FORMER IBM KINGSTON REMEDIATION

SUPPLEMENTAL SITE CHARACTERIZATION
EMERGING CONTAMINANTS
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) AND 1,4-DIOXANE
MW-313S AREA WORK PLAN
SITE ID: 356002
ORDER ON CONSENT, INDEX #D3-10023-6-11

Prepared for:

IBM Environmental Engineering
2300 Dulles Station West Blvd
Herndon, VA 20171

November 14, 2022
Revision 1: March 31, 2025
Revision 2: June 4, 2026

Prepared by:

Groundwater Sciences Corporation
and Groundwater Sciences, P.C., Verdantas Companies
560 Route 52, Suite 202
Beacon, New York 12508

GROUNDWATER SCIENCES
A Verdantas Company

Professional Geologist Certification
Former IBM Kingston Remediation
Town of Ulster
Ulster County, New York

Supplemental Site Characterization
Emerging Contaminants
Per- and Polyfluoroalkyl Substances (PFAS)
MW-313S Area Work Plan

Site ID: 356002
Order on Consent, Index #D3-10023-6-11

November 14, 2022
Revision 1: March 31, 2025
Revision 2: June 4, 2026

As the person with primary responsibility for the performance of the geological services and activities associated with the captioned Work Plan, I certify that I have reviewed the document titled *"Former IBM Kingston Site (iPark 87) Supplemental Site Characterization, Emerging Contaminants, Per- and Polyfluoroalkyl Substances (PFAS) MW-313S Area Work Plan, Site ID: 356002, Order on Consent, Index #D3-10023-6-11"*. This work plan is dated June 4, 2026, and was for IBM Corporation by Groundwater Sciences Corporation and Groundwater Sciences, P.C., Verdantas Companies.

I certify that the associated geological services and this work plan have been prepared under my direct supervision. To the best of my knowledge; all such information contained in this plan is complete and accurate.

I certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (Der-31).

This work plan bears the seal of a professional geologist; no alterations may be made to the information contained in this plan unless made in accordance with Title 8, Article 145, Section 7209 of New York State Education Law.

DOROTHY A. BERGMANN
No. 000477

Signature: ____________________ Date: June 4, 2026

Name: Dorothy A. Bergmann

License No: 00477

State: New York

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

1.0 INTRODUCTION

This work plan has been prepared for International Business Machines Corporation (IBM) by Groundwater Sciences Corporation (GSC) and Groundwater Sciences, P.C., Verdantas Companies to further delineate the nature and extent of Emerging Contaminants (EC) presence in the various environmental media on-site at iPark 87, the Former IBM Kingston Site (the Site), located at 300 Enterprise Drive, Kingston, Ulster County, New York (see **Figure 1-1**). This work plan was prepared in response to a request by the New York State Department of Environmental Conservation (NYSDEC) in its letter to IBM, dated September 15, 2022[1]. This work plan has been revised in accordance with a modification letter dated September 18, 2024[2], and following discussions with the Department[3]. Specifically, this work plan addresses NYSDEC's request to assess a possible Per- and Polyfluoroalkyl Substances (PFAS) source area in the vicinity of monitoring well MW-313S.

The Site is listed as a Class 4 Site (Site # 356002) in the Registry of Inactive Hazardous Waste Disposal Sites in New York State and is managed under the Order on Consent (Order), Index # D3-10023-6-11, signed with NYSDEC by IBM and TechCity[4] (the prior Site owner) on July 8, 2011[5]. On December 23, 2021[6], the current owner of portions of the East Campus, iPark 87 LLC was added

---

[1] New York State Department of Environmental Conservation, September 15, 2022, *Request for Additional Emerging Contaminants Sampling and Water Treatment System Upgrade, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, New York.*

[2] NYSDEC, September 18, 2024, Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY.

[3] NYSDEC, January 15, 2025, Supplemental Site Characterization Emerging Contaminants Soil Sampling Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY.

[4] TechCity was the name of the Site under previous ownership and as such, had been used in historical reports to describe the Site. The name TechCity has also been used to describe the multiple entities that owned different parcels on the Site and were collectively referred to as TechCity in multiple reports, correspondences and NYSDEC documents.

[5] New York State Department of Environmental Conservation, July 8, 2011, *In the Matter of the Development and Implementation of a Remedial Program for an Inactive Hazardous Waste Disposal Site under Article 27, Titles 9 and 13, and, Article 71 of the Environmental Conservation Law, International Business Machines Corporation ("IBM") and A.G. Properties of Kingston, LLC and Ulster Business Complex LLC ("TechCity"), (collectively, "Respondents"), Index D3-10023-6-11, NYSDEC Site No. 356002.*

[6] Consent of Additional Signatory for Order on Consent and Administrative Settlement, Index No. D3-10023-6-11 regarding Site #356002, December 23, 2021, executed by Joseph Cotter, President of i.Park 87 LLC.

to the Order as a Respondent with consent as an additional signatory. On November 16, 2023[7], iPark 87 West LLC, current owner of the West Campus, was added to the Order as a Respondent with consent as an additional signatory.

Prior to the Order, the Site was managed under the 6NYCRR Part 373 Hazardous Waste Management Permit (RCRA Permit)[8]. Corrective Action activities at the Site were conducted with oversight of NYSDEC under the RCRA Permit and from July 2011 to present under the Order.

IBM is currently authorized to discharge treated groundwater to Outfall 01A and Outfall 03B under State Pollutant Discharge Elimination System (SPDES) Permit Number NY0108138[9].

In response to a NYSDEC request[10], an Emerging Contaminant, Poly- and Perfluoroalkyl Substances (PFAS) and 1,4-Dioxane, Sampling Work Plan (*2018 EC Sampling Work Plan*)[11] for groundwater was prepared and submitted to NYSDEC on July 31, 2018. NYSDEC approved the *2018 EC Sampling Work Plan* in a letter[12] dated September 4, 2020. Groundwater sampling pursuant to the *2018 EC Sampling Work Plan* was completed during October 2020 and reported[13] to NYSDEC on January 29, 2021. The *2021 EC Sampling Report* was accepted[14] by the NYSDEC on August 26, 2021.

---

[7] Consent of Additional Signatory for Order on Consent and Administrative Settlement, Index No. D3-10023-6-11 regarding Site #356002, November 16, 2023, executed by Joseph Cotter, President of i.Park 87 West LLC.

[8] New York State Department of Environmental Conservation, Article 27, Title 9, 6NYCRR 373 Hazardous Waste Management Permit, DEC Permit Number 3-5154-00067/00090, EPA ID NYD001359694, October 4, 1996.

[9] New York State Department of Environmental Conservation, July 2, 2024, SPDES Permit Renewal, SPDES No. NY0108138, Permittee International Business Machines Corporation (Permit Effective Date July 2, 2024, Permit Expiration Date June 30, 2029).

[10] NYSDEC, June 5, 2018, *Request for Sampling of Emerging Contaminants, Former IBM Kingston, NYSDEC Site No. 356002.*

[11] Groundwater Sciences Corporation and Groundwater Sciences, P.C., July 31, 2018, *Former IBM Kingston Facility (TechCity) Emerging Contaminants Poly- and Perfluoroalkyl Substances and 1,4-Dioxane Sampling Work Plan, Site No. 356002, Order on Consent, Index #D3-10023-6-11.*

[12] NYSDEC, September 4, 2020, *Emerging Contaminants Sampling Work Plan, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, Ulster County, NY.*

[13] NYSDEC, January 29, 2021, *Emerging Contaminants Sampling Work Report, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, Ulster County, NY.*

[14] NYSDEC, August 26, 2021, *Emerging Contaminants PFAS and 1,4-Dioxane Sampling Report, Former IBM Kingston, NYSDEC Site No. 356002.*

Monitoring well MW-313S is located near the border between Operable Unit 7 (OU7) and Operable Unit 3 (OU3) in the alcove just north of former Building 004 (B004), between former Building 003 (B003) and Building 005N (B005N) (**Figure 1-2**). MW-313S was installed as part of an investigation of the SWMU W, B004 Separator Tank (**Figure 1-3**). MW-313S was selected for PFAS and 1,4-Dioxane sampling under the *2018 EC Sampling Work Plan*. The monitoring results for MW-313S, reported in the *2021 EC Sampling Report,* show concentrations of PFOA and PFOS greater than the respective NYSDEC *Division of Water, Technical and Operational Guidance Series, (TOGS)* 1.1.1[15] guidance value for these compounds (**Plate 1**).

This Supplemental Site Characterization Work Plan for the MW-313S Area (*SC Work Plan for ECs in the MW-313S Area*) describes the objectives and methods proposed to further delineate the nature and extent of PFAS and 1,4-Dioxane in the vicinity of MW-313S. This work plan is one of three work plans[16] submitted in response to the NYSDEC request.

References used in the preparation of this *SC Work Plan for ECs (PFAS) in the MW-313S Area* are as annotated in the text of the work plan.

---

[15] New York State Department of Environmental Conservation, February 2023, *2023 Addendum to June 1998 Division of Water, Technical and Operational Guidance Series, (TOGS) No. 1.1.1.*

[16] Groundwater Sciences Corporation, November 14, 2022 (revised June 4, 2026), *Supplemental Site Characterization Work Plan, Emerging Contaminants, Per-and Polyfluoroalkyl Substances (PFAS) and 1,4-Dioxane, in SPDES Outfalls, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, New York.*

Groundwater Sciences Corporation, November 14, 2022 (revised June 4, 2026), *Supplemental Site Characterization Work Plan, Emerging Contaminants, Per-and Polyfluoroalkyl Substances (PFAS) and 1,4-Dioxane, in Soil, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, New York.*

2.0 SITE OVERVIEW

The following sections provide details on the Site, including current Site conditions and the Site chronology.

