KL EC Sampling Niskayuna, NY	Personnel Evacuation Sampling N		RDH/SET Peristaltic F Peristaltic F			Weather Well # Project #	±55°F, Sv MW-45 1940101245
Vell informa	tion: Depth of Well * Depth to Water * Length of Water Column	5	5.00 5.39 0.61	ft. ft. ft.	* Measureme	ents taken fr x	Top of Well	ective Casing
	1" diameter wells = $0.041 \times (L 2"$ diameter wells = $0.163 \times (L 4"$ diameter wells = $0.653 \times (L 4")$	-WC) =	1.73	gallons gallons gallons				
Vell evacuat	ion data:							
		1	2	3	Well Volu	mes		1
	Start Time	0954	1004	193				
	End Time	1002	1100	1020		1		
	Gallons Purged	1.73	1.73	1.73				
	Temp (C)	19.0	19.0	19.0				
	pH	7.83	7.85	7.81	-	1 mar 1		
	Spec. Conduc. (mS/cm)	3.01	3.02	3.02		1		
	ORP (mV)	98.0	90.2	76.3				
	DO (mg/L)	0.16	0.08	0.08	1.			
	Turbidity (NTU)	3,71	1.86	1.71				
	Probe type: Appearance at start: Appearance at end: Other Observations:	Headspace		10 00		rbidit	y met	er
	Amount of water removed: Depth to water before samplin	g:	NM	19 Compounds)	gallons ft. (below top by Modified	of inner cas	ing)	
	Parameters Sampled For:		US	EPA Method ane by USEP 8270 SIM	537 A Method	Sample Tim	e:	1035

Date	10-1-21	Personnel		RDH/SET	RDH/SET			<u>±55°F, Smm</u> MW-51	
Site Name	KL EC Sampling	Evacuation N	Nethod	Peristaltic Pump			Well #		
Site Location	Niskayuna, NY	Sampling Me	ethod	Peristaltic F	ump		Project #	1940101245	
						2			
Well informa	tion:								
	Depth of Well *	15.		ft.	* Measuren	nents taken fro	1		
	Depth to Water * 2.90 Length of Water Column 12.2			ft.		x	Top of Well		
			.22	ft.			-	ective Casing	
							(Other, Spe	ecify)	
	1" diameter wells = 0.041 x (L	WC) =	0.50	gailons					
	2" diameter wells = 0.163 x (L			gallons					
	4" diameter wells = 0.653 x (L		-	gallons					
							2		
Vell evacuat	ion data:		10 1.21						
			20-7-21	1.	Well Vo	lumes	-	-	
	Start Time	1119	1171	3 1125		-		-	
	End Time	1119	1121	1127		-			
	Gallons Purged	0.50	0.50	0.50	1				
	Temp (C)	18.2	18.3	18.4					
	pH	7.63	7.61	7.62					
	Spec. Conduc. (mS/cm)	2.69	2.71	2.74					
	ORP (mV)	100.6	100.8	100.3					
	DO (mg/L)	0.31	0.17	0.15			1		
	Turbidity (NTU)	105.8	48.5	17.6	/				
	Probe type:	-	YSI Quatro	12 12 million 10 million			_		
	Appearance at start:	BO		10 00	br				
	Appearance at end:	- Ligh	t bro	why n	o ode	De			
	Other Observations:			01					
	Other Observations.	Headspace P	ID reading.	U.I Ppo	2				
	Amount of water removed:		1.5	50	gallons				
	Depth to water before sampling	ig:	NM		ft. (below to	p of inner cas	ing)		
	Decemptors Compled For			Compounds) EPA Method					
	Parameters Sampled For:								
			1,4-DIOX	ane by USEP 8270 SIM	A method	Sample Tim	e:	1140	
	NOTES:								

Date Site Name Site Location	KL EC Sampling Niskayuna, NY	Personnel Evacuation Sampling M		RDH/SET Peristaltic Peristaltic		-	Weather Well # Project #	±55°F.€4 MW-40 1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column 1" diameter wells = 0.041 x (I	5	.93 5.47 .46 0.22	_ft. _ft. _ft.	* Measuren	ients taken f	Top of Well	ective Casing
	2" diameter wells = $0.163 \times (14)$ 4" diameter wells = $0.653 \times (14)$	-WC) =		gallons gallons				
Well evacuat	ion data:		_	_				
		1	2	3	Well Vol	umes	1	1
	Start Time	0926	Ň	Ň			-	
	End Time	0927	1	1				
	Gallons Purged		1	1		-		
	Temp (C)			1				
	pH	8.21	(2)	0				
	Spec. Conduc. (mS/cm)	1.06	C.	S				
	ORP (mV)							
	DO (mg/L)	1.35		1				
	Turbidity (NTU)		1	1		-		
	Probe type: Appearance at start: Appearance at end: Other Observations:	Headspace	ight brown,	no odor R	notk 0 0 do- 0H 11/2/21		'dity r	neter
	Amount of water removed: Depth to water before sampling	ng:	O	.22	_gallons _ft. (below to	o of inner ca	sing)	
	Parameters Sampled For:		US	Compounds EPA Method ane by USEI 8270 SIM	PA Method	Sample Tir	ne [.]	1235



PFAS Pre-Sampli	ng Checklist				
Site Name: Knolls Laboratory EC Sampling	Task: 1940101245				
Weather (temp/precip): ±60°F , Pan in PM	Date: 9-27-21				
Pre-Mobilization:	Sample Containers:				
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs				
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene				
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative				
Clothing has not been most recently washed with fabric softeners or other treatments	Paps are unlined and made of HDPE or polypropylene				
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):				
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering				
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):				
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).				
Field Equipment: Subcontractor (e.g., driller) materials and equipment conform to the requirements of this	Alconox [®] , Liquinox [®] Seventh Generation [™]) and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used.				
checklist (as applicable)	Food Considerations:				
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area				
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used				
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:				
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces				

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted

below.

Field Team Leader Name and Signature

0919



Site Name: Knolls Laboratory EC Sampling	Task: 1940101245
Weather (temp/precip): ±60°F, Sunny	Date: 9-28-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
Field Equipment: Subcontractor (e.g., driller) materials and equipment conform to the requirements of this	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used.
checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted

below.

Field Team Leader Name and Signature

0840



			PFAS Pre-Sampl	ing Checl	klist
Site Name:	Knolls L	aboratory l	Task:	1940101245	
	mp/precip):	±60°7	overcast	Date ;	9-30-

Pre-M	obi	lizat	ion:

The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

Using white Tyvek®; not using yellow Tyvek®

Riothing has not been most recently washed with fabric softeners or other treatments

Clothing has not been permanently chemically treated for insect resistance or UV protection

Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist

Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used

Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)



11

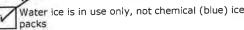
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist

Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon

Waterproof field books, waterproof paper, and Post-It Notes® are not used



Date :		20	
Sample	Contai	ners:	



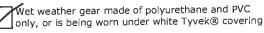
Sample containers have been received and are made of HDPE or polypropylene



Bottleware for non-drinking water samples do not contain preservative Caps are unlined and made of HDPE or

polypropylene

Wet Weather (as applicable):



Equipment Decontamination (as applicable):

On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above aboratory detection limits).

Alconox[®], Liquinox[®], Seventh Generation[™], and Citranox[®] are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:



Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area

Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:



Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAScontaining materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted

below

Field Team Leader Name and Signature





ENVIRONMENT & HEALTH

PFAS Pre-Sa	ampling Checklist
Site Name: Knolls Laboratory EC Samplin	g _{Task:} 1940101245
Weather (temp/precip): ± 55°F, overcos	Date: 10-1-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
right cluthing and DDF:	Sample containers have been received and are made of HDPE or polypropylene
Field Clothing and PPE: Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above Jaboratory detection limits).
	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®]
Field Equipment:	are being used as decontamination cleaning agents; Decon 90° is not being used.
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
	Any pre-wrapped food or snacks, carry-out food,
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature

0858

Time

Date Site Name Site Location	L L L KL EC Sampling Niskayuna, NY	Personnel Evacuation Sampling M	Method	AJG Peristaltic Peristaltic		-	Weather Well # Project #	± <u>30, Lig</u> Q3 · MV 19401012
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column 1" diameter wells = 0.041 x (2" diameter wells = 0.163 x (4" diameter wells = 0.653 x (LWC) =	51	ft. ft. gallons gallons gallons	* Measurem	x	Top of We	tective Casin
Well evacuat	ion data:							
		-	10	10	Well Vol	umes		1
	Start Time	13.59	1403	3	,			_
	End Time		1400	1413				
	Gallons Purgeo	0.30	030	0.36	-			
	Temp (C		13.9	14.0				
	pH	1 2 2 12	4.60	12.17	-			_
	Spec. Conduc. (mS/cm)	10000	284.3	5101				
	ORP (mV) DO (mg/L)		204.5	202.3				
	Turbidity (NTU)	1	210	12.5	-			_
	Probe type: Appearance at start: Appearance at end:	BNU		+ Lamotte	Turbidimeter			
	Other Observations:		PID reading:	0.0				
	Amount of water removed: Depth to water before sampli	ng:	1.10 			o of inner cas	ing)	
	Parameters Sampled For:			Compounds EPA Metho	by Modified d 537			1
					142	Sample Tim	e:	1420
	NOTES:			0				
						_	_	
							_	

Date 12 1 1 Personnel NUCP Weather +30 1/47x Site Name Niksyuna, NY Sampling Method Peristatic Pump Weather +30 1/47x Site Location Niksyuna, NY Sampling Method Peristatic Pump Weather +30 1/47x Site Location Niksyuna, NY Sampling Method Peristatic Pump Weather +30 1/47x Site Location Niksyuna, NY Sampling Method Peristatic Pump Weather +30 1/47x Method Peristatic Pump Project # 190101245 Well information: 1/2 1/4 Top of Viell Casing Top of Protective Casing 1* diameter wells = 0.011 x (UVC) = 0.35 galions galions (UHer Spectry) 1* diameter wells = 0.653 x (UVC) = galions galions 1/3/4 1/4 1/3/2 1* diameter wells = 0.653 x (UVC) = galions 1/3/4 1/3/4 1/4 1/4 Start Time (1/3 C/5 / 3/4 1/3/4 1/3/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 <	RA	MBŐLL		GROU	NDWAT	ER SAM	PLING F	IELD LC)G
Depth of Well* 21.3 1 n. * Measurements taken from Depth to Water Column 9.3 4 n. * Top of Well Casing 1* diameter wells = 0.041 x (LWC) = 0.3 4 galions 2* diameter wells = 0.041 x (LWC) = 0.3 4 galions 2* diameter wells = 0.653 x (LWC) =	Site Name	KL EC Sampling	Evacuation I		Peristaltic F	Pump	-	Well #	+30 1197-10 3-MW121 1940101245
4" diameter wells = 0.653 x (LWC) = gallons Well evacuation data: Well Volumes 1 Start Time 13 0 \$ 130 \$ 1/31/4 Gallons Purged Gallons Purged Gallons Purged Tem [0] 1/31/4 A 30 \$ 1/31/4 Gallons Purged Tem [0] 1/3 1/4 Tem [0] 1/3 1/4 Tem [0] 1/3 1/4 Prote type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Morget number number Appearance at end: Morget number Anount of water removed: PrAS (21 Compounds) by Modified Depth to water before sampling: PrAS (21 Compounds) by Modified USEPA Method 537	Well informa	Depth of Well * Depth to Water * Length of Water Column 1" diameter wells = 0.041 x (L	.WC) =	12.01	ft. ft. gallons	* Measurem		Top of We Top of Pro	tective Casing
Well Volumes 1 2 3 1 <th1< th=""> 1 1 1<</th1<>		•			-				
1 2 3 1/3/4 1/3/4 1/3/4 End Time 1/3/6 1/3/4 1/3/20 1/3/4 1/3/20 Gallons Purged 3 5 3/8 1/3/4 1/3/20 1/3/20 Gallons Purged 3 5 3/8 1/3/20 1/3/20 1/3/20 Gallons Purged 3 5 3/8 1/3/20 1/3/20 1/3/20 Properting 1/3/20 1/3/20 1/3/20 1/3/20 1/3/20 1/3/20 Spec. Conduc. (mS/cm) 1/3/20 2/2/3 2/5/3 1/3/20 1/3/20 1/3/20 ORP (mV) 1/1/1 1/3/20 1/4/4.5 1/3/20 1/3/20 1/3/20 Turbidity (NTU) 1/0 7/9.1 1/4/4.5 1/3/20 1/3/20 1/3/20 Probe type: YSI Quatro + Lamotte Turbidimeter 1/3/20 1/3/20 1/3/20 1/3/20 More // Appearance at start: Date //20/20 Date //20/20 1/3/20 1/3/20 1/3/20 Amount of water removed: 1/14 gallons gallons 1/3/20 1/3/20	Vell evacuat	ion data:	-			Mall Mal			
Start Time 13 c S 13 l 4			1	2	12	vveii voi	umes	1	1
End Time 500 1314 1320 Gallons Purged 38 58 38 Temp (C) 1.2.0 12.2 1.4.1 pH 7.02 0.99 1.4.1 Spec. Conduc. (mS/cm) 24.73 2.73 1.4.1 D0 (mg/L) 2.15 3.72 2.66 1.4.1 D0 (mg/L) 2.15 3.72 2.66 1.4.1 Turbidity (NTU) 1.0 7.9.7 41.2 1.4.1 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: B.0.1, A.0.0 0.0 Appearance at end: M.M.1, A.0.0 0.0 Monut of water removed: 1.14 gallons Depth to water before sampling: 1.14 gallons PrAS (21 Compounds) by Modified USEPA Method 537 Sample Time:		Start Time	1308						_
Gallons Purged 33 38 38 1 Temp (C) 12.0 12.2 1 1 pH 7.02 0.99 1 1 1 Spec. Conduc. (mS/cm) 12.9 2.073 1 1 1 ORP (mV) 1.0 1.973 1 1 1 1 D0 (mg/t) 2.15 2.72 2.90 1				1214	1 1 10 1				
Temp (C) 1/2,0/12,2 pH 2,0/2,0/2,0/2,0/2 Spec. Conduc. (mS/cm) 2,0/2,2/2,0/2 QRP (mV) 1/1,0/15,9/1 Marcine (mS/cm) 2,0/3,2/2,5/2,0/2 ORP (mV) 1/1,0/15,9/1 Marcine (mS/cm) 2,0/3,2/2,5/2,0/2 ORP (mV) 1/1,0/15,9/1 Marcine (mS/cm) 2,0/3,2/2,0/2 ORP (mV) 1/1,0/15,9/1 Marcine (mS/cm) 1/2,0/2 Turbidity (NTU) 1/0/17,1/4/1,2 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Barring, no ocide Appearance at end: Marcine, no ocide Other Observations: Headspace PID reading: 0.0 Amount of water removed: 1.14 gallons Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: Sample Time: Sample Time: Sample Time:			1	138	28				
pH 7. 02 0.99			NEF	12.0	172				_
Spec. Conduc. (mS/cm) Image: Species of the system Image: Species of the system <t< td=""><td></td><td></td><td>201</td><td>7.02</td><td>1.99</td><td></td><td></td><td></td><td></td></t<>			201	7.02	1.99				
ORP (mV) 1.0 1.9 <th1.9< th=""> 1.9 1.9 <</th1.9<>			1407	2472	2593				
DO (mg/L) 2.15 2.72 2.00 Turbidity (NTU) TY: 1 41.2 Image: Constraint of the second o			17110	1591	Hall T				
Turbidity (NTU) YSI Quatro 41.2 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Brown, no order Appearance at end: Morry, no order Other Observations: Headspace PID reading: 0.0 Amount of water removed: 1.14 gallons Depth to water before sampling: N.M ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: Image: Order			2 115	291	1.1010				
Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Brum, no order Appearance at end: Moregan and order Other Observations: Headspace PID reading: 0.0 Amount of water removed: 1.14 gallons Depth to water before sampling: N.M ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: Image: Image			1110	79.1	41.7				
		Appearance at start: Appearance at end: Other Observations: Amount of water removed: Depth to water before samplin	Headspace F	1.14 PFAS (21	0.0 Compounds)	gallons ft. (below top) by Modified	o of inner cas	ing)	(2-
NOTES: <u>* DUP Nec</u>				_			Sample Tim	ie:	330
		NOTES:	up he	e					
				-	_				

Well information: Depth of Well * 17.41 ft. * Measurements taken from Depth to Water * IC.00 ft. Top of Well Casis Length of Water Column 7.61 ft. Top of Protective 2* diameter wells = 0.041 x (LWC) =	RA	МВСТГ		GROUI	DWAT	ER SAMI	PLING FI		
Site Location Niksayuna, NY Sampling Method Peristaltic Pump Project # 192 Well information: Depth of Well * 17.41 ft. * Measurements taken from Depth to Water * 12.62 ft. Top of Well Casit 1* diameter wells = 0.041 x (LWC) = 1.31 gallons 2* diameter wells = 0.163 x (LWC) = $$ gallons 3* diameter wells = 0.653 x (LWC) = $$ gallons Well evacuation data: Well Volumes $$ Well for the evaluation data: Well Volumes $$ Well evacuation data: Well Volumes $$ Well for the evaluation of the evaluation o	Date	12 7 21	Personnel		AJG	145	P	Weather 🛨	30 1.91+
Well information: Depth of Well * 17.61 ft. * Measurements taken from Depth to Water * IC.002 ft. Top of Well Casis Length of Water Column 7.61 ft. Top of Protective (Other, Specify) 1* diameter wells = 0.041 x (LWC) =	Site Name	KL EC Sampling	Evacuation N	Nethod	Peristaltic F	Pump		Well # M	W122
Depth of Well * 17.41 ft. * Measurements taken from Depth to Water * 16.200 ft. Top of Well Casin Length of Water Column 7.61 ft. Top of Protective 1* diameter wells = 0.041 x (LWC) = 6.31 gallons gallons 2* diameter wells = 0.653 x (LWC) = -31 gallons gallons 4* diameter wells = 0.653 x (LWC) = -31 31 31 31 Well evacuation data: Well Volumes -31 31	Site Location	Niskayuna, NY	Sampling Me	ethod	Peristaltic F	Pump	-	Project #	1940101245
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restart @ 1950	1	NOTES: <u>* hi</u>	VI GIU	1 the	0 160	uler p	(mide	2 1640	
							-		