2.1 Site Background

The Site is located north of the City of Kingston in the Town of Ulster, Ulster County, New York and is bounded by John M. Clarke Drive to the east, Old Neighborhood Road and Route 209 to the north, Esopus Creek to the west, and Boices Lane to the south (see **Figure 1-1**).

The approximately 258-acre property was first developed by IBM from farmland during the 1950s. The primary activities at the Site included the manufacturing of electric typewriters and the development, manufacture and testing of computer systems and related components and technologies. IBM ceased operations during the early-1990s and the property was subsequently subdivided into multiple parcels. In 1998, IBM sold the Site to AG Properties of Kingston, LLC (Parcels: 2 – 19; 22 – 29 and; 30) and, Ulster Business Complex, LLC (Parcel 1 (Building 201-203 Complex); Parcel 20 (Building 042) and; Parcel 21 (Building 043)). Since that time, multiple property transfers have occurred from AG Properties of Kingston, LLC and Ulster Business Complex LLC to other entities. iPark 87 recently received approval from the Town of Ulster for certain lot line adjustments, removing certain parcels OU3 and adding certain parcels in OU4[17]. The current layout of the parcels are depicted on **Figure 1-2**.

The portion of the Site located east of Enterprise Drive is referred to as the East Campus and includes the majority of the buildings at the Site, many of which are vacant and some demolished with just the slab remaining (**Figure 2-1**). The portion located west of Enterprise Drive is referred to as the West Campus and includes the B201 / B202 / B203 complex; a large parking area south and west of this building complex; generally undeveloped land further to the southwest and north and; the Former

---

[17] LaBella PC for National Resources, *iPark 87 East Complex, Enterprise Drive, Town of Ulster, Ulster County, New York, Map of Lot Line Adjustment of Parcels 12, 13, 14, 16, 25 & 27 of Filed Map 10649, SV1-SV4,* filed with the Ulster County Clerk as Filed Maps 24-124A, 24-124B, 24-124C and 24-124D, July 23, 2024.

Industrial Waste Sludge Lagoon (Former IWSL), a closed surface impoundment located to the west of Building 036 (B036).

Prior to and under the RCRA Permit, IBM completed extensive RCRA Facility Assessments (RFAs) and RCRA Facility Investigations (RFIs) at all identified and accessible Solid Waste Management Units (SWMUs). A SWMU summary and generalized location information is presented on **Figure 1-3**. As areas became accessible, IBM completed additional investigations of SWMUs.

Corrective Measures implemented by IBM includes a perimeter control system that intercepts the groundwater plume described in more detail in **Section 2.4**.

The Order, which supersedes and replaces the former RCRA Permit, divided the Site into ten Operable Units (OUs), depicted in **Figure 1-2**. OU 3 and OU 3a comprise the Class 4 Inactive Hazardous Waste Disposal Site (**Figure 2-1**) and together with OU1, OU2, OU4a, OU5, OU6, OU7 and OU8 are proposed for Commercial Use[18] under the Order. OU4 is proposed for Restricted Residential Use under the Order[18].

NYSDEC's Statement of Basis[19] (*2013 Statement of Basis*), dated March 2013, provided an update on the Corrective Action activities at the Site and describes the closure conditions identified by various Site investigations from the late 1970s to 2012 and identifies four SWMUs that will be the subject of a future Statement of Basis: SWMU M, Portions of the IW Sewer Lines; SWMU S, Former Waste TCA Tanks (B001); SWMU T, Former Waste Oil Tank (B003) and; SWMU X, Building 031 Separator Tank. SWMUs S, T and M have been investigated, and the results of these investigations have been submitted to NYSDEC. The supplemental investigation of a portion of SWMU M was completed in late 2019 and the report was submitted March 31, 2020[20]. NYSDEC approved the supplemental investigation data report in a letter dated January 6, 2023[21] which included a request to

---

[18] Listing of Operable Units, Proposed Use and Status as described in Exhibit C of the *Order on Consent*, Index Number D3-10023-6-11, signed by IBM and TechCity on July 8, 2011.

[19] New York State Department of Environmental Conservation, March 2013, *Statement of Basis*, IBM-Kingston, Town of Ulster, Ulster County, EPA ID No. NYD001359694, Site No. 356002.

[20] Golder Associates, *Supplemental SWMU M Investigation Data Report,* March 31, 2020.

[21] New York State Department of Environmental Conservation, *Supplemental SWMU M Investigation Data Report, Former IBM-Kingston Site, NYSDEC Site Number 356002, Kingston, Ulster County, NY,* January 6, 2023.

submit an Alternatives Analysis / Feasibility Study Report to develop and select remedial action alternatives to address contamination identified in relation to SWMU M. In response, an Alternatives Analysis Report was submitted for SWMU M on May 5, 2023[22]. SWMU X has been investigated with no indication of any releases; however, it remains in operation as part of the B031 footer drain system.

2.2 Generalized Geology

The Site is located within the Hudson-Mohawk Lowland Physiographic Province. The bedrock underlying the western portion of the Site consists of siltstone and shale of the Middle Devonian Age Lower Hamilton Group. The eastern portion of the Site is underlain by both the Lower Hamilton Group and the Lower Devonian Age Onondaga Limestone. The exact location and nature of the contact between these units is not known. The Lower Hamilton Group forms a north-northwest trending bedrock high approximately coincident with Enterprise Drive and is described as a calcareous shale in boring logs completed during previous Site investigations.

Literature on regional geologic conditions indicate that a glacially-derived sand and gravel unit directly overlies the bedrock west of Enterprise Drive and a glacial till unit overlies the bedrock east of Enterprise Drive. These unconsolidated units are overlain by a varved silt and clay unit that is interpreted to be of lacustrine origin, with a thickness of zero feet in an area where it is absent proximate to the bedrock high, to over 180-feet in the central portion of East Campus as determined by previous Site borings. The clay portion of the varved silt and clay unit serves as an aquitard throughout most the Site, except in the localized area in the vicinity of the bedrock high where it is absent.

A well sorted, fine to coarse-grained sand of lacustrine origin, with intermittent, thin, silty-clay zones, overlies the varved silt and clay (or bedrock where the varved silt and clay is absent in the vicinity of the bedrock high). This surficial sand unit ranges in thickness across the Site from approximately 6-feet in the area of the bedrock ridge to greater than 30-feet in the central portion of the East Campus.

---

[22] WSP USA Inc., *Alternatives Analysis Report, Solid Waste Management Unit M: Portions of the Industrial Waste Sewer Lines, NYSDEC Site Identification Number 356002, Order on Consent Index Number D3-10023-6-11, Town of Ulster, Ulster County, NY,* May 5, 2023.

A discontinuous transition zone of relatively fine-grained materials is present at the base of the surficial sand unit in some areas of the Site[23].

Generalized descriptions of the near-surface lithologic units encountered at the Site are as follows:

- **Surficial SAND Unit:** Consists of light brown, fine to medium grained sand containing variable amounts of finer-grained silt and clay. This unit is typically saturated below a depth of approximately 6 to 7-feet below ground surface (ft bgs).
- **SILTY-SAND and CLAY Transition Unit:** Consists of variable amounts of reddish-brown to gray silt, sand, and clay. Typical appearance in a soil core is a silty-sand matrix containing thin lenses of silt and sandy clay. This unit, if present, is generally encountered between 15 to 20-ft bgs in the vicinity of B001.
- **Varved CLAY Unit:** Consists of red-brown and gray, plastic, cohesive, wet clay with intermittent silt zones. Typical appearance in a soil core is clay with laminae of silt and sometimes very fine-grained sand. This unit is typically encountered at approximately 20 to 25-ft bgs in the B001 area, with greater or lesser depths of first occurrence in localized areas.

The thickness of the sand unit increases and the thickness of the transition unit decreases coinciding with a shallowing of the depth to top-of-clay along the western edge of a clay unit "valley" identified in the *RCRA Facility Investigation on Groundwater Plumes* report[24]. This valley is deepest below B001 and B003 (i.e., approximately 30 ft bgs to the top of the clay unit) and extends southward towards Boices Lane.

2.3 Generalized Hydrogeology

The principal aquitard beneath the Site consists of the varved clay unit. Groundwater in the bedrock and in the deep sand and gravel and glacial till units that underlie the varved silt and clay is under confined conditions. Groundwater within the surficial sand unit that overlies the varved silt and clay unit is unconfined and exist under water table conditions. The surficial sand unit is typically unsaturated in the area of the bedrock high along Enterprise Drive.

---

[23] Groundwater Sciences Corporation, *RCRA Facility Assessments Newly Identified Solid Waste Management Units*, March 14, 1997.

[24] Groundwater Sciences Corporation, *RCRA Facility Investigation Groundwater Plumes and Sources,* March 14, 1997.

An east-west trending groundwater divide has been identified at the Site underlying former Building 001 (B001), former B002, former B003, and former B005S. The surficial sand aquifer groundwater elevation contour map is presented as **Figure 2-1**. Groundwater to the north of the divide flows west and northwest. Groundwater to the south of the divide flows west and southwest (**Figure 2-1**). The water table gradient in the eastern portion of the Site and in the vicinity of the GWCS is higher than the water table gradient in the southern and central portion of the Site. There is a large area where perennially saturated conditions do not exist in the shallow sand aquifer (**Figure 2-1**). This area of generally unsaturated shallow sand, located within the central and southwestern portion of the Site, is generally coincident with the highest elevations of the top of the varved silt and clay and the underlying bedrock ridge. A second smaller area where there is no saturated sand is shown in the northeastern corner of the Site (**Figure 2-1**).

Estimated horizontal groundwater flow velocities range from approximately 0.8 feet per day (feet/day) to 2 feet/day. Groundwater flow is significantly influenced by the presence of the perimeter control system.

2.4 Remedial Components and Systems

Groundwater remediation components and remedial systems at the Site include both man-made and natural structures and are considered Engineering Controls (ECs) as part of the Site remedy. Ongoing containment, interception, collection and treatment of groundwater remain important components of the Site remedy. The groundwater monitoring well system supports ongoing evaluations of the Site remedy through the collection of observable data, such as groundwater quality measurements and groundwater elevations where no direct measurements of function can be made due to the nature of the control, i.e. buried or otherwise not accessible.

- **Groundwater Monitoring Well System:** The monitoring well system comprises multiple groundwater monitoring wells with both flush mount and above-ground surface completions, many of which are routinely sampled to assess the effectiveness of existing Corrective Measures and includes monitoring wells located in OUs 1, 3, 3a, 4, 4a, 5, 6 and 7.
- **Perimeter Control System:** The perimeter control system consists of below grade man-made structures that intercept impacted groundwater and natural structures that provide hydraulic control at the Site. The primary purpose and function of the storm water sewer portions of the perimeter control system is to collect and convey storm water generated from surface water

runoff in areas in the various OUs through a gravity catch basin system. Portions of the perimeter control system are located in OUs 1, 3, 3a, 7 and 8 as shown in **Figure 2-1**. The perimeter control system consists of the following components:

  - **42-inch Storm Water Sewer System:** The primary purpose and function of the below grade 42-inch concrete storm water sewer, shown on **Figure 2-1**, is to provide conveyance of storm water generated from surface runoff areas in the various OUs through a gravity catch basin system. Historical groundwater monitoring data suggests that the sewer functions as a passive hydraulic barrier to downgradient groundwater migration due to the sewer design and hydraulic characteristics of the subsurface soils in the vicinity of the storm water sewer.
  - **60-inch Storm Water Sewer and its Outfall:** The 60-inch storm water sewer, shown on **Figure 2-1**, extends from the western portion of OU7, into OU3a on through the northern boundary of OU3a, where it continues into OU8 and terminates at an exposed outfall structure into a drainage swale. The primary purpose and function of the 60-inch storm water sewer is to provide conveyance of storm water generated from surface runoff areas in the various OUs through a gravity catch basin system. Historical groundwater monitoring data suggest the 60-inch sewer functions as a passive hydraulic barrier to downgradient groundwater migration due to the sewer design and hydraulic characteristics of the subsurface soils in the vicinity of the storm water sewer.
  - **Utility Trench Barrier Wall:** The Utility Trench Barrier Wall, shown on **Figure 2-1**, consists of a 250-foot-long trench constructed of compacted clay in an area where impacted groundwater has the potential to migrate through abandoned and active utility pipeline corridors and is a component of the groundwater perimeter control system. Approximately 100 feet of the Utility Trench Barrier Wall is located in OU3a with the remaining approximately 150 feet extending southward into OU3.

- **Groundwater Collection and Treatment:** has been ongoing at the Site since 1985 and currently consists of the following primary components:
    - **Groundwater Collection System Cutoff Trenches:** The Groundwater Collection System (GWCS) has operated at the Site since 1985 and consists of two groundwater interceptor trenches and lateral (**Figure 2-1**). As originally installed, the interceptor and lateral totaled approximately 1,900 feet. The interceptor trench was extended approximately 240 feet along the northeast terminus in May 1995. The interceptor portion of the system lies more or less perpendicular to the direction of groundwater flow and has been keyed into the relatively impermeable lacustrine silt and clay unit beneath the surficial sand water-bearing unit and as such fully intercepts groundwater flow, intersecting

the unsaturated portion of the surficial sand unit near Old Neighborhood Road extending along the western and northern perimeter of the North Parking Lot Area of the Site. The cutoff trenches and lateral gravity drain collected groundwater to three manholes equipped with duplex pumps for transfer of groundwater to the on-Site treatment system.

  - ■ **North Parking Lot Area (NPLA) System:** The North Parking Lot Area (NPLA) System has operated at the Site since late 1997 and was installed to mitigate groundwater infiltration to the storm sewer system. The NPLA System, located near former Building B003 and Building B005N in OU3, OU3a and OU7 as shown on **Figure 2-1**, consists of the re-use of old, abandoned storm water sewers that collect infiltrating groundwater which is then conveyed to pump stations PS-1 and PS-2, constructed within 141-inch deep fiberglass wet wells. The collected groundwater is then pumped through approximately 1,500 feet of fusion-welded HDPE piping to the on-site groundwater treatment facility (GTF) for treatment.

- **The Groundwater Treatment Facility (GTF):** Throughout much of 2024, the GTF consisted of a grit removal tank and two identical tray-type air stripping units designed to treat up to 83 gallons per minute of groundwater. The GTF was replaced with an equivalent temporary treatment system which operated from May 22, 2024, to January 9, 2025 during which time the GTF building was replaced by a newly designed concrete foundation, two-story building with updated GTF treatment technology components to respond to NYSDEC's directive[25] to upgrade the existing groundwater treatment system to address concentrations of PFAS and 1,4-dioxane in excess of MCL in on-Site groundwater. Conversion to the new GTF with upgraded treatment components occurred on January 21, 2025.

- **Former IWSL Surface Impoundment Cover:** OU5 includes SWMU L (**Figure 2-2**), the former Industrial Waste Sludge Lagoon (former IWSL) which comprises approximately 9,500 square feet (0.22 acres) and was used as a settlement pond for sludge produced during the treatment of acid / alkali wastes. Potential exposure to residual impacted soils located within the IWSL Surface Impoundment is mitigated by the surface impoundment cover and the Non-Disturbance Easement[26] recorded with the Office of the Ulster County Clerk.

---

[25] New York State Department of Environmental Conservation, September 15, 2022, *Request for Additional Emerging Contaminants Sampling and Water Treatment System Upgrade, Former IBM Kingston Site, NYSDEC Site No. 356002, Kingston, New York.*

[26] *Map of a Portion of Lands of International Business Machines Corporation showing a 0.582 Acre Non-disturbance Easement* by Brinnier and Larios, P.C. revised March 1, 1994 and filed in the Office of the Ulster County Clerk on May 25, 1994 as Filed Map No. 9970.

- **Former IWSL Surface Impoundment Security Fence:** The former IWSL Surface Impoundment is enclosed within an 8-foot-high chain-link fence.
- **Soil / Surface Cover System:** The potential for exposure to soil and/or groundwater impacted with residual contamination at the Site is addressed by a soil/surface cover system, which is comprised of a one-foot thick soil cover over exposed soil and/or by concrete building slabs, asphalt covered roads and concrete covered sidewalks that overlie areas above impacted soil and/or groundwater for OU1, OU3, OU3a, OU4a, OU6 and OU7. For OU4, the soil/surface cover system is comprised of a two-foot-thick soil cover.

2.5 Previous Soil Sampling

IBM has collected soil samples at different areas of the Site since the late 1970s. Soil samples have been collected, for the most part under the requirements of the RCRA Permit as part of RCRA Facility Assessments[27] and RCRA Facility Investigations[28] (RFIs).

Most recently and pursuant to the Order, additional sampling was required to characterize the surficial soils at the Site. As such, an SC Work Plan was designed and implemented in 2011 to verify that applicable land use standards are met in areas not currently covered by buildings or pavement (impervious materials). Following is a summary of previous soil sampling activities and results of those activities which provide a basis for the selection of sample locations for EC sampling discussed in **Section 3.0**.

---

[27] Groundwater Sciences Corporation, *IBM Kingston RCRA Facility Assessment, Four Recently Identified Solid Waste Management Units*, January 16, 1995.

IBM, *IBM Kingston Facility, Part 373 Permit No. 3-5154-00067/00090, Notification of Determination of New SWMU and Transmittal of SWMU Assessment Report, Inactive Demolition Debris Fill Area, SWMU AF*, February 9, 1998.

IBM, *IBM Kingston Facility, Part 373 Permit No. 3-5154-00067/00090, Inactive West Demolition Debris Fill Area, SWMU AF*, August 8, 2000.

Groundwater Sciences Corporation, *IBM Kingston RCRA Facility Assessments, Newly Identified Solid Waste Management Units*, March 14, 1997.

[28] Groundwater Sciences Corporation, *IBM Kingston RCRA Facility Investigations Soil Gas Surveys and Sewer Systems Sampling*, April 12, 1996.

Groundwater Sciences Corporation, *IBM Kingston RCRA Facility Investigation Groundwater Plumes and Sources*, March 14, 1997.

Groundwater Sciences Corporation, *IBM Kingston Expanded RCRA Facility Investigation, Former Industrial Waste Sludge Lagoon, Arsenic and VOC Plume Source Investigation and Deep Bedrock RCRA Facility Investigation,* February 26, 2002.