Date Site Name Site Location	KL EC Sampling Niskayuna, NY	Personnel Evacuation Sampling M		A Jŋ Peristaltic I Peristaltic I	Pump	Ð	Weather +3 Well # Q Project #	30 511an 3-MW-24 1940101245
Well informa	Depth of Well * Depth to Water * Length of Water Column	13 2 4.9 8.2		ft. ft. ft.		nents taken fro	Top of Well Top of Prote (Other, Spee	ective Casing
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		4	2	2	Well Vol	umes	1	1
	Start Time	1014	2	3				
	End Time	1021	1027	1033				
	Gallons Purged	12.33	0.33	0 33				
	Temp (C)	11.0	17.0	12.1				
	pH	7118	10.71	4.87				
	Spec. Conduc. (mS/cm)	10109	7703	6:220				
	ORP (mV)	102.7	1740	190.9				
	DO (mg/L)	12 54	2 69	2 23				
	Turbidity (NTU)	67 7	771	1187				
		12. 7						
	Probe type:	2	7 12	+ Lamotte T		le	1	
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						Sample Tim	e:	1040
	NOTES:	ms/m	SI) he	~				

	12×21				ER SAMI			
Date	12.821	Personnel					Weather	29°F.Sn
Site Name	KL EC Sampling	Evacuation		Peristaltic I		<u>.</u>	Well #	Q3-MW.
Site Location	Niskayuna, NY	Sampling N	lethod	Peristaltic I	Pump	-	Project #	1940101245
Vell informa	tion:		C •					
	Depth of Well *	14,		_ft.	* Measurem	ents taken fro	m	
	Depth to Water *	12.		ft.		X	Top of Well	-
	Length of Water Column	2,	53	- ^{ft.}		·	Top of Prot (Other, Spe	ective Casing
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	2" diameter wells = 0.163 x (L			_gallons				
	4" diameter wells = 0.653 x (L	WC) =		gallons				
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	End Time Gallons Purged	0.10	0.10	0-10				
	Temp (C)	105	11.2	119				-
	pHq	6.99	636	6.82				
	Spec. Conduc. (mS/cm)	1.908	1.874	1.579				
	ORP (mV)	167.1	1601	163.9				
	DO (mg/L)	2.95	2.52	2.39				
	Turbidity (NTU)	1223	56.5	24.4				
	Brobe type:			+ Lamotte 1	Fundation at an			
	Probe type:	3				1		
	Appearance at start: Appearance at end:		s. de	cer.	no ed			
		Leen	. 40	6677				
	Other Observations:	Headspace	PID reading:	0.0				
	Amount of water removed:		Ð.	30	gallons			
	Depth to water before samplin	g:	NM		ft. (below top	of inner casi	ng)	
	Deremotore Complet For			Compounds)				
	Parameters Sampled For:		US	EPA Method	1537			
						Sample Tim	e:	1030
	NOTES:							

RAMBO	LL		GROUNE	WATER D	DEVELOPN		D LOG	
Date	12 - 8 - 21 Q3 Yard (AOC- 005) RFI Fieldwork	Personnel		5日,山白		-		+25, 51000
Site Name Site Location	Groundwater Investigation Niskayuna, NY	Evacuation Me Sampling Meth		-	Itic Pump istaltic Pump	-	Well # Q Project #	525 <u>, sign</u> 3 <u>-MW187</u> 1 <u>940:1012</u>
Well informa	tion: Initial Depth of Well * Final Depth of Well * Depth to Water * Length of Water Column	22.0 kols 15	ि इ.2 ह.2 14	ft. ft. ft. ft.	* Measuremen	ts taken from	Top of We Top of Pro (Other, Sp	tective Casing
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	Start Time		1133	1200			ļ	
	End Time Gallons Purged		1139	0.29			<u> </u>	
	Temperature (C)		13.3	12.0				
	pH	1 10 13	1.79	1.74				
	Spec. Conduc. (mS/cm)		7.70	8.37				
	Turbidity (NTU)		MIN					
		*	2)	11201				
	Probe type:		YSI Quatro					
	Appearance at start:		Mill		_			
	Appearance at end:	Ľ	stun			_		
	Other Observations:	Headspace PIC	o reading:	.0 2200				
	Amount of water removed: Depth to water before sampli	ng:	0.87		gallons ft. (below top of	f inner casing)		
	Parameters Sampled For:	US	Compounds) by EPA Method 5	37	-	Sample Time:	13.45	1210
		cincincier indina	reading GEAT		not purzic		13+ Marie	
1 Day 2) NOT	after 2 nd r. enough volum	eciding re For	NTU M	cidina)				

Note: Samples were twisid



PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling	_{Task:} 1940101245
Weather (temp/precip): +32, snowney	Date: 12-7-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wer-Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above aboratory detection limits).
Field Equipment:	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents;
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Decon 90 [®] is not being used.
	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature



(12) Knolls Laborary PFAS Pre-Sam	pling Checklist
Site Name: Kesselring-Site EC Sampling	Task: 1940101245
Weather (temp/precip): -25° Siting	Date: 12/8/21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
Field Equipment: Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used. Food-Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and V/Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature

Enclosure (2)

Emerging Contaminants Groundwater Monitoring Report for the Kesselring Site Emerging Contaminants Groundwater Monitoring Report for the Kesselring Site

Knolls Atomic Power Laboratory Kesselring Site West Milton, New York

June 2022

Prepared by

Fluor Marine Propulsion, LLC Knolls Atomic Power Laboratory Niskayuna, New York Operated for the United States Department of Energy Table of Contents

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- Appendix A Data Validation Report
- Appendix B Field Data Forms

List of Acronyms and Abbreviations

amsl	Above Mean Sea Level
AFFF	Aqueous Film-Forming Foam
CVOC	Chlorinated Volatile Organic Compound
FTS	Fluorotelomer Sulfonate
HDPE	High Density Polyethylene
KAPL	Knolls Atomic Power Laboratory
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PFAS	Per- and Polyfluoroalkyl Substances
PFDA	Perfluorodecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PPE	Personal Protective Equipment
ppt	Parts Per Trillion
QA	Quality Assurance
QC	Quality Control
SOW	Scope of Work
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

A Scope of Work (SOW), reference (1), was implemented to evaluate groundwater at the Knolls Atomic Power Laboratory (KAPL) – Kesselring Site (Site) for the presence of the emerging contaminants, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, as identified by the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). The SOW was prepared in accordance with the reference (2) NYSDEC Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs. The SOW was provided to NYSDEC via email on April 6, 2021. Following resolution of NYSDEC and New York State Department of Health (NYSDOH) comments, NYSDEC approved the SOW by reference (3) on September 2, 2021. The SOW fieldwork was implemented in the fall of 2021.

The SOW specified that a monitoring report would be prepared to document the findings of the fieldwork. This Monitoring Report includes a site description, emerging contaminants groundwater analytical data summary and assessment, and conclusions.

1.1 Emerging Contaminants Groundwater Sampling Implementation Summary

The SOW was implemented in two phases – the Initial Phase that implemented the SOW and a Supplemental Phase that was performed based on the results of the Initial Phase and discussions with NYSDEC and NYSDOH. The objectives of the SOW were to evaluate for the presence of Emerging Contaminants in groundwater.

The Initial Phase consisted of groundwater sample collection from four wells at the Hogback Road Landfill and nine wells in the Site's developed area. The Supplemental Phase consisted of groundwater sample collection from two wells at the Hogback Road Landfill and the Site's developed area East Ditch. An implementation summary is provided on Table 1.

2.0 SITE DESCRIPTION

As shown on Figure 1, the Site is approximately 3,900 acres of mostly undeveloped land with a centrally located developed area of approximately 65 acres. The Site is located near West Milton, New York, approximately 17 miles north of the city of Schenectady and 9 miles southwest of Saratoga Springs. The Site is an industrial setting that is predominantly paved with one pressurized-water naval nuclear propulsion plant (i.e., prototype) and support facilities that include administrative offices, machine shops, waste storage facilities, oil storage facilities, training facilities, equipment service buildings, chemistry laboratories, a boiler house, a cooling tower, and wastewater treatment facilities. Additionally, there have been three other prototypes that are permanently shutdown; one has been dismantled and the other two will be dismantled. The Site is dedicated primarily to the training of personnel in the operation of naval nuclear propulsion plants. The Site is owned by the United States Department of Energy and is currently operated by Fluor Marine Propulsion, LLC.

The Hogback Road Landfill (landfill), Solid Waste Management Unit #35, is located approximately 7/8-mile south-southeast of the developed area as shown on Figure 1. The landfill is approximately 14 acres and was operated from 1951 until October 1993. Toward the end of operation, the landfill was used exclusively for the disposal of cafeteria waste, office waste, and construction and demolition debris. Prior to the enactment of the Resource Conservation and Recovery Act, certain wastes such as asbestos scraps, scrap metal, lead bricks, oil and oily water, paint; and chemicals were disposed of in the landfill. The landfill was closed in 1994 in accordance with 6 New York Codes, Rules and Regulations Part 360 Solid Waste Management regulations, and groundwater is monitored annually per the requirements of the reference (4) Hogback Road Landfill Post Closure Monitoring and Maintenance Operations Manual.

In May 2021, NYSDEC Division of Materials Management, issued their reference (5) Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, with emphasis on emerging contaminants. The Comprehensive Plan included the Inactive Landfill Initiative Program to assess potential impacts that inactive landfills may have on public drinking water supplies. The Hogback Road Landfill was identified in this program as a "Potential Future Investigation List Site".

2

2.1 Environmental Setting

The Site is located within the undulating transition zone between the Adirondack Mountains and the Hudson-Mohawk Valley lowlands. Ground elevations in the vicinity of the Site generally range from 400 to 900 feet above mean sea level (amsl) as shown on Figure 1. The ground surface elevations range from approximately 480 to 490 feet amsl within the developed area of the Site and from approximately 456 to 497 feet amsl at the landfill.

2.2 Geology

2.2.1 Developed Area

Overburden deposits consist of lake-bottom deposits (lacustrine silts) and glacial till. Fluvial deposits have been observed in some isolated areas of the Site. Coarse backfill materials consisting of sand, gravel, and crushed stone have also been added during construction activities.

2.2.2 Hogback Road Landfill

Overburden deposits at the landfill consist of glacial till and kamic sands and gravel of varying extent and thicknesses. Two types of glacial till exist at the landfill. The Mohawk till is clay rich and is the lower till deposit and, where present, overlies bedrock. The Adirondack till is clay poor and typically overlies the Mohawk till. The sand and gravel deposits typically overlie the till deposits.

2.3 Groundwater

2.3.1 Developed Area

Groundwater at the developed area is not used for drinking water. There are no groundwater aquifers in the vicinity of the Site that are designated as a sole source aquifer by the USEPA or as a primary or principal aquifer by NYSDEC. Primarily, the glacial till and lacustrine silt deposits yield very low volumes of groundwater. However, localized areas of saturated coarse-grained deposits that can transmit groundwater have been observed at the Site.

Groundwater elevations within the Site's developed area range from approximately 495 feet amsl in the western portion to approximately 465 feet amsl on the downgradient, eastern portion of the developed area as shown on Figure 2. Groundwater flow is generally to the east and conforms to the ground surface topography and converges to the East Ditch and ultimately the Glowegee Creek.

2.3.2 Hogback Road Landfill

Groundwater elevations at the landfill generally range from 485 feet amsl on the west side to 450 feet amsl to 460 feet amsl on the east. During closure activities in the early 1990s, an apparent east to west groundwater divide existed through the approximate center of the landfill. North of the divide, groundwater flow is to the northeast and south of the divide groundwater flow is to the southeast. Along the divide, groundwater flow is west to east. A more recent groundwater elevation contour map was developed using the groundwater elevations from the routine Site landfill monitoring conducted in September 2021. As shown on Figure 3, groundwater flow is consistent with that reported during landfill closure. Overall, groundwater flows toward and discharges to the Glowegee Creek, with some groundwater first entering the unnamed tributary to the north of the landfill and the Hogback Brook to the south of the landfill before entering the Glowegee Creek.

2.3.3 Drinking Water Supply

Drinking water for the Kesselring Site is provided by on-site production wells located approximately one mile east of the developed portion of the Site. The well field is hydrogeologically separate from current and historical operational areas. The production wells were sampled twice in 2021 for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and 1,4-dioxane in accordance with NYSDOH sampling requirements for public water supplies. The laboratory analytical results, transmitted to NYSDOH by references (6) and (7), show that these three compounds were not detected during each sampling event. Groundwater at the landfill is not used for drinking water.

The closest downstream private drinking water supply well from the developed area is associated with a private residence approximately one mile east / southeast and hydraulically separated from the Site by the Glowegee Creek (Figure 4). The closest downgradient private drinking water supply well from the landfill is approximately 0.3 miles southeast of the landfill (Figure 4).

3.0 SCOPE OF WORK IMPLEMENTATION

As shown on Table 1, groundwater samples were collected from nine developed area wells (MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, and MW-18), the East Ditch, and six Hogback Road Landfill wells (HB-1A, LMW-4, HB-5A2, HB-8A, HB-9A, and HB-11A). Attempts were made to collect a sample from Hogback Road Landfill well HB-10A; however, the well was dry. Developed area and Hogback Road Landfill sampling locations are shown on Figures 2 and 3, respectively.

For the Initial Phase of sampling, groundwater samples were submitted to the Eurofins TestAmerica Laboratory in Sacramento, California for the analysis of PFAS in accordance with modified USEPA Method 537 and to the Eurofins TestAmerica Laboratory in Edison, New Jersey for analysis of 1,4-dioxane by USEPA Method 8270 selected ion monitoring. Both analytical laboratories are NYSDOH Environmental Laboratory Approval Program certified for the methods. For the Supplemental Phase of sampling, groundwater samples were analyzed only for PFAS, as 1,4-Dioxane was not detected in the Initial Phase of sampling and determined not to be a constituent of concern. NYSDEC Analytical Service Protocol Category B data packages were generated by TestAmerica and validated by an independent data validator. The data validation report is provided in Appendix A.

3.1 Groundwater Sampling Locations

Developed area groundwater sampling locations were determined based on an evaluation of past uses of potential Emerging Contaminant containing items, available groundwater chlorinated volatile organic compound (CVOC) analytical results for potential 1,4-dioxane indicator CVOCs, and local groundwater flow patterns. Hogback Road Landfill sample locations were determined based on available CVOC analytical results and local groundwater flow patterns. This detailed evaluation and sampling location rationale is described in the approved reference (1) SOW. Supplemental sampling locations were determined based on the initial sampling results and discussions with NYSDEC and NYSDOH.

3.2 Sample Collection and Handling

Prior to conducting groundwater sampling activities, monitoring well headspace was screened for organic vapors with a photoionization detector immediately upon opening the well. Any existing dedicated groundwater sampling equipment within the selected wells was removed prior to the start of the sampling to minimize the potential for anomalies in the Emerging Contaminants analytical data. The depth to groundwater was then measured in the monitoring well and compared to a previously determined total well depth to calculate the volume of water to be purged during sampling activities. The water levels were obtained by using an electronic water level indicator probe graduated in 0.01-foot increments.

Groundwater monitoring wells were purged by removing three well volumes of water. In slowly recharging monitoring wells, the well was purged to dryness for a minimum of one well volume. Monitoring well purging and sampling was conducted using a peristaltic pump with dedicated high density polyethylene (HDPE) tubing for each well. Due to the depth of HB-5A2, which is at the limits of the peristaltic pump, the aid of a stainless steel in-line check valve was used to purge and sample the well.

Groundwater purging and sampling was conducted while appropriate personal protective equipment (PPE) was donned by sampling personnel as described in the SOW.

Water quality parameters including: temperature, conductivity, pH, oxidation-reduction potential, turbidity and dissolved oxygen were measured after each well volume was purged. Visual observations were also noted at the start and end of purging; however, no odors or sheens were observed. Well purging information is provided in the field data forms in Appendix B.

Following purging activities, groundwater samples were collected for laboratory analysis. All sampling was performed in accordance with the SOW. Prior to each sample collection, a new pair of nitrile gloves were donned by sampling personnel. The groundwater sample for PFAS analysis was collected first by direct filling the HDPE laboratory-provided containers. The sample for 1,4-dioxane analysis was collected after the PFAS sample collection (including collection of any Quality Assurance/Quality Control (QA/QC) samples for PFAS analysis). The 1,4-dioxane samples were direct-filled into laboratory-provided containers. QA/QC samples including duplicates, matrix spikes/matrix spike duplicates, field reagent blanks, and equipment blanks were collected at the frequency and following the procedures as specified in the SOW. After collecting the sample, the sample identification, project name, date and time of sample collection, and sample analysis were placed on the sample container labels. The sample information was also recorded on a laboratory provided chain of custody and placed with the sample containers in a cooler containing regular ice for transportation to the laboratory.

The East Ditch groundwater sample and field duplicate were collected following three days of no precipitation to ensure a representative sample of groundwater. The sample was collected by direct-filling the laboratory provided container by dipping the container into the ditch water until full. Samples were then labeled, handled, and shipped as described above.

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3.3 Equipment Decontamination

All non-dedicated sampling equipment (i.e., the water level indicator and the in-line check valve used for HB-5A2) was cleaned between each use. Equipment was cleaned by rinsing the equipment with laboratory provided water, followed by a solution containing 1,4-dioxane free soap (i.e., Seventh Generation[™]) and laboratory provided water. Equipment was rinsed a second time with laboratory provided water and the equipment was wiped with paper towels. Cleaning fluids were applied with spray bottles and the minimal volume was absorbed with paper towels.