The *2011 SC Work Plan for Surficial Soils*[29] presents a summary of the historical assessment and investigation documents for the SWMUs associated with each of the OUs that were the subject of the supplemental Site characterization. Most of the soil sampling done prior to the *2011 SC Work Plan for Surficial Soils* was conducted on samples collected from depths of two (2) feet below ground surface and greater.

Using information collected during historical investigations, historical Site chemical and waste management activities, current conditions at the time of sampling, and drainage patterns, IBM identified locations for collection and analysis of soil samples as part of the *2011 SC Work Plan for Surficial Soils.*

The surficial soil sampling and analysis plan that was the subject of the *2012 SC Report on Surficial Soils*[30] is detailed in **Table 2-3** and is presented on **Figure 2-2**.

Table 2-3: *SC Work Plan for Surficial Soils*
Summary of Sample Data Collection and Evaluation Criteria

Operable Unit	Media	Number of Locations	Sample Depths	Soil Cleanup Objectives
OU2	Surficial Soils (0 to 1 foot)	Eight (8) locations	~ 2-3 inches bgs ~ 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU3	Surficial Soils (0 to 1 foot)	Four (4) locations	~ 2-3 inches bgs ~ 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU3a	Surficial Soils (0 to 1 foot)	Five (5) locations	~ 2-3 inches bgs ~ 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU4	Surficial Soils (0 to 2 feet)	Ten (10) locations	~ 2-3 inches bgs ~ 1 ft bgs ~ 2 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Restricted Residential
OU6	Surficial Soils (0 to 1 foot)	Five (5) locations	~ 2-3 inches bgs ~ 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU7	Surficial Soils (0 to 1 foot)	Two (2) locations	~ 2-3 inches bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
bgs = Below Ground Surface				

---

[29] Groundwater Sciences Corporation, *Former IBM Kingston Facility (TechCity), Site Number 356002, Order on Consent Index: D3-10023-6-11, Supplemental Site Characterization Work Plan, Surficial Soils, September 26, 2011.*

[30] Groundwater Sciences Corporation, *Former IBM Kingston Facility (TechCity), Site Number 356002, Order on Consent Index: D3-10023-6-11, Supplemental Site Characterization Report: Surficial Soils Evaluation, February 15, 2012.*

Originally presented in the *2012 SC Report on Surficial Soils*, **Figure 2-3** and **Figure 2-4** show the sampling results of the SC surficial soils sampling characterization for OU3 and OU7, respectively. When reviewing these figures, it is important to note that the reporting levels for the sampling methods are well below the comparative applicable 6NYCRR Part 375-6.8(b) Commercial Soil Cleanup Objective values for protection of human health for OU3 and OU7. In addition, the reporting levels for the sampling methods are well below the comparative applicable 6NYCRR Part 375-6.8(b) Restricted Residential Soil Cleanup Objective values.

Based on the results of the *2012 SC Report on Surficial Soils* characterization as summarized on these figures, there were no detections of VOCs in surficial soils collected in OU7 (**Figure 2-3**) and limited detections of VOCs in surficial soil samples collected in OU3 (**Figure 2-4**). The detected concentrations are well below the comparative applicable 6NYCRR Part 375-6.8(b) Commercial Soil Cleanup Objective values for the protection of human health. No surficial soil samples were collected coincident with SWMU W as part of the *2018 EC Sampling Work Plan.* Soil sampling at this unit was conducted as part of the *RFA: Newly Identified SWMUs*[16] as discussed in **Section 2.6**.

2.6 SWMU W: Former B004 Separator Tank

The former B004 Separator Tank, SWMU W, was located just north of B004 between former B003 and B005N (**Figure 2-5**). The following discussion is based on the RFA of this unit, completed under the RCRA Permit and as presented in the reports entitled, *RFA: Newly Identified SWMUs* and the *2021 EC Sampling Report.*

The former B004 Separator Tank, SWMU M consisted of a 4,000-gallon capacity concrete underground storage tank (UST) that was part of the general, or acid/alkali, Industrial Waste (IW) sewer piping system. Plans for this tank indicate that it had baffles and it was presumably used to separate dissolved material from floating material entrained in the IW flow generated by finishing processes associated with the electric typewriter division in the late 1950s and 1960s. Plans for this tank indicate that the concrete walls of the tank extended approximately four inches above grade and that it was covered by steel plates. The base of this tank was at an approximate elevation of 170 feet, which is approximately three feet below the current water table. As part of the *RFA: Newly Identified SWMUs*, the ground surface was inspected at the location where the tank should have been located.

The concrete walls and the steel plates which covered this tank as shown on the plan, were not located. Therefore, the tank was presumed removed.

One soil gas sample was collected as part of the *RFI: Soil Gas Surveys and Sewer Systems Sampling*[17], no VOCs were detected. Under the *RFA: Newly Identified SWMUs*, one soil boring and one monitoring well was drilled to assess this SWMU. The two locations, B-312 and MW-313S are shown on **Figure 2-5**. Monitoring well MW-313S was completed as a fully penetrating monitoring well with a screened interval from 5.9 feet to 15.9 feet below ground surface (bgs). Soil boring B-312 was drilled downgradient from the SWMU to the top of the varved silt and clay. As shown on **Figure 2-1**, groundwater flows northwesterly beneath this SWMU.

Five soil samples were collected, at depths coincident with the water table and the base of the shallow sand unit at both locations and were analyzed for aromatic and halogenated VOCs. One additional soil sample was collected from MW-313S based on field screening results. Four VOCs were detected in these soil samples, none of which were detected above the current Standards Criteria and Guidance values (SCGs) as defined in *6NYCRR Part 375*[31]. VOCs were detected in groundwater at levels consistent with the area-wide groundwater plume which appear to originate from the northern portion of B005S. Impacted groundwater in this area is being addressed as part of the North Parking Lot Area Passive Groundwater Collection System, described in **Section 2.4**.

Following these earlier investigations and assessments, the *2013 Statement of Basis* concluded No Further Action for this unit with placement of an Environmental Easement and implementation of an Interim Site Management Plan.

As noted in **Section 1.0,** MW-313S is located near the border between OU7 and OU3 in the alcove just north of former B004, between former B003 and B005N. MW-313S was installed as part of an investigation of the SWMU W, the Former B004 Separator Tank (**Figure 1-3**) and was selected as a groundwater sampling location based on the apparent position to SWMU W, the Former B004 Separator Tank under the *2018 EC Sampling Work* Plan. Groundwater monitoring results collected

---

[31] 6NYCRR Part 375, Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.

under the *2018 EC Sampling Work Plan* and reported on in the *2021 EC Sampling Report* show concentrations of PFOS and PFOA above the respective TOGS 1.1.1[15] guidance values at this monitoring location (**Plate 1**).

3.0 SCOPE OF WORK

The main objectives of this *SC Work Plan for ECs in the MW-313S Area* are to:

- Assess the presence of ECs in Site groundwater in the vicinity of and downgradient to monitoring well MW-313S;
- Assess the presence of ECs in Site soils in the vicinity of monitoring well MW-313S;
- Report on the findings of this evaluation;

These objectives will be met through the performance of the following tasks:

- Selection of the sample locations based on historical monitoring data and knowledge of site activities, current site conditions and accessibility (utility or other surface impediments).
- Supplemental characterization of current site conditions consisting of the collection of groundwater samples and surficial soil samples for PFAS and 1,4-Dioxane at prescribed depths and select locations, including:
    - Sample soil locations that are in the vicinity of MW-313S;
    - Collect a soil sample from the groundwater interface from one of these soil sample locations, down gradient from MW-313S, in addition to the surface soil samples.
- Comparison of validated laboratory results with anticipated site use guidance values provided in Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS Under NYSDEC's Part 375 Remedial Programs) [32] and TOGS 1.1.1[15].
- Prepare a report of findings (current conditions report) with recommendations for additional activities, if necessary.

The rationale for location selection and collection criteria are as described in detail in **Section 3.1**, below. The locations selected for monitoring are shown on **Figure 3-1**. The following sections describe the scope of work for each of these tasks.

Prior to initiating field activities, a preliminary site visit will be conducted to ascertain physical access to each of the proposed sampling locations. Should access to any of the proposed sampling locations

---

[32] New York State Department of Environmental Conservation, *Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, April 2023.*

become restricted due to physical obstructions or safety hazards, NYSDEC will be notified. Prior approval of any deviations from the proposed plan will be obtained from NYSDEC.

3.1 Selection of Sample Locations and Sampling Criteria

Nine (9) locations have been identified for the collection and analysis for ECs (PFAS) to address the NYSDEC sampling request: seven (7) groundwater monitoring locations and two (2) soil sample locations. Groundwater monitoring sample locations were selected based on historical groundwater monitoring data sampling results for VOCs and ECs and as applicable, professional judgement. Sample location selection criteria is discussed in the following subsections and is focused on areas where VOCs and other compounds may be present given products containing PFAS potential use in both manufacturing process and fire training activities.

3.1.1 Groundwater Monitoring Wells Selected for EC Monitoring

MW-313S, the subject of this work plan, was selected for EC monitoring for PFAS and 1,4-Dioxane and is located within OU7.