Investigation-derived waste including PPE, primarily nitrile gloves, and disposable sampling materials (e.g., tubing, paper towels) were managed as non-hazardous in accordance with Site waste management procedures.

4.0 EMERGING CONTAMINANTS RESULTS AND ASSESSMENT

Analytical results are provided on Tables 2 and 3. The data validation report is provided in Appendix A.

Analytical results are compared to the NYSDOH drinking water maximum contaminant level (MCL) of 10 part per trillion (ppt) or nanogram per liter for PFOS and PFOA and 1 part per billion or microgram per liter for 1,4-dioxane; there are no established NYS regulatory criteria for the other PFAS. For perspective, the PFOS and PFOA results are also compared to the NYSDEC proposed ambient water guidance values of 2.7 ppt and 6.7 ppt, respectively. For information the data are additionally compared to criteria in the SOWs that are now outdated. This includes the May 2016 USEPA lifetime health advisory of 70 ppt for PFOA and PFOS, individually and combined; and the former NYSDEC screening levels of no individual PFAS detected greater than 100 ppt (excluding PFOS and PFOA), and no individual monitoring well with a sum of PFAS detections (including PFOA and PFOS) greater than 500 ppt.

While there are currently no established regulatory criteria for the other PFAS, the NYS Drinking Water Quality Council has recommended a 10 ppt MCL for perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexanesulfonic acid (PFHxS). This recommendation is based on the overall persistence in the environment and toxicity of these PFAS, which is similar to PFOS and PFOA as, indicated in reference (8). These additional four PFAS were proactively evaluated relative to the recommended 10 ppt MCL, as it is anticipated that NYSDOH will adopt the recommendation as a drinking water MCL. The frequency of these four PFAS detected in the developed area and Hogback Road Landfill and a comparison to the recommended 10 ppt MCL is provided in Table 4 and described herein.

4.1 Data Summary

4.1.1 1,4-Dioxane

1,4-Dioxane was not detected in any of the groundwater samples. As a result, 1,4-dioxane was not analyzed for in the supplemental samples. The analytical results are presented on Table 2 and Table 3.

4.1.2 PFAS – Developed Area

Various combinations of individual PFAS, including PFOS and PFOA, were detected in 12 groundwater samples (10 samples and 2 duplicate samples) collected from the developed area wells and the East Ditch. The groundwater analytical results are presented in Table 2.

PFOS and PFOA concentrations in samples collected from developed area wells are shown on Figure 2.

PFOA concentrations range in the developed area from 0.96 ppt in MW-12 to 14 ppt in MW-18. The highest concentration of PFOS was noted in the sample collected from MW-6 at 327 ppt with the next highest concentration in MW-10 at 67.2 ppt. With the exception of these two monitoring wells, PFOS range in concentration from 2.18 ppt in MW-1 to 21.9 ppt in MW-18. The frequency of PFOS and PFOA results compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5.

The detection of PFOS in monitoring well MW-6 represents the only detection of PFAS greater than the USEPA health advisory of 70 ppt. The total concentration of PFAS in MW-6 is below the former NYSDEC screening level for total PFAS of 500 ppt.

The sample collected from the East Ditch is representative of the furthest downgradient sample location in the developed area. PFOS was detected in the sample and duplicate at concentrations of 7.01 ppt and 6.55 ppt, respectively; which exceed the NYSDEC proposed guidance value for groundwater of 2.7 ppt, but is below the NYSDOH drinking water MCL of 10 ppt. PFOA was detected in the sample and duplicate at concentrations of 2.82 ppt and 2.74 ppt, respectively, which are below all applicable criteria. In consideration of the adjacent Glowegee Creek, and for perspective, the East Ditch results are well below the NYSDEC draft surface water criteria of 160,000 ppt for PFOS; there is no current surface water standard for PFOA.

PFHpA was detected in all developed area samples including the East Ditch samples, with the exception of MW-12, at concentrations up to 10 ppt. With the exception of MW-12, PFNA was detected in all developed area samples including the East Ditch at concentrations up to 5.68 ppt. PFDA was detected in samples collected from MW-4, MW-6, MW-10, MW-15 (duplicate), and MW-18 at concentrations up to 1.95 ppt. PFHxS was detected in all developed area samples including the East Ditch sample, with the exception of MW-12, at concentrations up to 8.95 ppt. There are no exceedances of the recommended MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the developed area and a comparison to the recommended 10 ppt MCL is provided in Table 4.

4.1.3 Developed Area Assessment

Overall, developed area results generally correlate with the assessment provided in the SOW which concluded that the use of PFAS containing aqueous film-forming foam (AFFF) was limited

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to isolated areas of the developed area. Specifically, the PFAS composition in most of the site groundwater suggests electrochemical fluorination, similar to that used in the early production of legacy AFFF. This process was predominantly phased out in industry circa 2000 and the dominant process for production of PFAS changed to fluorotelomerization which yields different PFAS. For example, the presence of 6:2 fluorotelomer sulfonate (FTS) and 8:2 FTS in MW-6 and 8:2 FTS in MW-15 may suggest the use of newer AFFF formulations in addition to the legacy AFFF. The four PFAS that are recommended for addition to the NYSDOH list of drinking water MCLs did not exceed the proposed standard of 10 ppt. Furthermore, the East Ditch results, which represents an area of convergence of downgradient developed area groundwater, are below MCLs.

4.1.4 PFAS: Hogback Road Landfill

Various combinations of individual PFAS, including PFOS and PFOA, were detected in five of the six groundwater samples collected from the landfill. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from Hogback Road Landfill wells are shown on Figure 3.

PFAS were not detected in upgradient well HB-1A. PFOA concentrations range in the landfill groundwater samples from non-detect in HB-1A to 6.31 ppt in HB-5A2. PFOS range in concentration in groundwater from non-detect in HB-1A to 13.6 ppt in HB-11A. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values is provided in Table 6.

Fluorotelomer compounds were not detected in the landfill groundwater samples.

PFHpA was detected in all landfill samples, with the exception of HB-1A, at concentrations up to 7.67 ppt. PFNA was detected in HB-5A2 at a concentration of 0.46 J ppt. PFDA was not detected in landfill samples. PFHxS was detected in all landfill samples, with the exception of HB-1A, at concentrations up to 5.90 ppt. There are no exceedances of the recommended MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the Hogback Road Landfill and a comparison to the recommended 10 ppt MCL is provided in Table 4.

None of the PFAS concentrations exceeds the USEPA health advisory of 70 ppt or the former NYSDEC screening levels of 100 ppt individually or total PFAS of 500 ppt.

4.1.5 Hogback Road Landfill Assessment

Overall, the Hogback Road Landfill results are unremarkable. Only one sample result is greater than the MCL, and PFAS concentrations decrease in further downgradient wells to levels below the MCL. Additionally, the four PFAS that are recommended for addition to the NYSDOH list of drinking water standards do not exceed the recommended MCL of 10 ppt. The lack of fluorotelomer compounds, as a result of fluorotelomerization manufacturing processes, in the landfill samples correlates with the early 1990s landfill closure as those compounds were limited in production prior to the early 2000s (reference (9)).

4.2 AFFF Inventory

The principal potential PFAS containing item evaluated for usage at the Site is AFFF. A review of historical operations and early interviews with Site personnel indicate that fire-fighting training with AFFF was conducted onsite, proximal to former Building 31 (i.e., Farmhouse) and Building 3 (i.e., Site Firehouse) as shown on Figure 2. These two structures were located near one another; however, the Farmhouse was demolished in 2014 and office trailers currently exist at this location. Subsequent to the issuance of the SOW, additional discussions with on-site personnel indicated that fire extinguisher training was also historically performed at the prototypes in the developed area. The dates of training and usage are not certain. Fire-fighting training with AFFF, containing PFAS, is no longer conducted on-site. The Site began transitioning in 2007, and continues to use an alternative, PFAS-free, training foam product in training exercises conducted at the Site.

In June 2022, an update of the on-site AFFF inventory was performed. Currently, there is approximately (some volume in the extinguishers is estimated) 411 gallons of PFAS-containing AFFF (non-legacy) on-site for emergency response action. In addition, there is currently approximately 147 gallons of legacy AFFF that has been removed from active inventory and is awaiting off-site disposal.

5.0 CONCLUSION

1,4-Dioxane was not detected in any of the groundwater samples and is not considered a constituent of concern. PFAS are present in the developed area and Hogback Road Landfill groundwater. The PFAS present in groundwater at the Site's developed area are likely attributed to historical fire-fighting training operations using legacy AFFF and potential newer formulations of AFFF. The PFAS present in the Hogback Road Landfill are consistent with legacy PFAS formulations and correlates with the closure of the landfill in the early 1990s. The concentrations of PFAS observed in downgradient sample locations are below drinking water standards. Furthermore, groundwater discharges to the Glowegee Creek, which acts as a hydrogeologic barrier to off-site migration of PFAS from the developed area of the Site. At the Hogback Road Landfill, groundwater also flows into the Glowegee Creek and the nearest private downgradient well is approximately 0.3 miles from the property boundary.

Due to the evolving nature of regulatory requirements associated with PFAS, any future additional characterization will be performed based on discussions and alignment with NYSDEC and NYSDOH.

6.0 REFERENCES

- 1) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Kesselring Site, April 2021
- NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Kesselring Site, Emerging Contaminants Scope of Work (SOW)
- KAPL. 1998. Hogback Road Landfill Post-Closure Monitoring and Maintenance Operations Manual, Knolls Atomic Power Laboratory, Kesselring Site, September 1998, Revised March 2014
- 5) NYSDEC. 2021. Division of Materials Management. New York State Inactive Landfill Initiative, Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, May 2021
- NRLFO letter. NRLFO: AMO-S:ESH:21-008, dated February 2, 2021; Subject: First Quarter 2021 PFOA, PFOS, and 1,4-Dioxane Monitoring Results; Kenneth A. Kesselring Site (PWS ID: NY4520559).
- NRLFO letter. NRLFO: AMO-S:ESH:21-038, dated May 7, 2021; Subject: Second Quarter 2021 PFOA, PFOS, and 1,4-Dioxane Monitoring Results; Kenneth A. Kesselring Site (PWS ID: NY4520559).
- 8) NYS Drinking Water Quality Council (DWQC). 2022. Emerging PFAS Health based Drinking Water Values and Maximum Contaminant Levels [PowerPoint Slides], Sadie Wheeler, Ph.D., March 10, 2022, Minute 35 <u>https://totalwebcasting.com/view/?func=VOFF&id=nysdoh&date=2022-05-02&seq=1</u>
- 9) ITRC. 2020. History and Use of Per-and Polyfluoroalkyl Substances (PFAS), April 2020

Tables

Table 1Implementation Summary

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

october 4, 2021 - October 8, 2021	 Groundwater Sampling Four Hogback Road Landfill Wells Sampled HB-1A, LMW-4, HB-5A2, HB-11A One Field Reagent Blank Nine Developed Area Wells Sampled MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18 Three Field Reagent Blanks
	 HB-1A, LMW-4, HB-5A2, HB-11A One Field Reagent Blank Nine Developed Area Wells Sampled MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18
	 One Field Reagent Blank Nine Developed Area Wells Sampled MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18
	 Nine Developed Area Wells Sampled MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18
	 MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18
	MW-15, MW-16, MW-17, MW-18
upplemental Sampling Phase	
ecember 6, 2021	Groundwater Sampling
	Two Hogback Road Landfill Wells Sampled
	• HB-8A, HB-9A
	 HB-10A (not sampled – dry) One Field Reagent Blank
	One Developed Area Groundwater Sample
	o East Ditch
	 One Field Reagent Blank
otes:	
PFAS = per- and polyfluoroalkyl subs Protection Agency	stances; USEPA = United States Environmental
	ater samples analyzed for 21 PFAS by modified
	ane by USEPA Method 8270 Selected Ion
Monitoring (SIM).	les analyzed for PFAS only by modified USEPA
Method 537.	
	ofins TestAmerica Laboratories, Inc. of
	ne analysis performed by Eurofins TestAmerica
Laboratories, Inc. of Edison, New	
4. All necessary Quality Assurance accordance with the Scope of Wo	/ Quality Control samples collected in

Table 2 Developed Area Sample Results

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

		Area			Kesselring Facility Area		
		Location ID	MW-1	MW-4	MW-6	MW-10	MW-12
		Sample ID	KS-EC-MW-1-100721	KS-EC-MW-4-100821	KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721
		Sample Date	10/7/2021	10/8/2021	10/5/2021	10/5/2021	10/7/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.78 U	4.59 U	5.98	4.56 U	4.75 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.91 U	1.84 U	20.4	1.82 U	1.90 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.78 U	4.59 U	4.66 U	4.56 U	4.75 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.78 U	4.59 U	4.66 U	4.56 U	4.75 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	0.52 J	2.77	1.80 J	1.16 J	0.73 J
Perfluorobutanoic acid (PFBA)	NV	NV	5.05	10.4	8.07	4.56 U	4.75 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.91 U	1.05 J	0.89 J	1.95	1.90 U
Perfluorododecanoic acid (PFDoA)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.91 U	1.84 U	1.39 J	1.82 U	1.90 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	3.28	8.77	10.0	2.38	1.90 U
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	1.14 J	1.51 J	8.95	0.92 J	1.90 U
Perfluorohexanoic acid (PFHxA)	NV	NV	4.30	14.3	11.5	1.56 J	1.90 U
Perfluorononanoic acid (PFNA)	NV	NV	0.80 J	3.27	5.17	1.70 J	1.90 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10	2.18	6.44 *	<u>327 *</u>	<u>67.2 *</u>	2.49
Perfluorooctanoic acid (PFOA)	6.7	10	4.46	<u>12.1 *</u>	<u>11.3 *</u>	1.96	0.96 J
Perfluoropentanoic acid (PFPeA)	NV	NV	11.9	17.5	20.0	1.06 J	1.90 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 2 Developed Area Sample Results

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

		Area			Kesselring Facility Area		
		Location ID	MW-15	MW-15	MW-16	MW-17	MW-18
		Sample ID	KS-EC-MW-15-100521	KS-EC-X01-100521	KS-EC-MW-16-100721	KS-EC-MW-17-100721	KS-EC-MW-18-100521
		Sample Date	10/5/2021	10/5/2021	10/7/2021	10/7/2021	10/5/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	MCL					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	34.9	34.3	1.89 U	1.94 U	1.33 J
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	3.17	3.23	3.52	1.94 U	3.04
Perfluorobutanoic acid (PFBA)	NV	NV	9.01	8.86	6.81	4.84 U	5.48
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluorodecanoic acid (PFDA)	NV	NV	0.85 J	0.88 J	1.89 U	1.94 U	1.22 J
Perfluorododecanoic acid (PFDoA)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	5.26	5.22	2.98	0.53 J	9.54
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	2.39	2.25	0.83 J	1.32 J	2.18
Perfluorohexanoic acid (PFHxA)	NV	NV	10.9	10.6	6.92	0.82 J	7.29
Perfluorononanoic acid (PFNA)	NV	NV	5.68	5.52	0.71 J	0.41 J	4.61
Perfluorooctanesulfonic acid (PFOS)	2.7	10	<u>16.4 *</u>	<u>15.4 *</u>	2.63 EMPC	3.24 *	<u>21.9 *</u>
Perfluorooctanoic acid (PFOA)	6.7	10	9.58 *	9.44 *	6.61	2.24	<u>14.0 *</u>
Perfluoropentanoic acid (PFPeA)	NV	NV	16.1	15.4	8.22	0.94 J	9.12
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 2 Developed Area Sample Results

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

		Area	East Dit	ch Area
		Location ID	EASTDITCH-01	EASTDITCH-01
		Sample ID	KS-EC-EASTDITCH-01-120621	KS-EC-X02-120621
		Sample Date	12/6/2021	12/6/2021
	Proposed Guidance	Drinking Water		
Chemical Name	Values	MCL		
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.40 U	4.47 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.76 U	1.79 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.40 U	4.47 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.40 U	4.47 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	0.81 J	0.90 J
Perfluorobutanoic acid (PFBA)	NV	NV	3.22 J	3.89 J
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.76 U	1.79 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.76 U	1.79 U
Perfluorododecanoic acid (PFDoA)	NV	NV	1.76 U	1.79 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.76 U	1.79 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	1.93	2.57
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	3.07	2.99
Perfluorohexanoic acid (PFHxA)	NV	NV	3.32	3.05
Perfluorononanoic acid (PFNA)	NV	NV	0.47 J	0.50 J
Perfluorooctanesulfonic acid (PFOS)	2.7	10	7.01 *	6.55 *
Perfluorooctanoic acid (PFOA)	6.7	10	2.82	2.74
Perfluoropentanoic acid (PFPeA)	NV	NV	5.00	5.32
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.76 U	1.79 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.76 U	1.79 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.76 U	1.79 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.76 U	1.79 U
1,4-Dioxane	0.35	1.0		

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

Table 3 Hogback Road Landfill Sample Results

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

		Area			Hogback Road	d Landfill Area		
		Location ID	HB-1A	HB-5A2	HB-11A	LMW-4	HB-8A	HB-9A
		Sample ID	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-HB-11A-100421	KS-EC-LMW-4-100421	KS-EC-HB-8A-120621	KS-EC-HB-9A-120621
		Sample Date	10/4/2021	10/4/2021	10/4/2021	10/4/2021	12/6/2021	12/6/2021
	Proposed Guidance	Drinking Water						
Chemical Name	Values	MCL						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV	1.90 U	1.22 J	0.61 J	1.22 J	1.79 U	0.26 J
Perfluorobutanoic acid (PFBA)	NV	NV	4.74 U	10.7	4.71 U	10.1	4.47 U	4.98 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorodecanoic acid (PFDA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorododecanoic acid (PFDoA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroheptanoic acid (PFHpA)	NV	NV	1.90 U	7.67	0.88 J	3.35	0.55 J	0.97 J
Perfluorohexanesulfonic acid (PFHxS)	NV	NV	1.90 U	3.11	5.90	1.54 J	1.10 J	1.06 J
Perfluorohexanoic acid (PFHxA)	NV	NV	1.90 U	20.4	1.06 J	18.7	0.84 J	2.15
Perfluorononanoic acid (PFNA)	NV	NV	1.90 U	0.46 J	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10	1.90 U	6.67 *	<u>13.6 *</u>	9.08 *	1.89	0.89 J
Perfluorooctanoic acid (PFOA)	6.7	10	1.90 U	6.31	2.12	3.67	1.83	2.23
Perfluoropentanoic acid (PFPeA)	NV	NV	1.90 U	24.7	1.38 J	23.7	1.07 J	2.36
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluroroctanesulfonamide (FOSA)	NV	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
1,4-Dioxane	0.35	1.0	0.20 U	0.20 U	0.20 U	0.20 U		

Note: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "**".