Given the historical chemical and waste management activity in OU3, five (5) groundwater monitoring wells were selected for EC monitoring under the *2018 EC Sampling Work Plan* with three of five wells selected for PFAS monitoring. Two wells, MW-255S and MW-275S were selected for EC monitoring of 1,4-Dioxane only and were not sampled for PFAS (**Plate 1**). One well was selected for monitoring of both PFAS and 1,4-Dioxane (MW-503S, **Plate 1**). As reported in the *2021 EC Sampling Report*, and shown on **Plate 1**, PFOA and PFOS were detected at concentrations that exceed the TOGS 1.1.1[15] guidance values for these compounds at the three wells selected for monitoring of PFAS in OU3: MW-267S; MW-503S and; MW-505S. Of note, the concentrations of PFOA and PFOS in groundwater were similar in MW-267S (17 ng/L and 83 ng/L, respectively) and MW-505S (86 ng/L and 16 ng/L, respectively). PFOS concentrations in these two wells were two orders of magnitude lower than the concentration of PFOS in MW-313S (PFOS, 4000 ng/L). Monitoring well MW-505S lies in an apparent cross-gradient and proximate position to MW-313S. Monitoring well MW-267S lies in an apparent down-gradient position to this same area. Monitoring wells MW-505S and MW-267S will be resampled for PFAS under this work plan.

Monitoring well MW-266S lies in a downgradient position from the MW-313S area and has been selected for sampling under this work plan.

As discussed in **Section 2.3** and shown on **Figure 2-1**, an east-west trending groundwater divide has been identified at the Site underlying former Building 001 (B001), former Building 002 (B002), former Building 003 (B003), and former Building 005 (south) (B005S). Groundwater to the north of the divide flows west and northwest. Groundwater to the south of the divide flows west and southwest (**Figure 2-1**). MW-313S lies to the north of this divide as do monitoring wells MW-505S, MW-267S and MW-266S. Monitoring well MW-272S lies to the south and west of the MW-313S area in the vicinity of the groundwater divide. This location has been selected for EC monitoring under this work plan due to its position relative to the MW-313S area and the groundwater divide.

As shown on **Figure 3-1**, seven monitoring wells have been selected for EC monitoring in the MW-313S area: MW-117-S, MW-260S, MW-266S, MW-267S, MW-272S, MW-313S and MW-505S. MW-260S is currently located beneath a debris pile and is therefore inaccessible. Further, the condition of the well is unknown. Once the debris piles are removed, the condition of the well will be assessed for future monitoring. The locations of all groundwater monitoring wells selected for monitoring under this work plan have been previously surveyed.

3.1.2 Soil Sample Location Selected for EC Monitoring

As discussed in **Section 2.6**, at the Former B004 Separator Tank, SWMU W, there were limited detections of SVOCs in soils, some at concentration levels greater than or near SCG values.

Evaluation to assess the presence of ECs (PFAS and 1,4-Dioxane) in Site soils in the vicinity of monitoring well MW-313S is two-fold and includes sampling of surficial soil and sampling of soils at the soil / water interface. Two locations have been identified for surficial soil sampling. Both locations have been selected with the intention of locating in a proximate, downgradient position to MW-313S (**Figure 3-2**) while avoiding underground utilities and any debris.

Sampling for ECs (PFAS and 1,4-Dioxane) will be completed at both locations at the following intervals: 0-2 inches below ground surface, 0-1 foot below ground surface and 0-2 feet below ground surface. The location situated closer to MW-313S, shown on **Figure 3-2** as SS-LOC-A, has been selected for an additional sample at the soil / groundwater interface. Soil sampling will occur using hand-auger methodology and penetration of the auger will occur to the soil / groundwater interface or to the limit of refusal. Should resistance be encountered while using a hand auger to reach the groundwater interface, NYSDEC will be notified and a geoprobe or other drill method will be utilized to obtain the soil sample at the soil / groundwater interface.

All sample locations will be surveyed or GPS located. Based on the findings of this evaluation, together with the comparison of sampling results to the proposed 6NYCRR Part 375-6 SCOs for PFOA, PFOS and 1,4-Dioxane in soils (commercial), additional environmental assessment may be indicated, including sampling at depth.

3.2 Sample Collection

As described in the previously approved and implemented *2018 EC Sampling Work Plan*, sampling programs for PFAS required the development and implementation of detailed operating procedures to reduce the potential for cross contamination and false positive sample results due to low method detection limit concentrations associated with PFAS analysis (nanogram per liter or parts per trillion) and the numerous potential background sources of detectable concentrations.

The requested EC sampling activities will be performed in accordance with the general methods and procedures described in Standard Operating Procedures (SOPs). The SOPs incorporate sampling and analysis considerations described in the NYSDEC April 2023 publication, entitled, Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS Under NYSDEC's Part 375 Remedial Programs). These SOPs include:

SOP-1: General Field Methods for PFAS Sampling Programs (**Appendix C-1**)

SOP-2: Groundwater Monitoring Well Purge Protocols (**Appendix C-2**)

SOP-3: Groundwater Sampling Program Protocols (**Appendix C-3**)

SOP-4: Soil Sampling Protocol for PFAS (**Appendix C-4**)

SOP-6: Quality Assurance Quality Control Protocols (**Appendix C-5**)

SOP-NY: Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 373 Remedial Programs, April 2023 (**Appendix C-6**)

Field sampling data will be recorded on field data sampling sheets. The field data will be summarized and reported, as appropriate, in the SC Report for ECs in the MW-313S Area. The laboratory will provide data following NYSDEC Analytical Services Protocol (ASP) Category B data deliverables requirements. The laboratory data will be evaluated as per the Data Evaluation Procedures and these evaluations will culminate in a Data Usability Summary Report (DUSR).

Field activities will be conducted in conformance with the Site Health and Safety Plan for Groundwater Monitoring and Remediation Program (**Appendix D**).

3.3 Quality Assurance / Quality Control Samples

Field duplicates (for groundwater only), equipment rinse blanks, field blanks and trip blanks will be collected for Quality Assurance (QA)/Quality Control (QC) purposes to serve as a check on the validity of the sample, sampling technique, and laboratory precision. QA/QC samples will be collected in accordance with SOP-6 (**Appendix C-5**).

One field duplicate sample will be collected at a minimum for each twenty (20) groundwater samples.

Equipment rinse blanks will be collected once per day from non-dedicated equipment, if utilized. One field blank per day of sampling will be submitted to the laboratory for analysis. Field personnel will submit one laboratory supplied trip blank per sample cooler transported to the laboratory.

One sampling location will be selected for the collection of a matrix spike/ matrix spike duplicate for soils and one sampling location will be selected for the collection of a matrix spike / matrix spike duplicate for groundwater.

3.4 Analytical Laboratory Contracting and Analysis

Eurofins Lancaster Laboratories Environment Testing, LLC of Lancaster, Pennsylvania (Eurofins Lancaster) will complete the required sample analyses for forty (40) specific PFAS noted as the PFAS Target Analyte List (**Table 3-1**) using USEPA Method 1633 and 1,4-Dioxane utilizing USEPA Method 8270E SIM.

Eurofins Lancaster currently holds New York State Department of Health (NYSDOH) certification for the analysis of Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS) and 1,4-Dioxane. A copy of Eurofins Lancaster Laboratories NYSDOH Certificate of Approval for Laboratory Service is provided in **Appendix E-4**.

The USEPA Method 1633 PFAS Target Analyte List is provided on **Table 3-1**.

3.5 Analytical Methods / Quality Assurance Summary

In accordance with DER-10 - 2.4 (a)(2)(V) an “Analytical Methods/Quality Assurance Summary Table” has been prepared and is provided as **Table 3-2 for groundwater and Table 3-3 for soil samples**. **Table 3-4** and **Table 3-5** supplement the information provided in **Table 3-2** and **Table 3-3** and includes the proposed Field Sampling Plan / Quality Assurance Summary and anticipated sample collection order for groundwater and soils, respectively.

Table 3-1: USEPA Method 1633 PFAS Target Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Table 3-2: Analytical Methods / Quality Assurance Summary Table (Groundwater)

Sample ID	Matrix	Analytical Parameters	Sample Container & Volume	Sample Preservation	Holding Time	Analytical Method
Groundwater Samples*						
MW-117S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
MW-272S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
MW-266S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
MW-267S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
MW-505S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
MW-313S	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
*MW-260S	MW-260S is currently located beneath a debris pile and is therefore inaccessible. Further, the condition of the well is unknown. Once the debris piles are removed, the condition of the well will be assessed for future monitoring					

Table 3-2: Analytical Methods / Quality Assurance Summary Table (Groundwater) (continued)

Sample ID	Matrix	Analytical Parameters	Sample Container & Volume	Sample Preservation	Holding Time	Analytical Method
MS/MSD	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon® liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
Field Blank	QA/QC	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon® liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
Field Duplicate	Groundwater	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon® liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
Trip Blank	QA/QC	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon® liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM
Equipment Rinse Blank (water level indicator)	QA/QC	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon® liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
		1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C	7 days extract 40 days analyze	EPA 8270E SIM

Table 3-3: Analytical Methods / Quality Assurance Summary Table (Soil)

Sample ID	Matrix	Sample Depth	Analytical Parameters	Sample Container & Volume	Sample Preservation	Holding Time	Analytical Method
Soil Samples							
SS-LOC-A MW-313S vicinity*	Soil	0-2 inches	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-A MW-313S vicinity*	Soil	0-1 foot	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-A MW-313S vicinity*	Soil	0-2 feet	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-A MW-313S vicinity*	Soil	Soil/ GW Interface**	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-B MW-313S vicinity*	Soil	0-2 inches	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-B MW-313S vicinity*	Soil	0-1 foot	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
SS-LOC-B MW-313S vicinity*	Soil	0-2 feet	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
*	locations will be field selected with the intention of locating in a proximate position to MW-313S while avoiding underground utilities and any debris						
**	One location will be selected for an additional sample at the soil / groundwater interface. Soil sampling will occur using hand-auger methodology and penetration of the auger will occur to the soil / groundwater interface or to the limit of refusal.						