Table 4PFHpA, PFNA, PFDA, PFHxS Detection SummaryDeveloped Area and Hogback Road Landfill

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

Analyte	Area	Number of Detections per Number of Samples Analyzed	Range of Detections (ng/L)	Number of Samples > Recommended NYS DW MCL (10 ng/L)
	Developed Area	11/12	0.53 J to 10.0	0*/12
PFHpA	Hogback Rd. Landfill	5/6	0.55 J to 7.67	0/6
PFNA	Developed Area	11/12	0.41 J to 5.68	0/12
FFINA	Hogback Rd. Landfill	1/6	0.46 J	0/6
	Developed Area	6/12	0.85 J to 1.95	0/12
PFDA	Hogback Rd. Landfill	0/6	Not Detected	0/6
PFHxS	Developed Area	11/12	0.83 J to 8.95	0/12
	Hogback Rd. Landfill	5/6	1.06 J to 5.90	0/6

Notes: 1. ng/L= nanograms per liter; NYS = New York State; DW = Drinking Water; MCL = Maximum Contaminant Level; PFHpA = Perfluoroheptanoic acid; PFNA = Perfluorononanoic acid; PFDA = Perfluorodecanoic acid;

PFHxS = Perfluorohexanesulfonic acid; J = analyte detected at an estimated concentration

* Detection at the recommended NYS DW MCL

2. Recommended NYS DW MCL value is from the NYS Drinking Water Quality Council March 10, 2022 meeting.

Table 5PFOS and PFOA Detection SummaryDeveloped Area

Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
<u>PFOA</u>	Developed Area	0.96 to 14.0	5/12	3/12
NYS GW GV:	Upgradient	0.96 to 4.46	0/2	0/2
6.7 ng/L NYS DW MCL:	Center-Site	1.96 to 12.1	2/3	2/3
10 ng/L	Downgradient Perimeter	2.24 to 14.0	3/7	1/7
PFOS	Developed Area	2.18 to 327	9/12	5/12
NYS GW GV:	Upgradient	2.18 to 2.49	0/2	0/2
2.7 ng/L NYS DW MCL:	Center-Site	6.44 to 327	3/3	2/3
10 ng/L	Downgradient Perimeter	2.63 to 21.9	6/7	3/7

Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid

> 2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Table 6 PFOS and PFOA Detection Summary Hogback Road Landfill

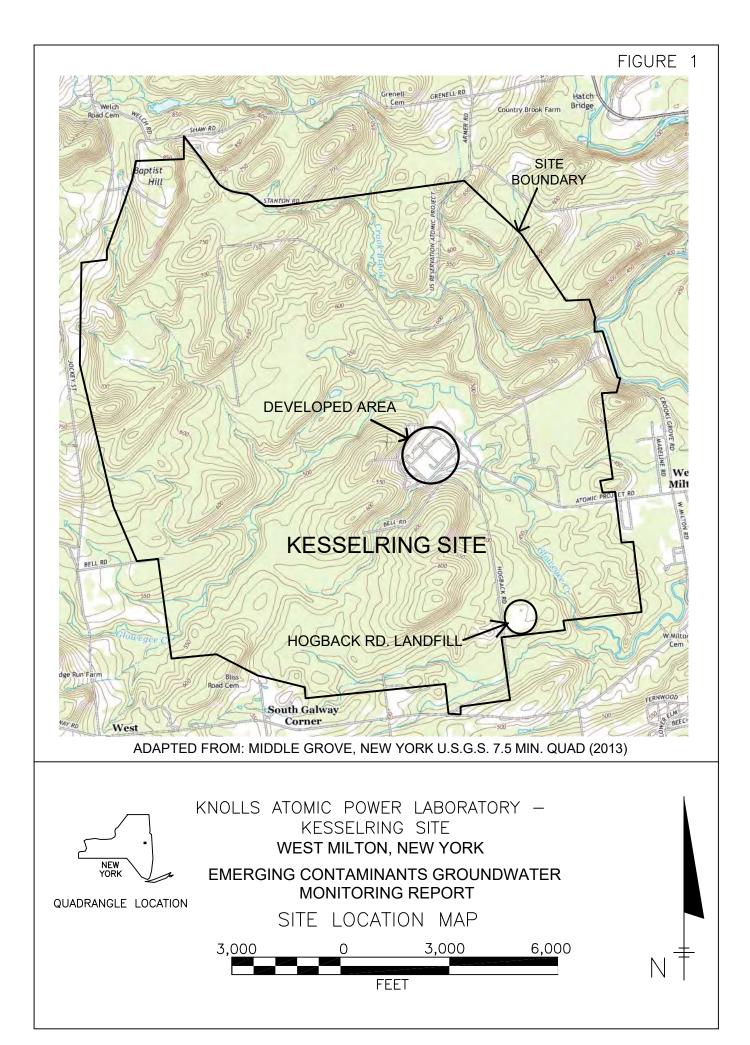
Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

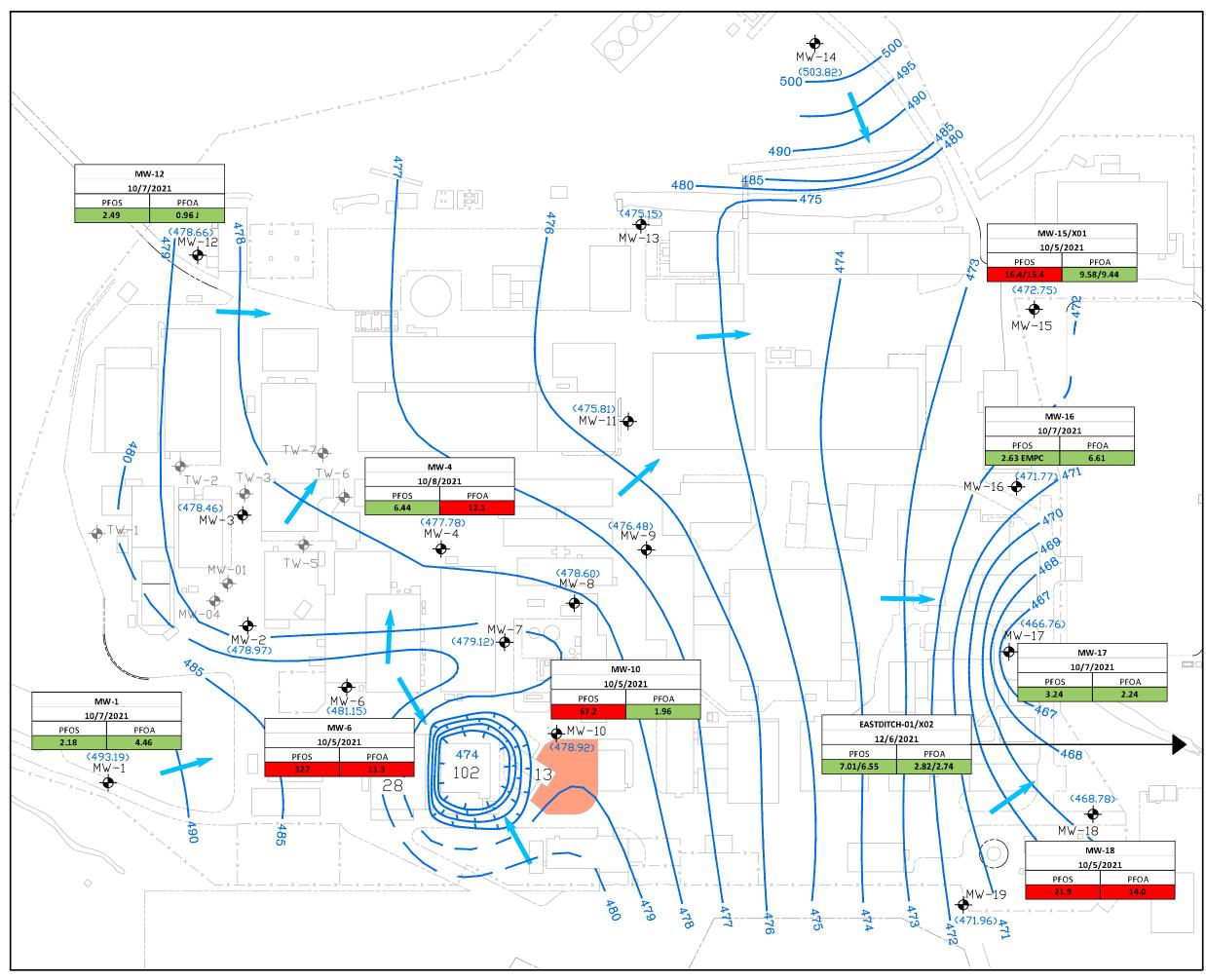
Analyte / Criteria	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA	-		
NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	1.83 to 6.31	0/6	0/6
PFOS			
NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	0.89 J to 13.6	3/6	1/6

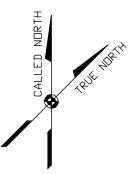
Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

> 2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Figures



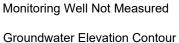






Monitoring Well Location with Groundwater Elevation Measured on (478.97) August 26, 2019





Groundwater Flow Direction

(Dashed where inferred)

Possible Fire Fighting Training Area

Notes

1. Monitoring wells surveyed in February 2010.

2. Groundwater elevations and contours presented in feet above mean sea level.

3. Groundwater measurements obtained August 26, 2019 for the Stormwate Drain System (SWMU #55) CISC RFA SV Report for Building 93. 4. Results are in nanograms per liter (ng/L). "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration.

5. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

6. Promulgated Maximum Contaminant Levels (MCLs) are from the 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Contour interval = 1 foot when <480 and 5 feet when >480.

- Red box = PFAS above criteria

- Green box = PFAS below criteria

KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE WEST MILTON, NEW YORK

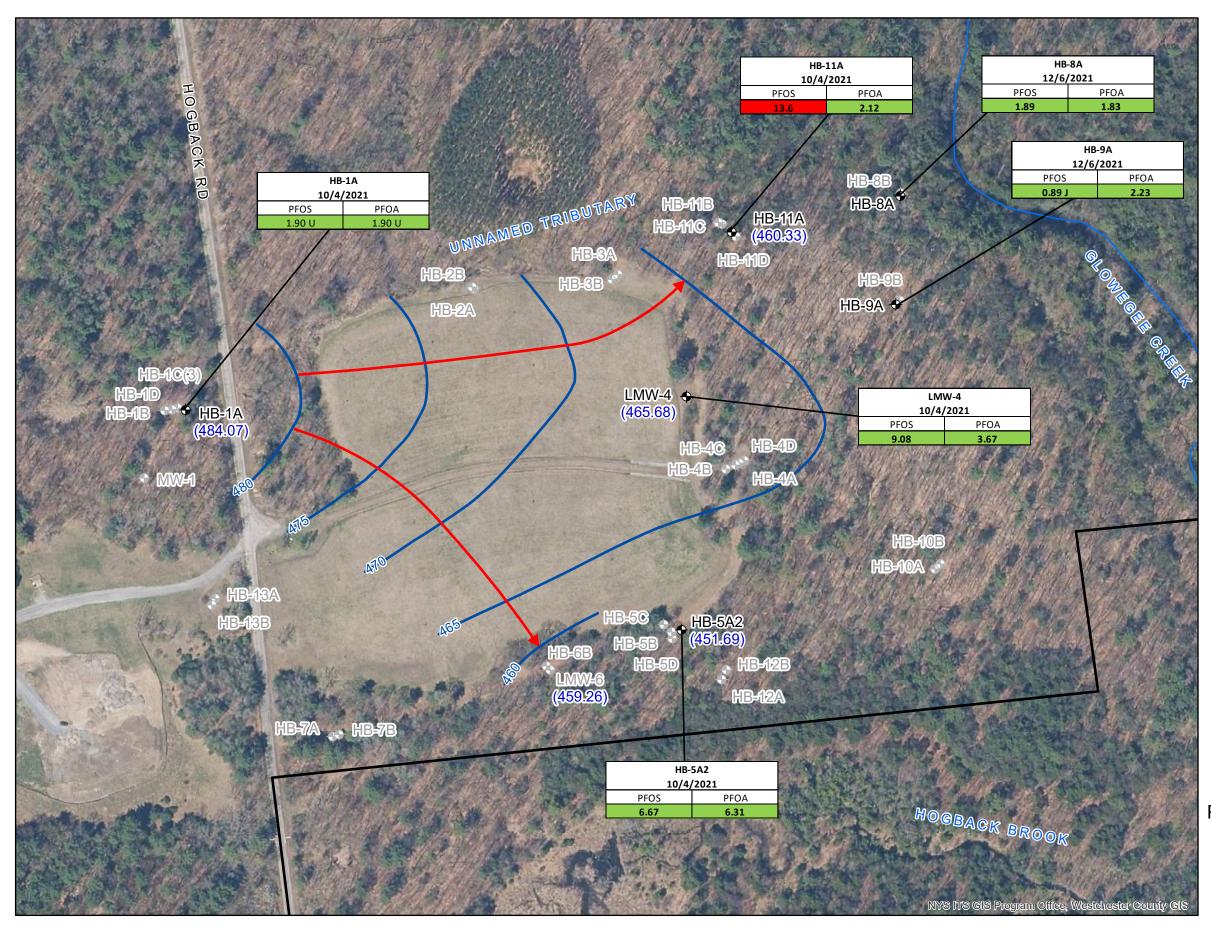
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 2

DEVELOPED AREA

PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER





N Legend HB1A (484.07) Sampled Monitoring Wells (Groundwater elevation measured in September 2021) Unsampled Monitoring Wells Apparent Groundwater Flow Direction Groundwater Elevation Contour Stream Approximate Property Boundary

Notes:

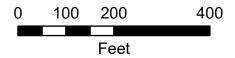
- Results are in nanograms per liter (ng/L). "U" indicates analyte not detected.
 "J" indicates analyte detected at an estimated concentration.
 Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica
- Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
- Promulgated Maximum Contaminant Levels (MCLs) are from the 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.
- Groundwater elevations and contours are presented in feet above mean sea level.
- Contour interval = 5 feet.
- Red box = PFAS above criteria
- Green box = PFAS below criteria

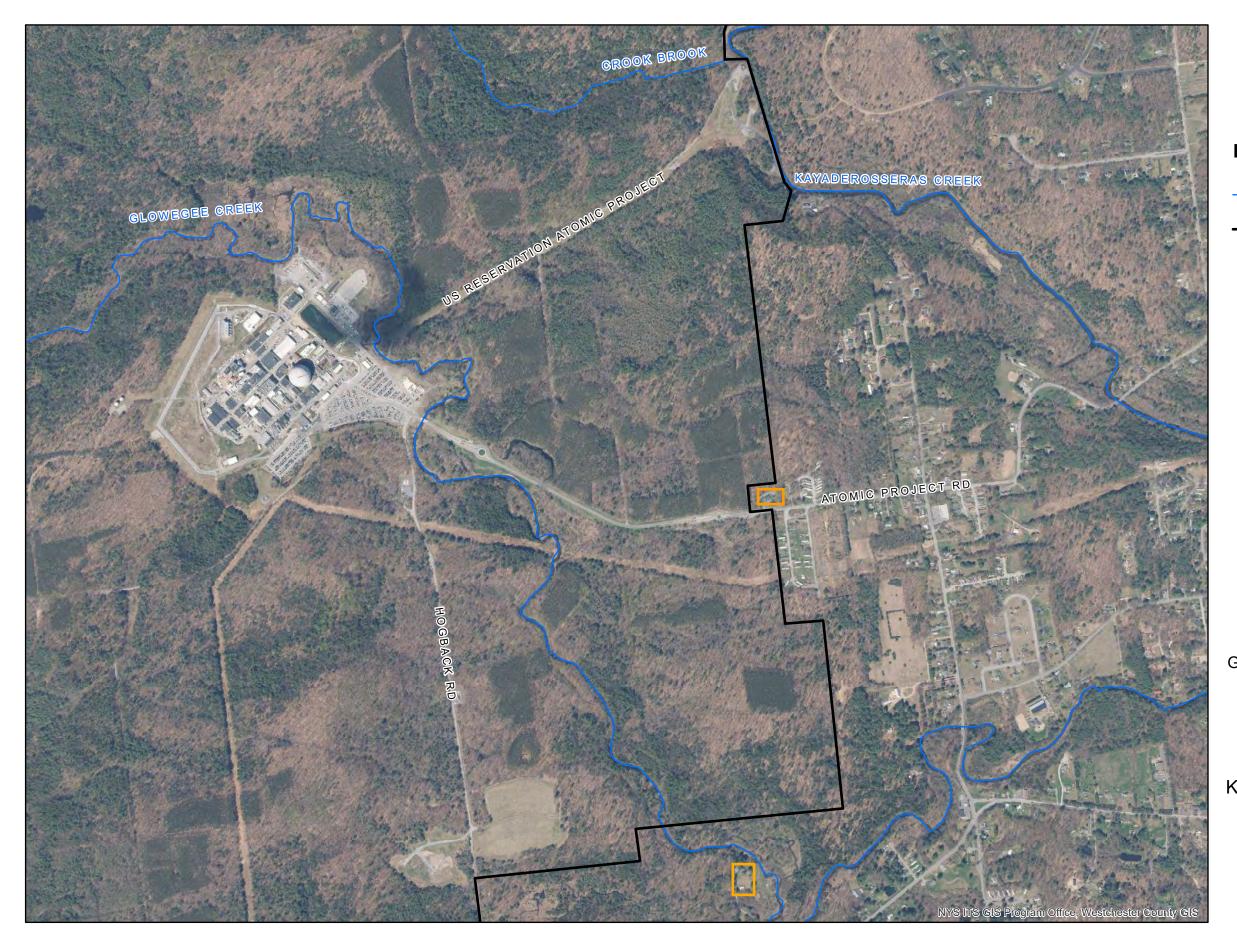
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE WEST MILTON, NEW YORK

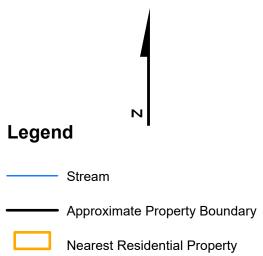
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 3

HOGBACK ROAD LANDFILL PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER







Appendix A Data Validation Report

Data Validation Services

120 Cobble Creek Road P.O. Box 208 North Creek, NY 12853

> Phone 518-251-4429 harry@frontiernet.net

April 26, 2022

Marc Flanagan FMP-KAPL P. O. Box 1072 Schenectady, NY 12301

RE: Knolls Atomic Power Laboratory (KAPL), Kesselring Site (KS) Emerging Contaminants (EC) Sampling Scope of Work Implementation Analytical Data Packages Eurofins TestAmerica Laboratories Report Nos. 200-60401-1 and 200-61267-1

Dear Mr. Flanagan:

Review has been completed for the data packages generated by Eurofins TestAmerica Laboratories that pertain to aqueous samples collected between 10/04/21 and 12/06/21 as part of the KAPL KS EC Sampling Scope of Work Implementation. In October 2021, thirteen samples, one field duplicate, and two equipment blanks were analyzed for 1,4-dioxane and a list of twenty-one per- and polyfluoroalkyl substances (PFAS). In December 2021, three samples, a field duplicate, and two equipment blanks were analyzed for PFAS. Four rinse blanks collected in October 2021 and two rinse blanks collected in December 2021 were analyzed for PFAS. The samples were processed and analyzed by the United States Environmental Protection Agency (USEPA) SW846 method 8270E Selected Ion Monitoring (SIM) and a modified USEPA Method 537.