Table 3-3: Analytical Methods / Quality Assurance Summary Table (Soil) (continued)

Sample ID	Matrix	Sample Location & Depth	Analytical Parameters	Sample Container & Volume	Sample Preservation	Holding Time	Analytical Method
MS/MSD	Soil	SS LOC A MW-313S vicinity 0-2 feet	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C	90 days extract 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
Field Blank	QA/QC (aqueous)	SS LOC A MW-313S vicinity 0-2 feet	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
Trip Blank	QA/QC (aqueous)	Not Applicable	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM
Equipment Rinse Blank (auger)	QA/QC (aqueous)	SS LOC A MW-313S vicinity 0-2 feet	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C	28 days extract, 0 to 6 degrees C 90 days extract, frozen 28 days analyze	EPA 1633
			1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C	14 days extract 40 days analyze	EPA 8270E SIM

Table 3-4: Field Sampling Plan / Quality Assurance Summary Table (Groundwater)

Sample Order	Sample ID	Matrix	Analytical Method	Analytical Parameters	Sample Container & Volume	Sample Preservation
Groundwater Samples*						
Day 1 1	Trip Blank	QA/QC	EPA 1633	PFAS (List of 40)	Laboratory Provided Analyte Free 2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 2	MW-117S	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 3	MW-272S	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 4	MW-266S	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 5	Field Blank (MW-266S)	QA/QC	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 6	MW-267S	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 7	MW-505S	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 8	MW-313S	QA/QC	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 9	Field Duplicate (MW-313S)	QA/QC	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 10	MS/MSD (MW-313S)	QA/QC	EPA 1633	PFAS (List of 40)	4 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 TBD	Equipment Rinse Blank (Water Level Indicator)	QA/QC	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 TBD	MW-260S*	Groundwater	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
*MW-260S	MW-260S is currently located beneath a debris pile and is therefore inaccessible. Further, the condition of the well is unknown. Once the debris piles are removed, the condition of the well will be assessed for future monitoring					

Table 3-4: Field Sampling Plan / Quality Assurance Summary Table (Groundwater) (continued)

Sample Order	Sample ID	Matrix	Analytical Method	Analytical Parameters	Sample Container & Volume	Sample Preservation
Day 2 1	Trip Blank	QA/QC	8270E SIM	1,4-Dioxane	Laboratory Provided Analyte Free 2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 2	MW-117S	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 3	MW-272S	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 4	MW-266S	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 5	Field Blank (MW-266S)	QA/QC	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 6	MW-267S	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 7	MW-505S	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 8	MW-313S	QA/QC	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 9	Field Duplicate (MW-313S)	QA/QC	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 10	MS/MSD (MW-313S)	QA/QC	8270E SIM	1,4-Dioxane	4 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 TBD	Equipment Rinse Blank (Water Level Indicator)	Groundwater	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 2 TBD	MW-260S*	Surface Water	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
*MW-260S	MW-260S is currently located beneath a debris pile and is therefore inaccessible. Further, the condition of the well is unknown. Once the debris piles are removed, the condition of the well will be assessed for future monitoring					

Table 3-5: Field Sampling Plan / Quality Assurance Summary Table (Soils)						
Sample Order	**Sample ID**	**Matrix**	**Analytical Method**	**Analytical Parameters**	**Sample Container & Volume**	**Sample Preservation**
Soil Samples (PFAS)*						
Day 1 1	Trip Blank	QA/QC (aqueous)	EPA 1633	PFAS (List of 40)	Laboratory Provided Analyte Free 2 – 125 ml HDPE cap w/o Teflon®liner	unpreserved 4+/-2 degrees C
Day 1 2	SS-LOC-A MW-313S vicinity* 0-2 inches	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Day 1 3	SS-LOC-A MW-313S vicinity* 0-1 foot	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Day 1 4	Equipment Rinse Blank (auger) SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC (aqueous)	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner (collected using Laboratory Provided Analyte Free water)	unpreserved 4+/-2 degrees C
Day 1 5	SS-LOC-A MW-313S vicinity* 0-2 feet	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Day 1 6	MS/MSD SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC	EPA 1633	PFAS (List of 40)	2 - 4 oz plastic jar (10 -20 grams each)	unpreserved 4+/-2 degrees C
Day 1 7	Field Blank SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC (aqueous)	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner (collected using Laboratory Provided Analyte Free water)	unpreserved 4+/-2 degrees C
Day 1 8	SS-LOC-A MW-313S vicinity Soil / GW Interface**	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Day 1 9	SS-LOC-B MW-313S vicinity* 0-2 inches	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C

Table 3-5: Field Sampling Plan / Quality Assurance Summary Table (Soils) (continued)

Day 1 10	Equipment Rinse Blank (trowel) SS-LOC-B MW-313S vicinity* 0-1 foot	QA/QC aqueous	EPA 1633	PFAS (List of 40)	2 – 125 ml HDPE cap w/o Teflon®liner (collected using Laboratory Provided Analyte Free water)	unpreserved 4+/-2 degrees C
Day 1 11	SS-LOC-B MW-313S vicinity* 0-1 foot	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Day 1 12	SS-LOC-B MW-313S vicinity* 0-2 feet	Soil	EPA 1633	PFAS (List of 40)	4 oz plastic jar (10 -20 grams)	unpreserved 4+/-2 degrees C
Soil Samples (1,4-Dioxane)*						
Day 1 13	Trip Blank	QA/QC (aqueous)	8270E SIM	1,4-Dioxane	Laboratory Provided Analyte Free 2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 1 14	SS-LOC-A MW-313S vicinity* 0-2 inches	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 15	SS-LOC-A MW-313S vicinity* 0-1 foot	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 16	Equipment Rinse Blank (auger) SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC (aqueous)	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 1 17	SS-LOC-A MW-313S vicinity* 0-2 feet	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 18	MS/MSD SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C

Table 3-5: Field Sampling Plan / Quality Assurance Summary Table (Soils) (continued)

Day 1 19	Field Blank SS-LOC-A MW-313S vicinity* 0-2 feet	QA/QC (aqueous)	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 1 20	SS-LOC-A MW-313S vicinity Soil / GW Interface**	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 21	SS-LOC-B MW-313S vicinity* 0-2 inches	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 22	Equipment Rinse Blank (trowel SS-LOC-B MW-313S vicinity* 0-1 foot	QA/QC (aqueous)	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
Day 1 23	SS-LOC-B MW-313S vicinity* 0-1 foot	Soil	8270E SIM	1,4-Dioxane	1 - 4 oz jar Clear Glass	unpreserved 4+/-2 degrees C
Day 1 24	SS-LOC-B MW-313S vicinity* 0-2 feet	Soil	8270E SIM	1,4-Dioxane	2 -250 ml Amber Glass	unpreserved 4+/-2 degrees C
*	locations will be field selected with the intention of locating in a proximate position to MW-313S while avoiding underground utilities and any debris					
**	One location will be selected for an additional sample at the soil / groundwater interface. Soil sampling will occur using hand-auger methodology and penetration of the auger will occur to the soil / groundwater interface or to the limit of refusal.					

3.6 Data Evaluation

The final step will be to analyze and interpret the data collected. Upon receipt of third-party validated laboratory data, validate sample data will be compared to applicable Standards, Criteria and Guidance (SCGs)[33, 34].

---

[33] Soil Cleanup Objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, guidance values presented in the Draft June 2022 DER *Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS Under NYSDEC's Part 375 Remedial Programs* will be used.