Data validation was performed with guidance from the following documents, with consideration of the specific project method requirements.

- Emerging Contaminants Scope of Work for the Kesselring Site, April 2021
- NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- USEPA. 2018. USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537, EPA 910-R-18-001, November 2018
- USEPA. 2017. USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

The following items were reviewed:

- Data Completeness
- Custody Documentation/Sample Condition
- Holding Times
- Surrogate, Isotopic Dilution, and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Correlations
- Field Duplicate Correlations
- Method/Equipment/Rinse Blanks
- Laboratory Control Samples (LCSs)
- Instrument Tunes

- Calibration Standard Responses
- Method Compliance
- Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted in compliance with project requirements and with adherence to quality criteria. Sample results are usable as reported or with minor qualification.

Validation data qualifier definitions, sample summaries, laboratory qualifier definitions/ glossaries, laboratory case narratives, and chains-of-custody are included in this report, and should be reviewed in conjunction with this text. Also attached is a data summary table displaying the sample results and the qualifications noted in this report.

PFAS compounds are identified by their common acronyms in this report. The data packages and data table reference both the technical names and the acronyms.

Field Duplicate Correlations

The blind field duplicate evaluations were performed for 1,4-dioxane and PFAS on KS-EC-MW-15-100521 and for PFAS on KS-EC-EastDitch-01-120621. The correlations meet validation guidelines.

1.4-Dioxane Analyses by USEPA Method 8270E SIM

The matrix spike accuracy and precision evaluation was performed on KS-EC-MW-1-100721. Recoveries and correlations fall within validation guidelines.

Instrument tune compounds meet fragmentation requirements. Surrogate standard recoveries are within validation guidelines. LCS recoveries are within the required range. Internal standard recoveries are within required ranges. Blanks show no contamination.

Calibration standards show acceptable correlations.

PFAS Analyses by Modified USEPA Method 537

The result for PFOS in KS-EC-MW-16-100721 has been qualified as being Estimated Maximum Possible Concentration (EMPC) due to an outlying ion ratio.

The detected results for PFTeA in KS-EC-HB-8A-120621, KS-EC-HB-9A-120621, and KS-EC-X02-120621 are considered external contamination and edited to reflect non-detection due to presence in the associated method, rinse, and equipment blanks.

The matrix spike accuracy and precision evaluations were performed on KS-EC-MW-1-100721 and KS-EC-HB-9A-120621. Recoveries and correlations fall within validation guidelines.

Holding time requirements were met. Isotopic dilution standard recoveries are within validation guidelines. LCS recoveries are within required ranges. Internal standard recoveries are within required ranges.

Calibration standards show responses within validation guidelines.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Jug Harry

Attachments:

Validation Data Qualifier Definitions Sample Summaries Laboratory Definitions/Glossaries Laboratory Case Narratives Chains-of-Custody Data Summary Table

VALIDATION DATA QUALIFIER DEFINITIONS

- **U** The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
- J The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
- J- The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
- J+ The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
- **UJ** The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
- **NJ** The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
- **R** The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
- **EMPC** The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Sample Summary

Client: Ramboll US Corporation Project/Site: KAPL KL/KS Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-60401-1	KS-EC-HB-1A-100421	Water	10/04/21 10:15	10/05/21 13:57
200-60401-2	KS-EC-LMW-4-100421	Water	10/04/21 11:25	10/05/21 13:57
200-60401-3	KS-EC-FRB01-100421	Water	10/04/21 11:30	10/05/21 13:57
200-60401-4	KS-EC-HB-11A-100421	Water	10/04/21 12:45	10/05/21 13:57
200-60401-5	KS-EC-HB-5A2-100421	Water	10/04/21 14:20	10/05/21 13:57
200-60445-1	KS-EC-MW-15-100521	Water	10/05/21 10:40	10/08/21 10:51
00-60445-2	KS-EC-MW-18-100521	Water	10/05/21 13:00	10/08/21 10:51
00-60445-3	KS-EC-FRB02-100521	Water	10/05/21 13:10	10/08/21 10:51
00-60445-4	KS-EC-MW-10-100521	Water	10/05/21 15:00	10/08/21 10:51
00-60445-5	KS-EC-MW-6-100521	Water	10/05/21 16:10	10/08/21 10:51
0-60445-6	KS-EC-X01-100521	Water	10/05/21 00:00	10/08/21 10:51
0-60492-1	KS-EC-MW-17-100721	Water	10/07/21 10:15	10/11/21 12:36
00-60492-2	KS-EC-MW-16-100721	Water	10/07/21 11:55	10/11/21 12:36
00-60492-3	KS-EC-MW-1-100721	Water	10/07/21 13:45	10/11/21 12:36
00-60492-4	KS-EC-EBW01-100721	Water	10/07/21 14:05	10/11/21 12:36
00-60492-5	KS-EC-EBW02-100721	Water	10/07/21 14:20	10/11/21 12:36
00-60492-6	KS-EC-MW-12-100721	Water	10/07/21 15:20	10/11/21 12:36
200-60492-7	KS-EC-FRB03-100721	Water	10/07/21 10:25	10/11/21 12:36
200-60493-1	KS-EC-MW-4-100821	Water	10/08/21 10:15	10/11/21 13:00
200-60493-2	KS-EC-FRB04-100821	Water	10/08/21 10:25	10/11/21 13:00

Sample Summary

Client: Ramboll US Corporation Project/Site: KAPL KS Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-61267-1	KS-EC-EastDitch-01-120621	Water	12/06/21 10:30	12/07/21 15:12
200-61267-2	KS-EC-X02-120621	Water	12/06/21 00:00	12/07/21 15:12
200-61267-3	KS-EC-FRB05-120621	Water	12/06/21 10:40	12/07/21 15:12
200-61267-4	KS-EC-EBW03-120621	Water	12/06/21 11:10	12/07/21 15:12
200-61267-5	KS-EC-HB-9A-120621	Water	12/06/21 13:15	12/07/21 15:12
200-61267-6	KS-EC-FRB06-120621	Water	12/06/21 13:05	12/07/21 15:12
200-61267-7	KS-EC-HB-8A-120621	Water	12/06/21 14:10	12/07/21 15:12
200-61267-9	KS-EC-EBW04-120621	Water	12/06/21 14:20	12/07/21 15:12

Laboratory Definitions/Glossaries

Client: Ramboll US Corporation Project/Site: KAPL KL/KS Emerging Contaminant Testing

Job ID: 200-60401-1

Qualifiers

GC/MS Ser	ni VOA
Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.
LCMS	
Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client: Ramboll US Corporation Project/Site: KAPL KS Emerging Contaminant Testing

Qualifiers

LCMS	
Qualifier	Qualifier Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Cloccaly	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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PRES	Presumptive
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RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Laboratory Case Narratives

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL/KS Emerging Contaminant Testing

Report Number: 200-60401-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY

The report being provided is a revision of the original report sent on 11/1/2021. The report (revision 2) is being revised due to: Revision to correct method reference in the narrative from 8270D SIM to 8270E SIM.

Report revision history

Revision 1 - 2/1/2022 - Reason - Form 3 for MS/MSD not in data package.

RECEIPT

The samples were received on 10/05/2021, 10/08/2021, 10/11/2021 and 10/11/2021; the samples arrived in good condition.

The container label for sample KS-EC-EBW02-100721 did not match the information listed on the Chain-of-Custody (COC). 1 of the 4 containers omit the 100721 from the sample ID. Logged and labeled according to COC

1,4-DIOXANE

Samples KS-EC-HB-1A-100421, KS-EC-MW-15-100521, KS-EC-MW-17-100721, KS-EC-MW-4-100821, KS-EC-LMW-4-100421, KS-EC-MW-18-100521, KS-EC-MW-16-100721, KS-EC-MW-1-100721, KS-EC-HB-11A-100421, KS-EC-MW-10-100521, KS-EC-EBW01-100721, KS-EC-HB-5A2-100421, KS-EC-MW-6-100521, KS-EC-EBW02-100721, KS-EC-X01-100521 and KS-EC-MW-12-100721 were analyzed for 1,4-Dioxane in accordance with 8270E SIM. The samples were prepared on 10/09/2021, 10/11/2021 and 10/14/2021 and analyzed on 10/09/2021, 10/13/2021, 10/14/2021 and 10/15/2021.

Nitrobenzene-d5 failed the surrogate recovery criteria high for KS-EC-MW-18-100521. Nitrobenzene-d5 failed the surrogate recovery criteria high for KS-EC-X01-100521. Refer to the QC report for details.

1,4-Dioxane exceeded the RPD limit for LCSD 460-805993/3-A. 1,4-Dioxane exceeded the RPD limit for LCSD 460-807006/5-A. Refer to the QC report for details.

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

PERFLUORINATED HYDROCARBONS

Samples KS-EC-HB-1A-100421, KS-EC-MW-15-100521, KS-EC-MW-17-100721, KS-EC-MW-4-100821, KS-EC-LMW-4-100421, KS-EC-MW-18-100521, KS-EC-MW-16-100721, KS-EC-FRB04-100821, KS-EC-FRB01-100421, KS-EC-FRB02-100521, KS-EC-MW-1-100721, KS-EC-HB-11A-100421, KS-EC-MW-10-100521, KS-EC-EBW01-100721, KS-EC-HB-5A2-100421, KS-EC-MW-6-100521, KS-EC-EBW02-100721, KS-EC-X01-100521, KS-EC-MW-12-100721 and KS-EC-FRB03-100721 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 10/10/2021, 10/13/2021 and 10/15/2021 and analyzed on 10/11/2021, 10/13/2021, 10/14/2021 and 10/16/2021.

Several analytes failed the recovery criteria low for the MS of sample 320-80196-2 in batch 320-533899. Perfluorononanoic acid (PFNA) failed the recovery criteria high.

Several analytes failed the recovery criteria low for the MSD of sample 320-80196-2 in batch 320-533899. 6:2 FTS exceeded the RPD limit.

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

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KS Emerging Contaminant Testing

Report Number: 200-61267-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY

The report being provided is a revision of the original report sent on 12/30/2021. The report (revision 1) is being revised due to: Samples KS-EC-EastDitch-01-120621, KS-EC-X02-120621 were excluded from the narrative in error.

RECEIPT

The samples were received on 12/07/2021; the samples arrived in good condition, properly preserved and on ice.

PERFLUORINATED HYDROCARBONS

Samples KS-EC-EastDitch-01-120621, KS-EC-X02-120621, KS-EC-FRB05-120621, KS-EC-EBW03-120621, KS-EC-HB-9A-120621, KS-EC-FRB06-120621, KS-EC-HB-8A-120621 and KS-EC-EBW04-120621 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 12/07/2021 and analyzed on 12/08/2021.

Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-548955/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

Chains-of-Custody

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3 KS-EC-HB-11A-100421		10/04/21	12:45	N	WG	2	G	2	×										
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1 KS-EC-MW-15-100521		10/05/21	10:40	N	WG	2	G	N					
2 KS-EC-MW-18-100521		10/05/21	13:00	N	WG	2	G	N	\times				
13 KS-EC-MW-10-100521		10/05/21	15:00	N	WG	2	G	N	X				
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			(Chain of (Custody/	Analy	ysis	Rep	ort						Page 1 of 1
RAMBOLL	Sampler(s): (Signature)): Re	A L	ing						Sarah			Lei	y	Lab Use Only
	Laboratory:		Holding Ti				Π			An	alysis	Requ	ired	5	Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	Test,America	a Laborators	14 days from analysis (Pf-	n sample colle AS)	Choil io				Preservative	is: (se	e key :	ai boui	aiti)		
ddress: 94 New Kamer Road, Ste. 106, Albany, N.Y. 12203	880 Riverside								13			_			Job Number:
Phone: (518) 724 7272	West Sacrana	nenio, CA, 95605		equirement: full ASP Car B	12				-						
Email: Paul.D'Annibale@gramboll.com Amy Spooner Susens@ramboll.com			Package with TAT, prelim	h a std 10-bus n auabtical res	antess day				V dists. (Lab 1D:
Project: KAPL - KS Emerging Contaminants Sampling ocation: Kesselsion Str. West Milton N Y	Attn: Katheyi	.n Kelly	in pivos table						ă						
Location: Kesselring Site, West Milton, N.Y Project #: 1940101245	Phone: 802-923-1021	21	1	nat: EQuIS 4 EC, EDD refe		Containers	pristle f	1	PFAS (21 Compounds) Modified Method 537						
Sample Identification						of	in Com	Could Y	21 Com ed Meth						
Unique Field Sample 1D (sys sample code)		Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number	Grade G	Field Followith	PEAS (Modufic						Lab Sample 1D
KS-EC-MW-17-100721	1	10/07/21	1015	N	WG	2	G	N	X						
2 KS-EC-FRB03-100721	١	10/07/21	10:25	FB	NQ	2	G	N	×						
3 KS-EC-MW-16-100721 .		10/07/21	11.55	N	WG	2	G	N	×						a man 1600 (198) (88)
3 KS-EC-MW-16-100721 4 KS-EC-MW-1-100721 5 KS-EC-MW-1-100721-MS	1	10/07/21	13.45	N	WG	2	6	N	X	1					
5 KS-EC-MW-1-100721-MS	1	10/07/21	13:45	ms	NQ	2	6	N	X	1					
* KS-EC-MW-1-100721-MS * KS-EC-EBW01-100721 * KS-EC-EBW02-100721	.D 11	15/50/01	13:45	ms	NQ	2	6	N	×		200-6	50492	Chain	of Custo	ody
1 KS-EC-EBW01-100721.		10/07/21	14:05	EB.	WQ.	2	6	N	X						
* KS-EC-ERWOZ-100721	10	15/70/0	14:20	EB.	WQ	2	6	N	X						
, KS-EC-MN-12-100721	1	10/07/21	15:20	N	wiG.	.2	G	N	X						
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al.	Time		Tracking No						Time						received:
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Sample Type: N = Normal env. sample, FD = field duplicate, FB = Eq	1 1 2	<u>~</u>	of ETD						1 mc 925	*					

· container lubel omits 100721 from Sample 10. 10+2 containers, Loyged & labeled percoc, NC 10-11-21