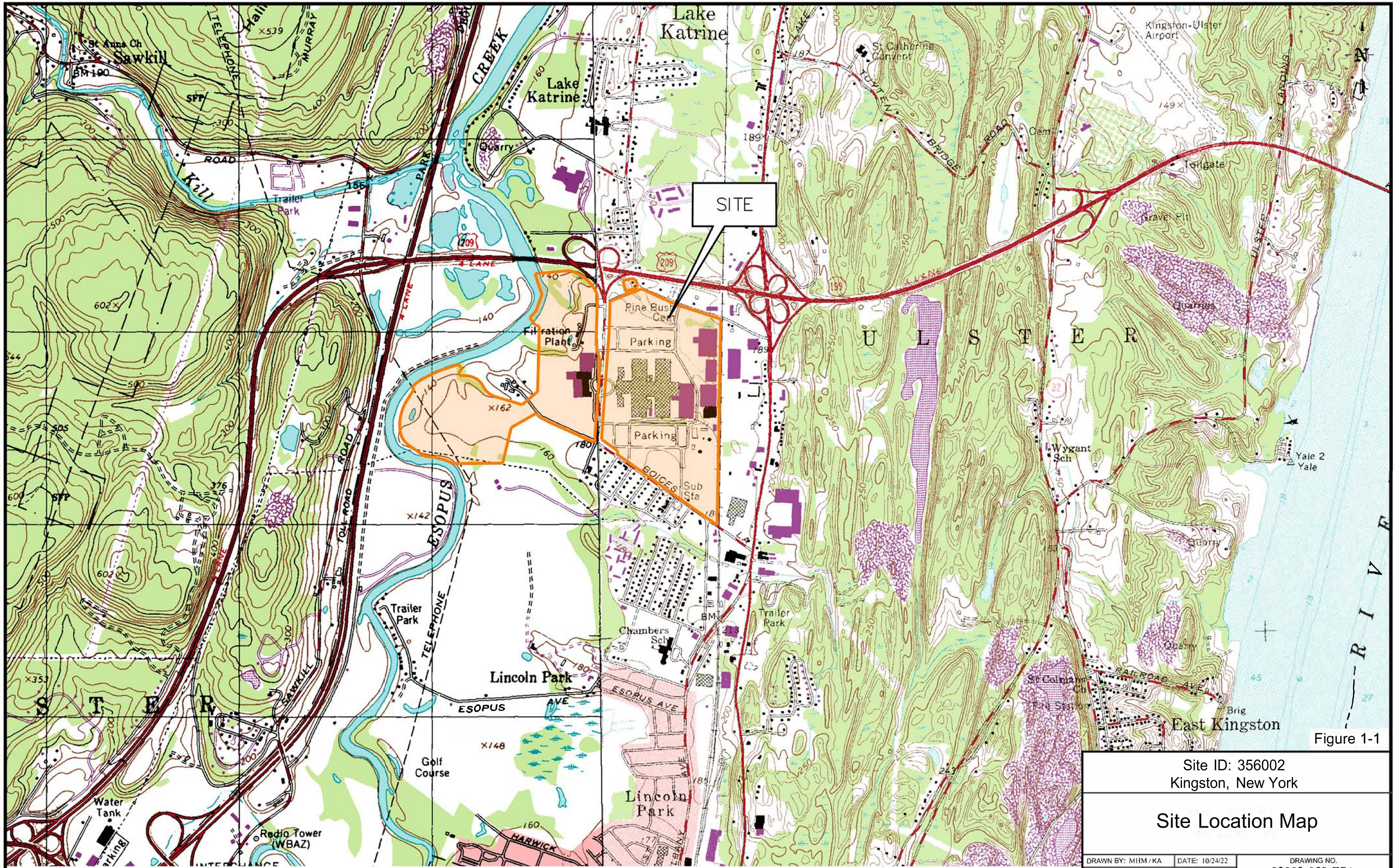
[34] New York State Department of Environmental Conservation, February 2023, *2023 Addendum to June 1998 Division of Water, Technical and Operational Guidance Series, (TOGS) No. 1.1.1.*

4.0 SCHEDULE AND REPORTING

IBM will implement the scope of work outlined in this SC Work Plan following NYSDEC approval of this SC Work Plan. The work will be completed in a timely manner. The duration of the work to collect samples from the selected locations is dependent on weather conditions.

IBM will submit an Emerging Contaminants, EC Sampling Program Report (Report) to NYSDEC within 60 days of receipt of the validated analytical data. The Report will present the findings of the Supplemental Emerging Contaminants EC sampling program for the MW-313S area including a description of implemented field activities and procedures, and the analytical laboratory results.

Based on the findings of this evaluation, together with the comparison of sampling results to the applicable SCGs for PFOA, PFOS and 1,4-Dioxane, additional environmental monitoring may be proposed.



Portions of the Kingston East (1963, photorevised 1980) and Kingston West (1997) 7.5 Minute USGS Quadrangles

Scale
0 750' 1500'

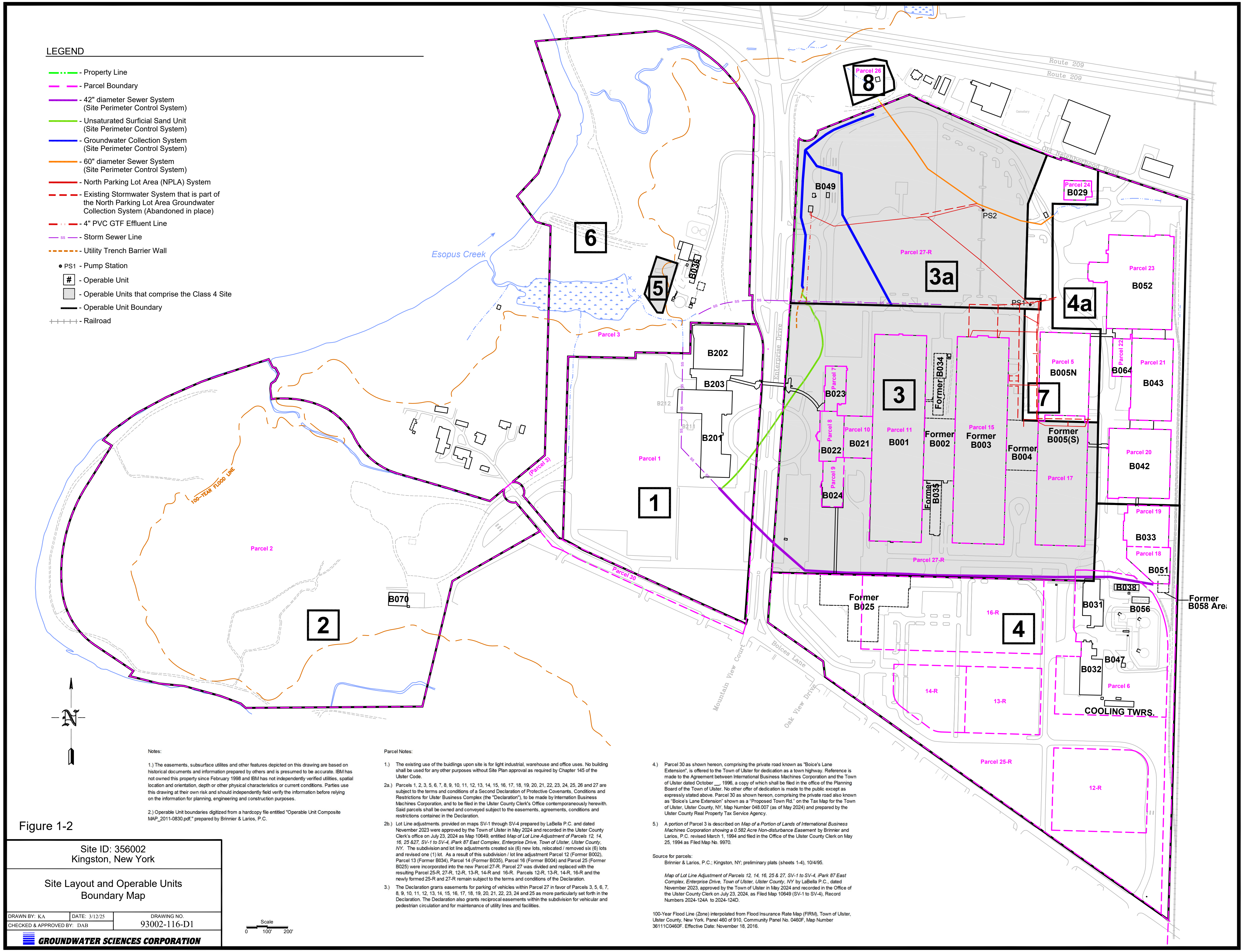
Figure 1-1

Site ID: 356002
Kingston, New York

Site Location Map

DRAWN BY: MHM / KA	DATE: 10/24/22
CHECKED & APPROVED BY: DAB	DRAWING NO. 93002-059-E7A

GROUNDWATER SCIENCES CORPORATION



LEGEND

- Property Line
- Parcel Boundary
- 42" diameter Sewer System (Site Perimeter Control System)
- Unsaturated Surficial Sand Unit (Site Perimeter Control System)
- Groundwater Collection System (Site Perimeter Control System)
- 60" diameter Sewer System (Site Perimeter Control System)
- North Parking Lot Area (NPLA) System
- Existing Stormwater System that is part of the North Parking Lot Area Groundwater Collection System (Abandoned in place)
- 4" PVC GTF Effluent Line
- Storm Sewer Line
- Utility Trench Barrier Wall
- ● PS1 - Pump Station
- # - Operable Unit
- ▨ - Operable Units that comprise the Class 4 Site
- Operable Unit Boundary
- Railroad

Notes:

1.) The easements, subsurface utilites and other features depicted on this drawing are based on historical documents and information prepared by others and is presumed to be accurate. IBM has not owned this property since February 1998 and IBM has not independently verified utilities, spatial location and orientation, depth or other physical characteristics or current conditions. Parties use this drawing at their own risk and should independently field verify the information before relying on the information for planning, engineering and construction purposes.

2.) Operable Unit boundaries digitized from a hardcopy file entitled "Operable Unit Composite MAP_2011-0830.pdf," prepared by Brinnier & Larios, P.C.

Parcel Notes:

1.) The existing use of the buidlings upon site is for light industrial, warehouse and office uses. No building shall be used for any other purposes without Site Plan approval as required by Chapter 145 of the Ulster Code.

2a.) Parcels 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 and 27 are subject to the terms and conditions of a Second Declaration of Protective Covenants, Conditions and Restrictions for Ulster Business Complex (the "Declaration"), to be made by Internation Business Machines Corporation, and to be filed in the Ulster County Clerk's Office contemporaneously herewith. Said parcels shall be owned and conveyed subject to the easements, agreements, conditions and restrictions contained in the Declaration.