Contact: Paul D'Annibale, Amy Spooner-Stevens Test. Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203 Test. Phone: (518) 724-7272 Ediso Email: Paul D'Annibale@tamboll.com Attraction: Project: KAPL - KS Emerging Contaminants Sampling Attraction: Location: Kesselring Site, West Milton, N.Y. Phone Project #: 1940101245 Phone	oratory: America Laboratory New Durham Rd on, NJ 08817 : Kathryn Kelly	analysis (1,4 Package R NYSDEC I Package wir TAT, prelin in pivot tabl	imer sample collec eduixane) equirement: full ASP Car I h a stel 10-bus n analytical res	3 Data sincss day sults provided	SI		Method 8270		h Trava	equired		Y	Lab Use Only Project Number: Job Number: Lab 1D:
Contact: Paul D'Annibale, Amy Spooner-Stevens Test. Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203 7774 Phone: (518) 724-7272 Ediss Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com 7774 Project: KAPL - KS Emerging Contaminants Sampling Attm. Location: Kesselring Site, West Milton, N.Y. Phone Project #: 1940101245 802-	America Laboratory New Durham Rd on, NJ 08817 : Kathryn Kelly ne:	7 days from analysis (1,4 Package R NYSDEC I Package wir TAT, prelin in pivot tab EDD Form	sample collect edioxane) equirement: full ASP Car I h a std 10-bus n analytical res ese nat: EQuIS 4-	3 Data sincss day sults provided	ş		8270 =			· · ·			Job Number:
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203 777 1 Phone: (518) 724-7272 Edise Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com 777 1 Project: KAPL - KS Emerging Contaminants Sampling Attm. Location: Kesselring Site, West Milton, N.Y. Photo Project #: 1940101245 802-1	New Durham Rd on, NJ 08817 : Kathryn Kelly ne:	analysis (1,4 Package R NYSDEC I Package wir TAT, prelin in pivot tabl	equirement: full ASP Car I h a std 10-bus n analytical rea les nat: EQuIS 4	3 Data sincss day sults provided	SI		8270 =	ves: (se	e key at	bottom)			5
Phone: (518) 724-7272 Edise Email: Paul.D'Annibale@ramboll.com Froject: KAPL - KS Emerging Contaminants Sampling Attin: Location: Kesselring Site, West Milton, N.Y. Project #: 1940101245 802-1	on, NJ 08817 : Kathryn Kelly ne:	NYSDEC I Package wir TAT, prelin in pivot tabl	Full ASP Car I h a std 10-bus n analytical res les nat: EQuIS 4	siness day sults provided	52		8270						5
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1 KS-EC-MW-17-100721	10/07/21	10:15	N	WG	2	GN	X						1
2 KS-EC-MW-16-100721	10/07/21	11:55	N	WG	2	GN	X						2
KS-EC-MW-1-100721	10/07/21	13:45	2	WG	2	GN	X						3
KS-EC-MW-1-100721-MS	10/07/21	B:45	MS	WQ	2	GN	Х						3
$\frac{P}{KS-EC-MW-1-100721}$ $\frac{KS-EC-MW-1-100721-MS}{KS-EC-MW-1-100721-MSD}$ $\frac{KS-EC-EBW01-100721}{KS-EC-EBW01-100721}$	10/07/21	13:45	ms	NQ	2	GN	X						3
2, KS-EC-EBW01-100721	10/07/21	14:05	EB	WQ	2	GN	X						Y
KS-EC-EBW02-100721	15/50/01	14:20		WQ	2	GN	X						ć
8 KS-EC-MW-12-100721	10/07/21	15:20	N	WG	2	GN	X						6
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RAMBOLL	Sample	11	obert Horn	ung					1	Sarah	Tra	ivaly				Lab Use Only
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Contact: Paul D'Annibale, Amy Spooner Stevens	TestAme	enca Laboratory	analysis	n sample coll	CORRECTION DOC				Preservato	uns: (see	her	at bo	tion			
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	880 Rive	rside Play							()							Job Number:
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Project: KAPL - KS Emerging Contaminants Sampling	Aun: Ka	uthryn Kelly	in pivot tab	0.8					; pr							
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Sample Matrix: SE = Seduncut, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Contro

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RAMBOLL	Sample (Signatu		obert Horn	ung						Sarah T			eil	ly	L	ab Use Only
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Contact: Paul D'Annibale, Amy Spooner-Stevens	Test Am	enca Laboratory	 i days from analysis 	i sample colle	chon to				Preservative	s: (see k	ey at b	ottom	1)			
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	777 Nev	v Durham Rd						ſ	0						Je	ob Number:
Phone: (518) 724-7272	Edison,	NJ 08817	Package R	equirement:		1			8270		1					
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Project: KAPL - KS Emerging Contaminants Sampling	Aun: K.	uhryn Kelly	in pivot tab		suits provided											
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of Ramboll	Time	1335		EEM			<u> </u>	1	Fime 13	35						
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Sample Type: N = Normal env. sample, FD = field duplicate, EB = E Sample Matrix: SE = Sediment, SO = Soil, W/G = Ground Water, WS	quipment Bla 5 = Surface W	nk, TB = Trip Blank, Zater - W/W = Waster W	MS = Lab M Ator WP = 1	utrix Spike, (Potoble Water	Ther (Specify) S(x) = S(x) + Q(x)	T	10C	X	Water Oa	alia Con	ural					
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Contact: Paul D'Annibale, Amy Spooner-Stevens	TestAme	mea Laborate	ou).	analysis (12)		CCIECUL (1)				Preservatives:	see key at	bottom)	_	
Address: 94 New Karner Road, Stc. 106, Albany, N.Y. 12203		rside Pkwy	1157.05				4			LI					Job Number:
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Data Summary Table

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area			Hogback Road Landfill Area		
	Location ID	HB-1A	HB-5A2	HB-11A	LMW-4	Field Reagent Blank
	Sample ID	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-HB-11A-100421	KS-EC-LMW-4-100421	KS-EC-FRB01-100421
	Sample Date	10/4/2021	10/4/2021	10/4/2021	10/4/2021	10/4/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.90 U	1.22 J	0.61 J	1.22 J	1.87 U
Perfluorobutanoic acid (PFBA)	NV	4.74 U	10.7	4.71 U	10.1	4.68 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorodecanoic acid (PFDA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorododecanoic acid (PFDoA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroheptanoic acid (PFHpA)	NV	1.90 U	7.67	0.88 J	3.35	1.87 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.90 U	3.11	5.90	1.54 J	1.87 U
Perfluorohexanoic acid (PFHxA)	NV	1.90 U	20.4	1.06 J	18.7	1.87 U
Perfluorononanoic acid (PFNA)	NV	1.90 U	0.46 J	1.88 U	1.90 U	1.87 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.90 U	6.67 *	13.6 *	9.08 *	1.87 U
Perfluorooctanoic acid (PFOA)	6.7	1.90 U	6.31	2.12	3.67	1.87 U
Perfluoropentanoic acid (PFPeA)	NV	1.90 U	24.7	1.38 J	23.7	1.87 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluroroctanesulfonamide (FOSA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area		Hogback Road Landfill Area		Kesselring	Facility Area
	Location ID	HB-8A	HB-9A	Field Reagent Blank	MW-1	MW-4
	Sample ID	KS-EC-HB-8A-120621	KS-EC-HB-9A-120621	KS-EC-FRB06-120621	KS-EC-MW-1-100721	KS-EC-MW-4-100821
	Sample Date	12/6/2021	12/6/2021	12/6/2021	10/7/2021	10/8/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.79 U	0.26 J	1.75 U	0.52 J	2.77
Perfluorobutanoic acid (PFBA)	NV	4.47 U	4.98 U	4.38 U	5.05	10.4
Perfluorodecanesulfonic acid (PFDS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluorodecanoic acid (PFDA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.05 J
Perfluorododecanoic acid (PFDoA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroheptanoic acid (PFHpA)	NV	0.55 J	0.97 J	1.75 U	3.28	8.77
Perfluorohexanesulfonic acid (PFHxS)	NV	1.10 J	1.06 J	1.75 U	1.14 J	1.51 J
Perfluorohexanoic acid (PFHxA)	NV	0.84 J	2.15	1.75 U	4.30	14.3
Perfluorononanoic acid (PFNA)	NV	1.79 U	1.99 U	1.75 U	0.80 J	3.27
Perfluorooctanesulfonic acid (PFOS)	2.7	1.89	0.89 J	1.75 U	2.18	6.44 *
Perfluorooctanoic acid (PFOA)	6.7	1.83	2.23	1.75 U	4.46	12.1 *
Perfluoropentanoic acid (PFPeA)	NV	1.07 J	2.36	1.75 U	11.9	17.5
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.79 U	1.99 U	0.69 J	1.91 U	1.84 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluroroctanesulfonamide (FOSA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area			Kesselring Facility Area		
	Location ID	MW-6	MW-10	MW-12	MW-15	MW-15
	Sample ID	KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721	KS-EC-MW-15-100521	KS-EC-X01-100521
	Sample Date	10/5/2021	10/5/2021	10/7/2021	10/5/2021	10/5/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	5.98	4.56 U	4.75 U	4.77 U	4.63 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	20.4	1.82 U	1.90 U	34.9	34.3
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.66 U	4.56 U	4.75 U	4.77 U	4.63 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.66 U	4.56 U	4.75 U	4.77 U	4.63 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.80 J	1.16 J	0.73 J	3.17	3.23
Perfluorobutanoic acid (PFBA)	NV	8.07	4.56 U	4.75 U	9.01	8.86
Perfluorodecanesulfonic acid (PFDS)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluorodecanoic acid (PFDA)	NV	0.89 J	1.95	1.90 U	0.85 J	0.88 J
Perfluorododecanoic acid (PFDoA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.39 J	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroheptanoic acid (PFHpA)	NV	10.0	2.38	1.90 U	5.26	5.22
Perfluorohexanesulfonic acid (PFHxS)	NV	8.95	0.92 J	1.90 U	2.39	2.25
Perfluorohexanoic acid (PFHxA)	NV	11.5	1.56 J	1.90 U	10.9	10.6
Perfluorononanoic acid (PFNA)	NV	5.17	1.70 J	1.90 U	5.68	5.52
Perfluorooctanesulfonic acid (PFOS)	2.7	327 *	67.2 *	2.49	16.4 *	15.4 *
Perfluorooctanoic acid (PFOA)	6.7	11.3 *	1.96	0.96 J	9.58 *	9.44 *
Perfluoropentanoic acid (PFPeA)	NV	20.0	1.06 J	1.90 U	16.1	15.4
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluroroctanesulfonamide (FOSA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area			Kesselring Facility Area		
	Location ID	MW-16	MW-17	MW-18	Field Reagent Blank	Field Reagent Blank
	Sample ID	KS-EC-MW-16-100721	KS-EC-MW-17-100721	KS-EC-MW-18-100521	KS-EC-FRB02-100521	KS-EC-FRB03-100721
	Sample Date	10/7/2021	10/7/2021	10/5/2021	10/5/2021	10/7/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.89 U	1.94 U	1.33 J	1.84 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
Perfluorobutanesulfonic acid (PFBS)	NV	3.52	1.94 U	3.04	1.84 U	1.96 U
Perfluorobutanoic acid (PFBA)	NV	6.81	4.84 U	5.48	4.60 U	4.90 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	1.89 U	1.94 U	1.22 J	1.84 U	1.96 U
Perfluorododecanoic acid (PFDoA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	2.98	0.53 J	9.54	1.84 U	1.96 U
Perfluorohexanesulfonic acid (PFHxS)	NV	0.83 J	1.32 J	2.18	1.84 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	6.92	0.82 J	7.29	1.84 U	1.96 U
Perfluorononanoic acid (PFNA)	NV	0.71 J	0.41 J	4.61	1.84 U	1.96 U
Perfluorooctanesulfonic acid (PFOS)	2.7	2.63 EMPC	3.24 *	21.9 *	1.84 U	1.96 U
Perfluorooctanoic acid (PFOA)	6.7	6.61	2.24	14.0 *	1.84 U	1.96 U
Perfluoropentanoic acid (PFPeA)	NV	8.22	0.94 J	9.12	1.84 U	1.96 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluroroctanesulfonamide (FOSA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area	Kesselring Facility Area		East Ditch Area		Equipment Blank
	Location ID	Field Reagent Blank	EASTDITCH-01	EASTDITCH-01	Field Reagent Blank	Equipment Blank
	Sample ID	KS-EC-FRB04-100821	KS-EC-EASTDITCH-01-120621	KS-EC-X02-120621	KS-EC-FRB05-120621	KS-EC-EBW01-100721
	Sample Date	10/8/2021	12/6/2021	12/6/2021	12/6/2021	10/7/2021
	Proposed Guidance					
Chemical Name	Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
Perfluorobutanesulfonic acid (PFBS)	NV	0.22 J	0.81 J	0.90 J	1.82 U	1.85 U
Perfluorobutanoic acid (PFBA)	NV	4.32 U	3.22 J	3.89 J	4.56 U	4.61 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluorodecanoic acid (PFDA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluorododecanoic acid (PFDoA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroheptanoic acid (PFHpA)	NV	1.73 U	1.93	2.57	1.82 U	1.85 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.73 U	3.07	2.99	1.82 U	1.85 U
Perfluorohexanoic acid (PFHxA)	NV	1.73 U	3.32	3.05	1.82 U	1.85 U
Perfluorononanoic acid (PFNA)	NV	1.73 U	0.47 J	0.50 J	1.82 U	1.85 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.73 U	7.01 *	6.55 *	1.82 U	1.85 U
Perfluorooctanoic acid (PFOA)	6.7	1.73 U	2.82	2.74	1.82 U	1.85 U
Perfluoropentanoic acid (PFPeA)	NV	1.73 U	5.00	5.32	1.82 U	1.85 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.73 U	1.76 U	1.79 U	0.89 J	1.85 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluroroctanesulfonamide (FOSA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area		Equipment Blank	
	Location ID	Equipment Blank	Equipment Blank	Equipment Blank
	Sample ID	KS-EC-EBW02-100721	KS-EC-EBW03-120621	KS-EC-EBW04-120621
	Sample Date	10/7/2021	12/6/2021	12/6/2021
	Proposed Guidance			
Chemical Name	Values			
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	5.00 U	4.25 U	4.45 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	2.00 U	1.70 U	1.78 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	5.00 U	4.25 U	4.45 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	5.00 U	4.25 U	4.45 U
Perfluorobutanesulfonic acid (PFBS)	NV	2.00 U	1.70 U	1.78 U
Perfluorobutanoic acid (PFBA)	NV	5.00 U	4.25 U	4.45 U
Perfluorodecanesulfonic acid (PFDS)	NV	2.00 U	1.70 U	1.78 U
Perfluorodecanoic acid (PFDA)	NV	2.00 U	1.70 U	1.78 U
Perfluorododecanoic acid (PFDoA)	NV	2.00 U	1.70 U	1.78 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	2.00 U	1.70 U	1.78 U
Perfluoroheptanoic acid (PFHpA)	NV	2.00 U	1.70 U	1.78 U
Perfluorohexanesulfonic acid (PFHxS)	NV	2.00 U	1.70 U	1.78 U
Perfluorohexanoic acid (PFHxA)	NV	2.00 U	1.70 U	1.78 U
Perfluorononanoic acid (PFNA)	NV	2.00 U	1.70 U	1.78 U
Perfluorooctanesulfonic acid (PFOS)	2.7	2.00 U	1.70 U	1.78 U
Perfluorooctanoic acid (PFOA)	6.7	2.00 U	1.70 U	1.78 U
Perfluoropentanoic acid (PFPeA)	NV	2.00 U	1.70 U	1.78 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	2.00 U	0.79 J	0.70 J
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	2.00 U	1.70 U	1.78 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	2.00 U	1.70 U	1.78 U
Perfluroroctanesulfonamide (FOSA)	NV	2.00 U	1.70 U	1.78 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

Table 1b Groundwater Sampling Results - 1,4-Dioxane

Emerging Contaminant Sampling Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

	Area		Hogback Road	d Landfill Area		Kesselring Facility Area		
Location ID		HB-11A	HB-1A	HB-5A2	LMW-4	MW-1	MW-4	
	Sample ID	KS-EC-HB-11A-100421	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-LMW-4-100421	KS-EC-MW-1-100721	KS-EC-MW-4-100821	
	Sample Date	10/4/2021	10/4/2021	10/4/2021	10/4/2021	10/7/2021	10/8/2021	
	Proposed Guidance							
Chemical Name	Values							
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	

	Area			Kesselring Facility Area							
Location ID		MW-6	MW-10	MW-12	MW-15	MW-15	MW-16				
	Sample ID	KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721	KS-EC-MW-15-100521	KS-EC-X01-100521	KS-EC-MW-16-100721				
	Sample Date	10/5/2021	10/5/2021	10/7/2021	10/5/2021	10/5/2021	10/7/2021				
	Proposed Guidance										
Chemical Name	Values										
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U				

	Area	Kesselring I	Facility Area	Equipment Blank			
Location ID		MW-17	MW-18	Equipment Blank	Equipment Blank		
	Sample ID	KS-EC-MW-17-100721	KS-EC-MW-18-100521	KS-EC-EBW01-100721	KS-EC-EBW02-100721		
Sample Date		10/7/2021	10/5/2021	10/7/2021	10/7/2021		
	Proposed Guidance						
Chemical Name	Values						
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U		

Notes: 1. Results in micrograms per liter (µg/L). "U" indicates analyte not detected. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

Appendix B Field Data Forms

ate ite Name	10-4-21 KS EC Sampling	Personnel Evacuation N	Vethod	RDH/SET Peristaltic Pur	mp		Weather Well #	±65°F, Ram HB-1A
	West Milton, NY	Sampling Me	g Method Peristaltic Pump				Project #	1940101245
lell informat	tion:					_		
	Depth of Well *	13	.70	ft. *	Measureme	ents taken fro	7	
	Depth to Water *	5	.14	ft.		X	Top of Wel	
	Length of Water Column	8	,56	ft.				ective Casing
							(Other, Spe	ecity)
	1" diameter wells = 0.041 x (L	WC) =		gallons				
	2" diameter wells = $0.163 \times (L$		1.40	gallons				
	4" diameter wells = $0.653 \times (L$			gallons				
Vell evacuat	ion data:				Well Volu			
		1	2	3	wen von	mes	1	1
	Start Time	0944	0457	0959		1		1
	End Time		0956	1004				
	Gallons Purged		1.40	1.40			1.1.2	1
	Temp (C)		14.3	14.3				
	pH		6.06	6.03			-	
	Spec. Conduc. (mS/cm)		0.090					
	ORP (mV)		110.9	114.1				
	DO (mg/L)		5.38	5.71				
	Turbidity (NTU)	3.26	1.13	1.07	_			
	Probe type:		YSI Quatro	+ Lamot	HE TUC	oidity	moter	-
	Appearance at start:	0	lear,		for			
	Appearance at end:		lear	o odo				
	Other Observations:	Headspace	PID reading:	0.0000	n	_		
				.,				
	Amount of water removed:		4	.20 g	allons			
	Depth to water before sampli	na.	NM			of inner cas	sina)	
	Dopin to water before sampli				,			
				Compounds) t				
	Parameters Sampled For:			SEPA Method &				
			1,4-Diox	ane by USEPA 8270 SIM	A Method	Sample Tirr	ie.	1015
				0210 SIW		Jampie III		
	NOTES:						~~~	

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Date	10-4-21	Personnel		RDH/SET			Weather ±65°F. Ran		
Site Name	KS EC Sampling	Evacuation M	Vethod	Peristaltic P	ump	Well # Stewm-4 LMW-4			
Site Location	West Milton, NY	Sampling Me	ethod	Peristaltic P	ump	-	Project #19	1940101245	
Well informa	tion:								
	Depth of Well *		.00	ft.	* Measurem	ents taken fro	1		
	Depth to Water *	13	.17	ft,		X	Top of Well C	-	
	Length of Water Column		-83	ft.		1	(Other, Speci		
	48. 1 ¹			gallons					
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L		0.30	gallons					
	4" diameter wells = $0.653 \times (L$		_0.30	gallons					
Vell evacuat	tion data:	1		-	Well Vol	umes			
		1	2	3		1.22.1			
	Start Time	1105	1108	1112		1.			
	End Time		1110	1113					
	Gallons Purged	0 0	0.30	0.30					
	Temp (C)	2 1 .	14.0	14.1					
	pH	6.61	6.69	6.68		-			
	Spec. Conduc. (mS/cm)	0.0	0.65	66.0					
	ORP (mV)		2.94	3.20					
	DO (mg/L) Turbidity (NTU)		3.01	2.21	122			-	
	Turbidity (NTO)	7.01	13.01	12.21					
	Probe type: Appearance at start: Appearance at end:	@ 4/2 Lea	YSI Quatro	odo.	- , light	- gray	- clear		
	Other Observations:	Headspace	PID reading:	6.0pp	7				
	Amount of water removed: Depth to water before sampli	ng;	Ó	.90	gallons ft. (below to	p of inner cas	ing)		
	Parameters Sampled For:		ÙS	SEPA Metho		l			
			1,4-Diox	ane by USE 8270 SIM		Sample Tim	ie:	1125	
	NOTES:	_							

Date Site Name Site Location	10-4-21 KS EC Sampling West Milton, NY	Personnel Evacuation Sampling M		RDH/SET Peristaltic F Peristaltic F		Weather Well # Project #	<u>+60°F, Ram</u> HB-11A 1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column 1" diameter wells = 0.041 x (L	5	1.00	ft_ ft_ ft_ gałlons	* Measurements	x Top of Wel	ective Casing
	2" diameter wells = 0.163 x (l 4" diameter wells = 0.653 x (l		0.89	gallons gallons			
Well evacuat	ion data:				Well Volume	e	
		1	2	3	weil volume	5	1
	Start Time	1224	1230				
	End Time			\backslash			
	Gallons Purged		$ \rangle$				
	Temp (C)	13.6					
	pH	7.02	D	dupto			
	Spec. Conduc. (mS/cm)	0.83	(5)	1 (S)		and the second	
	ORP (mV)	98.0)	4	13		
	DO (mg/L)	and the second sec					
	Turbidity (NTU)	0 1					
	Probe type: Appearance at start: Appearance at end: Other Observations: Amount of water removed: Depth to water before sampli Parameters Sampled For:	Headspace	PID reading NM PFAS (2'	Compounds SEPA Metho xane by USE	gallons ft. (below top of i) by Modified d 537 PA Method	_	i245
	NOTES: NOTES:	med	due al	8270 SIM	saina 1.7	nple Time:	lumes

Date	10-4-21	Personnel		RDH/SET			ther $\pm 60\%$	zaip
-	(S.E.C. Samaling	Evacuation I	Method	Peristaltic Pur	mp will be	I value Well	# HB-5A2	
-	West Milton, NY	Sampling M	ethod 19/1/2	Peristaltic Pur	mp w/ for	-value Proje	ect # 194010124	5
					1			_
Vell informatio	on: Depth of Well *	(4/2) L	43.69	ft. *	Measuremen	s taken from		
	Depth to Water *		0.42	ft	F		of Well Casing	
	ength of Water Column		3.27	ft,		Тор	of Protective Casing	
						(Oth	er, Specify)	
			-					
	l" diameter wells = 0.041 x (L' 2" diameter wells = 0.163 x (L'		0.53	gallons gallons				
	t" diameter wells = 0.163 x (L			gallons				
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Vell evacuatio	n data:							
			là.		Well Volum	es		-
Г	Start Time	1350	1357	3		10		
	End Time	1254	1404	1413	1V	31.		
H	Gallons Purged	0.53	0.53	0.53				
Ē	Temp (C)	12.0	12.1	11.2				
	рН	6.60	6.70	6.65				_
	Spec. Conduc. (mS/cm)	1.08	1.08	1.08				
-	ORP (mV)	91.0	70.3	61.5				_
-	DO (mg/L)	2.51	3.53	2.88				_
L.	Turbidity (NTU)	28.6	61.2	26.1		AV		-
1	Probe type:	-	YSI Quatro	+ Lamott	e Turbi	dity me	ter	
	Appearance at start:	Lic	tht ba		retallic			
,	Appearance at end:	Ur	ght bo	own S	light i	notallic	odor	-
					9			
(Other Observations:	Headspace	PID reading.	0.0 ppr	1			_
				~				
	Amount of water removed:		1.5		allons			
	Depth to water before samplir	g:	NM	ft	t. (below top c	f inner casing)		
	Parameters Sampled For:			Compounds) b EPA Method 5				
	Parameters Sampled For.			ane by USEPA				
			.,	8270 SIM		ample Time:	1420	
				1				_
	NOTES: Not ex	norgh	herd	otherw	1441 -	to use	peri perip	
	Hand	alm2	100	SAGANS	46 Ca	100 100	prior to us	-

Date Site Name Site Location	KS EC Sampling	Personnel Evacuation N Sampling Me		RDH/SET Peristaltic P Peristaltic P			Weather Well # Project #	<u>±55°F, D.P.P.</u> MW-15 1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column 1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L	() =	58 52 1.39	gallons	* Measurem	ents taken fro	Top of Wel	ective Casing
	4" diameter wells = 0.653 x (L	WC) =		gallons				
Well evacuat	ion data:		_		Well Vol	umes		
		1	2	3		1		
	Start Time	0958	1007	1018				
	End Time	1004	10:5	1026				
	Gallons Purged	1.39	1.39	1.39				
	Temp (C)	16.4	16.6	16.5				
	pH	7.19	4.83	5.04				
	Spec. Conduc. (mS/cm)	-24.3	-53.6	-65.5		1.00		
	ORP (mV) DO (mg/L)	0.22	0.30	0.23			1	
	Turbidity (NTU)	4.63	4.09	2.67		-		
	Probe type: Appearance at start: Appearance at end:		YSI Quatro	HIOW .	no i	rbidit	y me	er
	Other Observations:	Headspace	PID reading	0.0 pp	m			
	Amount of water removed: Depth to water before samplir	ng:	<u>4.1</u> NM	7	gallons ft. (below to	p of inner cas	sing)	
	Parameters Sampled For:		ับร	Compounds SEPA Methoo ane by USER 8270 SIM	537	Sample Tin	ne:	1040
	NOTES: (plle)	t Fie	id DU	e xo	oxane	this	bratio	2

Date Site Name Site Location	KS EC Sampling West Milton, NY	Personnel Evacuation I Sampling M		RDH/SET Peristaltic Peristaltic		-	Weather Well # Project #	=60°F, Dura MW-18 1940101245
Well inform	ation: Depth of Well * Depth to Water * Length of Water Column	6	.10 .80 .30	ft ft ft	* Measuren	x	Top of Wel	ective Casing
	1" diameter wells = 0.041 x (2" diameter wells = 0.163 x (4" diameter wells = 0.653 x (LWC) =	1.84	galions gallons gallons				
Well evacua	ation data:	-						
		1	2	3	Well Vo	lumes	1	1
	Start Tim		1239	1249				
	End Tim		1247	1257				
	Gallons Purge		1.84	1.84	1		1	
1.1	Temp (C	16.5	16.5	16.4				
	pl		7.27	7.29	11	1	-	_
	Spec. Conduc. (mS/cm	0.79	0.85	0.36		-	-	
	ORP (mV)-0.2	-44.6	-48.7		-	-	
	DO (mg/L		0.15	0.12				
	Turbidity (NTU	4.31	1.58	1.25			1	-
	Probe type: Appearance at start: Appearance at end:	Lie			no ode		1 mete	٢
	Other Observations:	Headspace	PID reading	0.0 pp	m			
	Amount of water removed: Depth to water before samp	ling	<u>5.</u>	52	_gallons _ft. (below to	op of inner ca	ising)	
	Parameters Sampled For:		US	SEPA Metho	PA Method	d Sample Ti	me:	1300

Date	10-5-21	Personnel		RDH/SET		- C	Weather	±55°F, are
Site Name	KS EC Sampling	Evacuation N	lethod	Peristaltic F	Pump		Well #	MW-10
Site Location	West Milton, NY	Sampling Me	thod	Peristaltic F	Pump		Project #	1940101245
Well informa	tion:	12	2,00 0 infe	5/21				
	Depth of Well *				* Measurem	ents taken fr		
	Depth to Water *	4.2		ft.		X	Top of Wel	ective Casing
	Length of Water Column	7.0	<u> </u>	ft.		((Other, Spe	
	1" diameter wells = 0.041 x (LV	NC) =		gallons				
	2" diameter wells = 0.163 x (LV		1.27	gallons				
	4" diameter wells = 0.653 x (L		-	gallons				
					_			
Well evacuat	tion data:		_					
			0	2	Well Vol	umes	T	
	Start Time	1432	1439	3				
	End Time	1436	1444	1452		-		
	Gallons Purged	1.77	1.27	1.27	1		-	
	Temp (C)	19.1	19.0	19.0				
	pH	7.55	7.45	7.43	-	1		
	Spec. Conduc. (mS/cm)	0.438	0.498	0.497	15-5-5	-		
	ORP (mV)	62.0	65.7	67-7	1000			
	DO (mg/L)	7.42	7.01	6.93			-	
	Turbidity (NTU)	20.6	20.6	29.6				1
	Probe type:		YSI Quatro	+ Lam	othe TU	rbidy	meter	
	Appearance at start:	Liak			odo-		2.242	
	Appearance at end:	Ung	1 1 1	-	no ode	50		
		J						
	Other Observations:	Headspace	PID reading:	D.Opp	m		-	
	Amount of water removed:		3	.81	gallons			
	Depth to water before samplin	g:	NM			p of inner ca	sing)	
) by Modified			
	Parameters Sampled For:			EPA Metho				
10.0			1,4-Diox	ane by USE 8270 SIN		Sample Tir	ne:	1500
	NOTES: Bailer	TO WP	11 Remi	ve to	0	and	sample	, then replace

Date	10-5-21	Personnel		RDH/SET		. · · · ·	Weather	±55°F, over
Site Name	KS EC Sampling	Evacuation N	lethod	Peristaltic Pump			Well #	MW-6
Site Location	West Milton, NY	Sampling Method		Peristaltic P	ump	Project #	1940101245	
Well informa		14	1.0					
	Depth of Well *	13.		- 7	* Measurem	1	Top of Well	Casing
	Depth to Water *	0		ft.		X	-	ective Casing
	Length of Water Column	15.	64	ft.			(Other, Spe	
								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	1" diameter wells = 0.041 x (L	WC) =		gallons				
	2" diameter wells = 0.163 x (L		2,22	gallons				
	4" diameter wells = 0.653 x (L	-		gallons				
							_	
Vell evacuat	tion data:				Well Vol	umes		
		1	2	3				
	Start Time	1537	1547	1556				
	End Time	1545	1554	1603				1
	Gallons Purged	2.22	2.22	2.22		· · · · ·		
	Temp (C)	19.1	19.1	19.1				
	pH	7.37	7.40	7.40				-
	Spec. Conduc. (mS/cm)	2.94	2.96	2.97				-
	ORP (mV)	49.2	33.0	24.7				
	DO (mg/L)	1.34	0.12	0.08				
	Turbidity (NTU)	36.8	9.33	4.47				
	Probe type: Appearance at start: Appearance at end:	Gro Ue		o odo	othe Th	rbidit	y mete	<i>c</i>
	Other Observations:	Headspace	PID reading:	0.0 pp	2			
	Amount of water removed: Depth to water before samplin	ıg:	<u> </u>	66	gallons ft. (below to	p of inner ca	sing)	
	Parameters Sampled For:		US	Compounds) EPA Method	537			
				ane ny USEF	PA Method			1610

Dete	10-7-21	Personnel		RDH/SET			Weather	±55°F	ma
Date		Evacuation N	Acthod	Peristaltic P	ump	- · · ·	Well #	MW-17	
Site Name	THE LE CLAMP IS			-		-	Project #	1940101245	
Site Location	West Milton, NY	Sampling Me	ethoù	Peristaltic P	ump	-	Tioject#	1040101240	
Well informa		15	-50 101-	1/21					
	Depth of Well *			- ît.	* Measuren	nents taken fro	Top of Wel	Cosing	
	Depth to Water *	12.	31	-ft		X		ective Casing	
	Length of Water Column	3	.19	- ft.		4 200 24	(Other, Spe		
	1" diameter wells = 0.041 x (L			gallons					
	2" diameter wells = 0.163 x (L		0.52	gallons					
	4" diameter wells = 0.653 x (L	WC) =		gallons					
Well evacuat	tion data:								
					Well Vo	lumes		-	
		1	2	3					_
	Start Time	0935	0940	0944		1		-	
	End Time	0937	0943	6946		-	-		-
	Gallons Purged	0.52	0.52	\backslash		-			-
	Temp (C)	16.6	7.39	10171	21	-			-
	pH	7.43		(3)					-
	Spec. Conduc. (mS/cm)	0.84	1.00	10%		-		-	-
	ORP (mV)	109.5				-		-	
	DO (mg/L)	4.23	2-88	1			-		
	Turbidity (NTU)	4.60	6,49					-	-
						d - tar	male		1
	Probe type:		YSI Quatro			bidity 1	ineter -		-
	Appearance at start:			o ode					
	Appearance at end:	0	ear ,	no od	00				
	Other Observations:	Headspace	PID reading	0.0pp	2				-
	Amount of water removed:			17	gallons				
	Depth to water before samplir	ng:	NM		ft. (below to	op of inner cas	ing)		
			DEAS (21	Compounds) by Modifie	d			
	Parameters Sampled For:			SEPA Method		-			
			1,4-Dio	ane by USE	PA Method			.015	- 17
1.1				8270 SIM		Sample Tim	ie:	1015	
	NOTES: 2	well	dry a	flerr	emouin	0. 770	5 well	volume	C
di Terre	NOTES: RURAL	well			or to	1 como	sina	VOIDE	
	MILLIN	wen	o reu	Part Part	00 10	ount	9.		

Date Site Name Site Locatior	10-7-21 KS EC Sampling West Milton, NY	Personnel Evacuation Sampling M		RDH/SET Peristaltic P Peristaltic P			Weather Well # Project #	HS5°F, fog MW-16 1940101245
Well inform	ation: Depth of Well * Depth to Water * Length of Water Column		8.10 C 1.13 .97	0/7/2/ ft. ft. ft.	* Measuremen	its taken fro x	Top of We	tective Casing
	1" diameter wells = 0.041 2" diameter wells = 0.163 4" diameter wells = 0.653	x (LWC) =	 	gallons gallons gallons				
Well evacua	ation data:				Well Volum	nes		
1.1.1		1	2	3		100		
	Start T		1123	1				
	End T		1131	1		-	-	
	Gallons Pur Temp		16.7	1000			1	
		PH 7.31	7.35	10/1/24			·	
	Spec. Conduc. (mS/		3.17				-	
	ORP (109.4				-	-
	DO (m		5.12	+			-	
	Turbidity (N	ти) 4.86	11-47		I			0
	Probe type:		YSI Quat	ro + (om	othe The	bidite	, met	20
	Appearance at start:	12220	Clear.				1	
	Appearance at end:	1		100 00	1			
	Other Observations:	Headspace	PID readin	g: O.OPP	m			
	Amount of water removed Depth to water before sa			3.14	gallons ft. (below top o	of inner casi	ing)	
	Parameters Sampled For	:	Ĺ	1 Compounds JSEPA Methoo oxane by USEI 8270 SIM	d 537 PA Method	Sample Tim	e:	_1155
	NOTES: WE	1 arged	dry	after 1	remoun	92.	well	volumes.
	Allo	A Chai	toUr	ecover	prior		ectimo	

Date	10-7-21	Personnel		RDH/SET		Weather	±60°F, Sun
Site Name	KS EC Sampling	Evacuation M	lethod	Peristaltic I	Pump	Well #	MW-1
	West Milton, NY	Sampling Me		Peristaltic I	Pump	Project #	1940101245
Well informa		19. 18.	00	ft.	* Measuremen	ts taken from	
	Depth of Well * Depth to Water *		. 65	ft.		x Top of We	II Casing
	Length of Water Column		135	ft.			tective Casing
	Length of Water Column			- "	E	(Other, Sp	
	1" diameter wells = 0.041 x (L			gallons gallons			
	2" diameter wells = $0.163 \times (L$	-	0, +1	_gallons gallons			
	4" diameter wells = 0.653 x (L	.vvC) =		gailons			
Well evacuat	tion data:						
		1		1.	Well Volur	nes	1
	free and the second sec	1	2	3	1 ·····		
	Start Time		1319	1326			-
	End Time		1324	0.71			
	Gallons Purged Temp (C)		15.9	16.0			
	pH	Contra A toot 1	7.22	7.22			
	Spec. Conduc. (mS/cm)		3.48	3.75	12000		
		SUG111.6	110.9	_	1		-
	DO (mg/L)	11.44	6.44	6.40			
	Turbidity (NTU)	- 0	6.41	4.59			
					alle bri	- 1th, mole	_
	Probe type:	1.0	YSI Quatri		Contraction of the second s	sidity meter	
	Appearance at start:		int q	1 1	0 000		
1	Appearance at end:	CH	eur jo	o odd	20		
	Other Observations:	Headspace	PID reading	: 0.0pg	m		
	Amount of water removed:		7	.13	gallons		
	Depth to water before sampli	ng	NM		-	of inner casing)	
		5	-				
					s) by Modified		
	Parameters Sampled For:			SEPA Metho			
10.0			1,4-Dio	kane by USE 8270 SIN	PA Method	Sample Time:	1345
				0210 31			
	NOTES: Collect	ms/m	ISD C	it this	s locatio	in Bo- PFAS	and
		oxane.					
				noved	onar to	puramal sa	mainch

Date		Personnel Evacuation	Mathad	RDH/SET Peristaltic P			Weather Well #	±60°F, Sun MW-12
Site Name	KS EC Sampling			-			Project #	1940101245
Site Location	West Milton, NY	Sampling M	ethod	Peristaltic P	ump		Froject #	1940101243
Well informa		(=	7.60 101	421				
	Depth of Well *		.58	ft. ft.	* Measureme	ents taken from	n Top of Well	Casing
	Depth to Water * Length of Water Column		0.62	ft.				ective Casing
	Length of Water Column		0,10				(Other, Spe	
	1" diameter wells = 0.041 x (L	W(C) =		gallons				
	2" diameter wells = 0.163 x (L	-	1.14	gallons				
	4" diameter wells = 0.653 x (L			gallons				
Well evacuat	ion data:		_		Well Volu	imes		
		1	2	3	Wen Vol			
	Start Time	1451	1458	1506				
	End Time	1455	1503	1511				
	Gallons Purged		1.14	1.14				· · · · · · · ·
	Temp (C)	16.0	15.7	15.2				
	pH		01328 7.96	7.92			-	
	Spec, Conduc. (mS/cm)	0.84	0.85	0.82	-			
	ORP (mV)		97.9	97.6	-			
	DO (mg/L)		8.05	8-84				-
	Turbidity (NTU)	4.71	23.4	4.26				
				1	a No a		. Maal	2
	Probe type:		YSI Quatro	+ Lan	VOTIC II	urbidin	1 met	r
	Appearance at start:		ear, 1	A	P1 -			
	Appearance at end:	0	ear	10 000				
	Other Observations:	Headspace	PID reading:	0.0000	>		_	
	Amount of water removed:		3	.42	gallons			
	Depth to water before samplin	na:	NM	.16	CT	o of inner casi	ng)	
		.3.	-					
				Compounds)				
	Parameters Sampled For:			EPA Method				
			1,4-Diox	ane by USEF 8270 SIM	PA Method	Sample Time	:	1520
				0210 01101		Somple time		
	NOTES: TUDIN	a m u	vell n	moved	onior	to a	raina	Isampling
	and	then		ed.	T	1	0.0	- 1 5
	- Aller - Alle		1.					

Date Site Name Site Location	KS EC Sampling	Personnel Evacuation Sampling M		RDH/SET Peristaltic P Peristaltic P			Weather Well # Project #	<u>≠60°;-, over</u> MW-4 1940101245
Well informa	Depth of Well * Depth to Water * Length of Water Column	3.	3.30 30 91 39	ft. ft.	* Measureme	nts taken fr x	Top of Wel	ective Casing
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	WC) =	1.53	gallons gallons gallons				
Well evacuat	ion data:				*			
					Well Volu	mes	1	1
		1 0929	2	3	-			
	Start Time End Time	0948	0951				-	
	Gallons Purged		1.53	1.53				
	Temp (C)	17.1	17.1	17.0		1.55		
	pH	7.96	7.92	7.75				
	Spec. Conduc. (mS/cm)	5.89	5.67	7.93				
	ORP (mV)		101.3	101.2		-		×
	DO (mg/L)	3.79	3.35	1.79				
	Turbidity (NTU)	84.5	36.9	24.6			1	
	Probe type: Appearance at start: Appearance at end: Other Observations:	Dar Clea	k broc				meter	
. 6	Amount of water removed: Depth to water before samplir	ng:	<u>4.</u>	59	gallons ft. (below top	of inner ca	using)	
а _{чар} ,4	Parameters Sampled For:		ับร	Compounds) SEPA Methoc ane by USEF 8270 SIM	I 537 PA Method	Sample Tir	me:	1015
	NOTES: Bailer	in we	replace	nove a	hing guit	avreir turk	ng/san	healtha

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:Asu.

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PFAS	Pre-Sam	plina	Checklist
	rie eam	P	

Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): ±65°F, Rain	Date: 0-4-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above above detection limits).
	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents;
Field Equipment:	Decon 90 [®] is not being used.
equipment conform to the requirements of this	
L checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature

0907

Time



PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): ±55°F, overrast	Date: 10-5-21
Pre-Mobilization: light rain	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Paps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above boratory detection limits).
Field Equipment:	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted

below.

Field Team Leader Name and Signature

OS

Time



PFAS	Pre-Sam	olina	Checklist
	I I V Valling		

Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): ±55°F, overcast	Date: 10-7-21
Pre-Mobilization: foggy	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
Field Equipment:	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be elocated to the support area or other area of the site away from the sampling locations and noted

below. ſ

Field Team Leader Name and Signature

0905	_

Time



PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): = 600F avercast	Date: 10/8/21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Kny use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above aboratory detection limits).
Field Equipment:	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents; Decon 90 [®] is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relacated to the support area or other area of the site away from the sampling locations and noted below.

TH

Field Team Leader Name and Signature

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RAMB	๕ เเ		GROU	IDWATI	ER SAMF	PLING F	IELD LO	G
Date <u>12-4-</u> Site Name <u>KS EC Sa</u> Site Location <u>West Milt</u>	ampling	Personnel Evacuation N Sampling Me	Method	Peristaltic F Peristaltic F		-	Weather Well # Project #	<u>+40°, overcas</u> <u>HB - DA</u> 1940101245
Well information: Depth of N Depth to N Length of		11. 33 4.7 4.5	3 7 Ude	ft. ft. ft.	* Measureme	ents taken fro x	Top of Well	ective Casing
2" diamet	er wells = 0.041 x (L er wells = 0.163 x (L er wells = 0.653 x (L	WC) =	2.74	gallons gallons 🏼 🛪 gallons	3=2.7	22941		
Well evacuation data:								
					Well Volu	imes		
· · · · · · · · · · · · · · · · · · ·		1	2	3				
	Start Time	1345	351	1356				
	End Time		1530	1904				
	Gallons Purged Temp (C)	0.17	0.17	8.14				
	pH	7 01	7.22	922				_
- Court		1 1 1 1 2	1.36	4.56				-
Spec.	Conduc. (mS/cm)	22027	2112.0	2122				
	ORP (mV)	SLDit	344.0	2441				
	DO (mg/L)	10.91	0.42	9.40				
	Turbidity (NTU)	3.88	1.40	0.10			L	
Appearan	ce at start:	C(e C(l) Headspace F	ar, n sr, n	+ Lamotte T J <u>) 0</u> d J <u>) 0</u> V-(for			
	f water removed: water before samplir	ng:	2.5 NM		gallons ft. (below top by Modified	of inner casi	ing)	
Paramete	rs Sampled For:			EPA Method	537	Sample Tim	e:	1410
NOTES:							_	
		_						
	-	_	_	_				
							_	

Site Name KS EC Sampling Evacuation Method Peristatic Pump Weil # 14 B- Site Location West Millon, NY Sampling Method Peristatic Pump Project # 194010 Weil Information: Depth of Weil * 1 1 * * Measurements taken from Depth of Water Column 1 1 1 * * * * Measurements taken from 1* diameter wells = 0.041 x (LWC) = 1 3 gallons *	GROUNDWATER SAMPLI	
Site Location West Million, NY Sampling Method Peristaltic Pump Project # 19400 Well Information: Depth of Well * 23.9.5.1.1. * Measurements taken from Top of Well Casing Depth of Water Column Image: Column fill of Water Column Image: Column fill of Water Column fill of Water Column * Measurements taken from Top of Proteetive Casing Top of Proteetive Casing Top of Proteetive Casing Top of Proteetive Casing transmitted to the column fill of Water Column fill of Water Column ************************************		Weather ± 450 Over
Well information: Depth of Well* Depth of Water* Depth of Water Column Depth of Water Column Top of Well Casing Top of Protective Casing to		
Depth of Well* 23.85 ft * Measurements taken from Depth to Water* Image: Conduct Transmission of the state of the	Sampling Method Peristaltic Pump	Project # 1940101245
Depth to Water * Image: Constant of Water Column Image: Column		
Length of Water Column B, q, S ft. Top of Protective Case (Other, Specify) 1" diameter wells = 0.041 x (LWC) = A^* diameter wells = 0.653 x (LWC) = A^* diameter wells = A^* diameter wells = 0.75 x (Max + Max + M		
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$\frac{1^{\circ} \text{diameter wells} = 0.041 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}{\frac{1^{\circ} 2^{\circ}}{4^{\circ} \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{4 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{3}{20} \text{ gallons}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{6 \text{ diameter wells} = 0.653 \times (LWC) = 1^{\circ} \frac{1^{\circ} \frac{2^{\circ}}{3}}{1 \text{ diameter meter}}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{6 \text{ diameter meter}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{6 \text{ diameter meter}} \text{ diameter wells} = 1^{\circ} \frac{1^{\circ} \frac{2^{\circ}}{3}}{1 \text{ diameter meter}}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{3 \text{ diameter meter}} \text{ diameter meter}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{3 \text{ diameter meter}} \text{ diameter meter}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}}{2 \text{ diameter meter}} \text{ diameter meter}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}} \text{ diameter diameter} \text{ diameter meter}}{2 \text{ diameter meter}} \text{ diameter meter}}$ $\frac{1^{\circ} \frac{2^{\circ}}{3}} \text{ diameter diameter} \text{ diameter meter}} \text{ diameter} \text{ diameter} \text{ diameter} \text{ diameter} \text{ diameter}} \text{ diameter} \text{ diameter} \text{ diameter} \text{ diameter}} \text{ diameter} d$		
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$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}{} \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	0.041 x (LWC) = gallons	•
4 ' diameter weils = 0.553 x (LWC) = gailons fell evacuation data: 1 2 3 Image: Start Time (12-1) 1/2,230 1/2,4/8 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,30 1/2,4/8 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,30 1/2,4/8 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,30 1/2,4/8 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,30 1/2,4/8 Image: Start Time (12-1) Image: Start Time (12-1) 1/0,-1 1/0,0 Image: Start Time (12-1) Image: Start Time (12-1) Image: Start Time (12-1) 1/2,1/7 3/4/1,1 3/2/6,9 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,1/7 3/4/1,1 3/2/6,9 Image: Start Time (12-1) Image: Start Time (12-1) 1/2,1/7 3/1/1,1 3/2/6,9 Image: Start Time (12-1) Image: Start Time (12-1) Image: Start Time (12-1) 1/2,1/7 3/1/2,1/7 3/1/2,1/2 1/2,1/7 1/2,1/7 Image: Start Time (12-1) 1/2,1/7 3/1/2,1/2 1/2,1/7 1/2,1/2 1/2,1/7 1/2,1/7		× 3
Well Volumes 1 2 3		4.19-500
1 2 3 1 1 Start Time 12-1 12-30 12-48 1 End Time 12-30 12-48 1 12-3 1 Gallons Purged 1-38 1-38 1-39 1 1 Gallons Purged 1-38 1-39 1 10-0 1 Temp (C) 10-1 10-0 1 10-0 1 10-0 pH 8.04 7.94 7.48 1 1 10-0 1 Spec. Conduc. (ms/cm) 121.7 249.3 344.9 1 1 1 0 ORP (mV) 308.7 349.1 320.9 1 <		
Start Time 12.1 12.30 12.48 1 End Time 12.30 12.48 130.3 1 1 Gallons Purged 1.38 1.39 1 1 1 0 pH 8.04 7.94 7.68 1 1 0 1 Spec. Conduc. (mS/cm) 92.1.7 24.9.3 3444.9 1 1 0 ORP (mV) 308.7 314.1 326.9 1 1 0 1 1 0 1 1 1 0 1	Well Volumes	5
End Time 1248 1303 Image: Constraint of the second s		
Gallons Purged 7.38 7.38 7.39 Temp (C) 10.1 10.0 10.1 10.0 pH 8.04 7.94 7.98 10.1 Spec. Conduc. (mS/cm) 421.7 249.3 344.8 10.1 ORP (mV) 308.7 319.1 326.9 10.1 D0 (mg/L) 17.01 12.99 12.47 10.1 Turbidity (NTU) 1.19 3.50 0.45 10.1 Probe type: YSI Quatro + Lamotte Turbidimeter 10.1 10.1 10.1 Appearance at start: CleCkY, Some SmAll proceeders vis, bk + no co 10.0 10.0 Other Observations: Headspace PID reading: 0.0 0.0 Amount of water removed:		
Temp (C) 10.1 10.0 10.0 pH 8.04 7.94 7.68 10.0 Spec. Conduc. (mS/cm) 421.7 349.3 344.8 10.0 ORP (mv) 308.7 319.1 326.9 10.0 10.0 DO (mg/L) 17.01 12.99 12.47 10.0 10.0 10.0 Probe type: YSI Quatro + Lamotte Turbidimeter 10.0 10.0 10.0 10.0 10.0 10.0 Appearance at start: CleCkY, Some SmAll productes vis, bk + no.co 10.0 10.0 10.0 10.0 10.0 Other Observations: Headspace PID reading: 0.0 0.0 0.0 0.0 0.0 Amount of water removed:		
pH 8. 04 7.94 7. 68 Spec. Conduc. (mS/cm) 421.7 249.3 344.8 ORP (mV) 308.7 319.1 326.9 D0 (mg/L) 17.01 12.99 12.47 Turbidity (NTU) 1.19 3.50 0.45 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: CleCV. Some SmAll particles Appearance at end: CleCV. NM Solo Other Observations: Headspace PID reading: 0.0 0 Amount of water removed:		
ORP (mV) 308 7 319.1 326.9 DO (mg/L) 17.01 12.99 12.47 Turbidity (NTU) 1.19 3.50 0.45 YSI Quatro + Lamotte Turbidimeter Appearance at start: YSI Quatro + Lamotte Turbidimeter Appearance at start: YSI Quatro + Lamotte Turbidimeter Other Observations: Headspace PID reading: 0.0 Other Observations: Headspace PID reading: 0.0 Amount of water removed: YSI Quatro + Lamotte Turbidimeter gallons Depth to water before sampling: M ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537		
ORP (mV) 308 7 319.1 326.9 DO (mg/L) 17.01 12.99 12.47 Turbidity (NTU) 1.19 3.50 0.45 YSI Quatro + Lamotte Turbidimeter Appearance at start: YSI Quatro + Lamotte Turbidimeter Appearance at end: Use South Sou		
Turbidity (NTU) 1,19 3,50 0.45 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Clear, Some small particles vis, bk, no color Appearance at end: Clear, no odor Other Observations: Headspace PID reading: 0.0 ppm Amount of water removed: 4.15 Depth to water before sampling: M PFAS (21 Compounds) by Modified USEPA Method 537		
Turbidity (NTU) 1.19 3.50 0.45 Probe type: YSI Quatro + Lamotte Turbidimeter Appearance at start: Clear, Some small particles vis, bk, no color Appearance at end: Clear, no odor Other Observations: Headspace PID reading: 0.0 ppm Amount of water removed: 4.15 Depth to water before sampling: M PFAS (21 Compounds) by Modified USEPA Method 537	O (mg/L) 17. (01 12.99 12.47	
Appearance at start: Appearance at end: Image: Clear, No oddr Other Observations: Headspace PID reading: 0.0 ppm Amount of water removed: Image: Mail particular start gallons Depth to water before sampling: MM ft. (below top of inner casing) Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537		
Amount of water removed:	Clear, some small particles	s visibk; no odor
Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537	neadspace FID reading. U.V MMM	
Parameters Sampled For: USEPA Method 537		nner casing)
Sample Time:		
	Sarr	nple Time: 1315
NOTES: PID= 0.0 ScIMPLE ID KS-EC-H3-9A-12	PID= 0.0 sample ID KS	-EC-H3-9A-1200

RAMBC		W	GP GROUI	DWATER	iwał Developa	つ A ENT- FIEL	D LOG	
Date	12-6-21 Q3 Yard (AOC-	Personnel		Wel.	1A56			50 <u>'F, cloue</u> East Dit
Site Name	005) RFI Fieldwork Groundwater Investigation	Evacuation I	Vethod	NA	-	- 4		
Site Location	Niskayuna, NY	Sampling Me	ethod	Grab	and the second	-	Project #	1940101245
Well informa			NA					
	Initial Depth of Well *		NA	ft.	* Measuremen		7	
	Final Depth of Well *			ft.		×	Top of Well	
	Depth to Water * Length of Water Column		NA NA	ft. ft.			(Other, Spe	ective Casing
	1" diameter wells = 0.041 x (l			gallons				ony)
	2" diameter wells = $0.163 \times (10^{-1})$			gallons				
	4" diameter wells = 0.653 x (l	,		gallons				
Nell evacuat	tion data:							
		/			Well Volumes			_
		1027			-			
	Start Time							_
	End Time			_				_
	Gallons Purged Temperature (C)		+			I		
	pH		-					-
	Spec. Conduc. (mS/cm)							
	Turbidity (NTU)			-				
	OF?	211.6						
	-	and						
	Probe type:		YSI Quatro	11 /			_	
	Appearance at start:		na na	O ofen				
	Appearance at end:							
	Other Observations:	Headspace F	PID reading.					
	Other Observations.		ib reading.					
	Amount of water removed:		NA -	Grab sample	gallons			
	Depth to water before sampling: NM				ft. (below top o	f inner casino)		
		·						
			(D) (
	Deservations Operated Ex	nds) by Modified hod 537		Comple The		1030		
	Parameters Sampled For:		501.71100		-	Sample Time:		<u>, </u>
	NOTES: FIZBO	50	1040			_		
	TOTED. F1-00	1 10-						



(3) Vesse rmy PFAS Pre-Sample	ing Checklist
Site Name Knotts Laboratory EC Sampling	Task: 1940101245
Weather (temp/precip): 50°F. Cloudy	Date: 12-6.2/
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
Field Equipment:	Alconox [®] , Liquinox [®] , Seventh Generation [™] , and Citranox [®] are being used as decontamination cleaning agents;
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Decon 90 [®] is not being used.
	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS- containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted

below. 1. Ul C

Field Team Leader Name and Signature

0945

Time