2b.) Lot Line adjustments, provided on maps SV-1 through SV-4 prepared by LaBella P.C. and dated November 2023 were approved by the Town of Ulster in May 2024 and recorded in the Ulster County Clerk's office on July 23, 2024 as Map 10649, entitled *Map of Lot Line Adjustment of Parcels 12, 14, 16, 25 &27, SV-1 to SV-4, iPark 87 East Complex, Enterprise Drive, Town of Ulster, Ulster County, NY*. The subdivision and lot line adjustments created six (6) new lots, relocated / removed six (6) lots and revised one (1) lot. As a result of this subdivision / lot line adjustment Parcel 12 (Former B002), Parcel 13 (Former B034), Parcel 14 (Former B035), Parcel 16 (Former B004) and Parcel 25 (Former B025) were incorporated into the new Parcel 27-R. Parcel 27 was divided and replaced with the resulting Parcel 25-R, 27-R, 12-R, 13-R, 14-R and 16-R. Parcels 12-R, 13-R, 14-R, 16-R and the newly formed 25-R and 27-R remain subject to the terms and conditions of the Declaration.

3.) The Declaration grants easements for parking of vehicles within Parcel 27 in favor of Parcels 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 as more particularly set forth in the Declaration. The Declaration also grants reciprocal easements within the subdivision for vehicular and pedestrian circulation and for maintenance of utility lines and facilities.

4.) Parcel 30 as shown hereon, comprising the private road known as "Boice's Lane Extension", is offered to the Town of Ulster for dedication as a town highway. Reference is made to the Agreement between International Business Machines Corporation and the Town of Ulster dated October __, 1996, a copy of which shall be filed in the office of the Planning Board of the Town of Ulster. No other offer of dedication is made to the public except as expressly stated above. Parcel 30 as shown hereon, comprising the private road also known as “Boice’s Lane Extension” shown as a “Proposed Town Rd.” on the Tax Map for the Town of Ulster, Ulster County, NY, Map Number 048.007 (as of May 2024) and prepared by the Ulster County Real Property Tax Service Agency.

5.) A portion of Parcel 3 is described on *Map of a Portion of Lands of International Business Machines Corporation showing a 0.582 Acre Non-disturbance Easement* by Brinnier and Larios, P.C. revised March 1, 1994 and filed in the Office of the Ulster County Clerk on May 25, 1994 as Filed Map No. 9970.

Source for parcels:

Brinnier & Larios, P.C.; Kingston, NY; preliminary plats (sheets 1-4), 10/4/95.

Map of Lot Line Adjustment of Parcels 12, 14, 16, 25 & 27, SV-1 to SV-4, iPark 87 East Complex, Enterprise Drive, Town of Ulster, Ulster County, NY by LaBella P.C., dated November 2023, approved by the Town of Ulster in May 2024 and recorded in the Office of the Ulster County Clerk on July 23, 2024, as Filed Map 10649 (SV-1 to SV-4), Record Numbers 2024-124A to 2024-124D.

100-Year Flood Line (Zone) interpolated from Flood Insurance Rate Map (FIRM), Town of Ulster, Ulster County, New York. Panel 460 of 910, Community Panel No. 0460F, Map Number 36111C0460F. Effective Date: November 18, 2016.

Scale
0 100' 200'

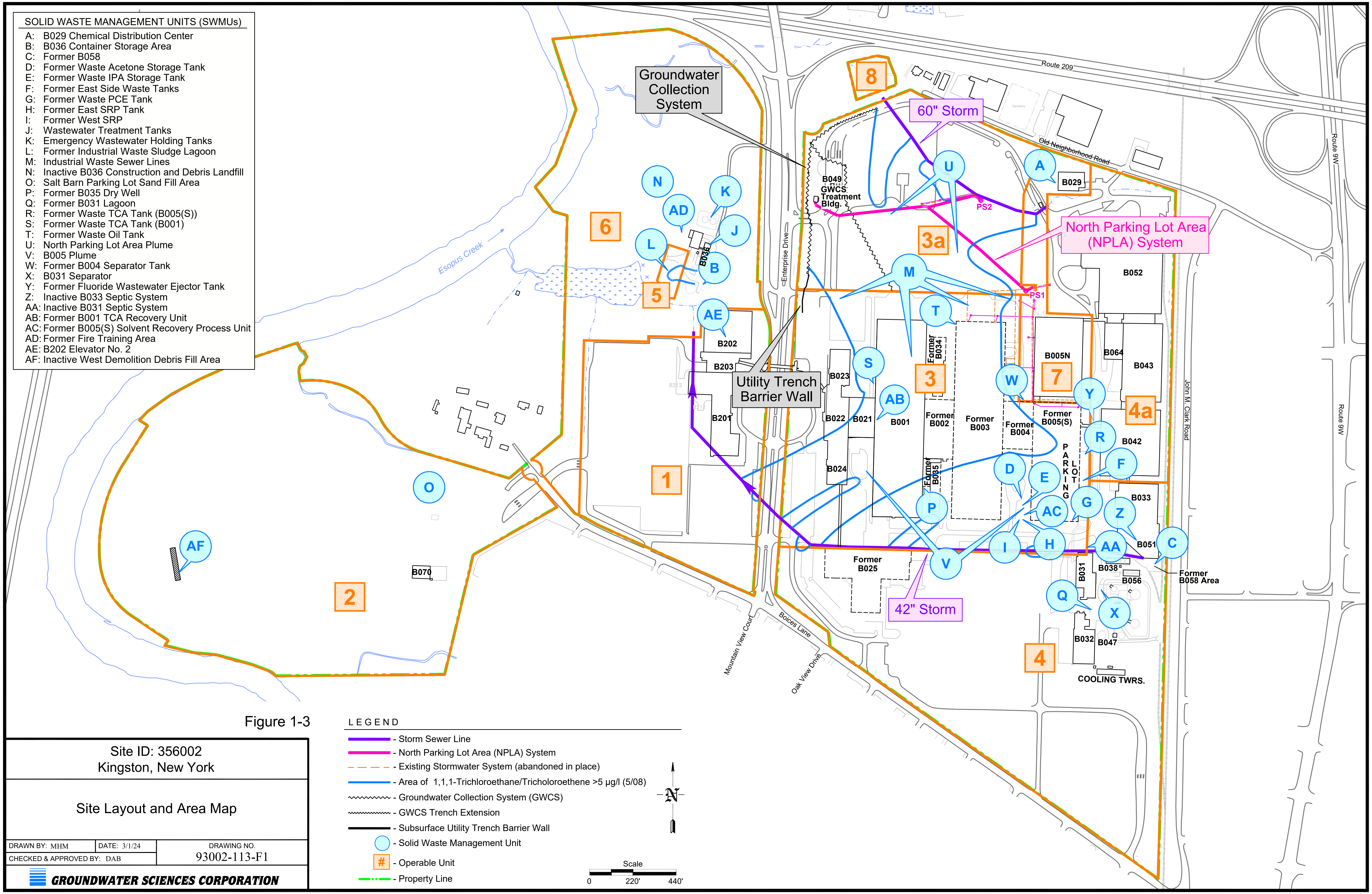
Figure 1-2

Site ID: 356002
Kingston, New York

Site Layout and Operable Units
Boundary Map

DRAWN BY: KA
DATE: 3/12/25
CHECKED & APPROVED BY: DAB
DRAWING NO.
93002-116-D1

GROUNDWATER SCIENCES CORPORATION



SOLID WASTE MANAGEMENT UNITS (SWMUs)

A: B029 Chemical Distribution Center
B: B036 Container Storage Area
C: Former B058
D: Former Waste Acetone Storage Tank
E: Former Waste IPA Storage Tank
F: Former East Side Waste Tanks
G: Former Waste PCE Tank
H: Former East SRP Tank
I: Former West SRP
J: Wastewater Treatment Tanks
K: Emergency Wastewater Holding Tanks
L: Former Industrial Waste Sludge Lagoon
M: Industrial Waste Sewer Lines
N: Inactive B036 Construction and Debris Landfill
O: Salt Barn Parking Lot Sand Fill Area
P: Former B035 Dry Well
Q: Former B031 Lagoon
R: Former Waste TCA Tank (B005(S))
S: Former Waste TCA Tank (B001)
T: Former Waste Oil Tank
U: North Parking Lot Area Plume
V: B005 Plume
W: Former B004 Separator Tank
X: B031 Separator
Y: Former Fluoride Wastewater Ejector Tank
Z: Inactive B033 Septic System
AA: Inactive B031 Septic System
AB: Former B001 TCA Recovery Unit
AC: Former B005(S) Solvent Recovery Process Unit
AD: Former Fire Training Area
AE: B202 Elevator No. 2
AF: Inactive West Demolition Debris Fill Area

Figure 1-3

Site ID: 356002
Kingston, New York

Site Layout and Area Map

DRAWN BY: MHM
DATE: 3/1/24
CHECKED & APPROVED BY: DAB
DRAWING NO. 93002-113-F1

GROUNDWATER SCIENCES CORPORATION

LEGEND

- Storm Sewer Line
- North Parking Lot Area (NPLA) System
- Existing Stormwater System (abandoned in place)
- Area of 1,1,1-Trichloroethane/Tricholoroethene >5 µg/l (5/08)
- Groundwater Collection System (GWCS)
- GWCS Trench Extension
- Subsurface Utility Trench Barrier Wall
- Solid Waste Management Unit
- Operable Unit
- Property Line

N

Scale
0 220' 440'

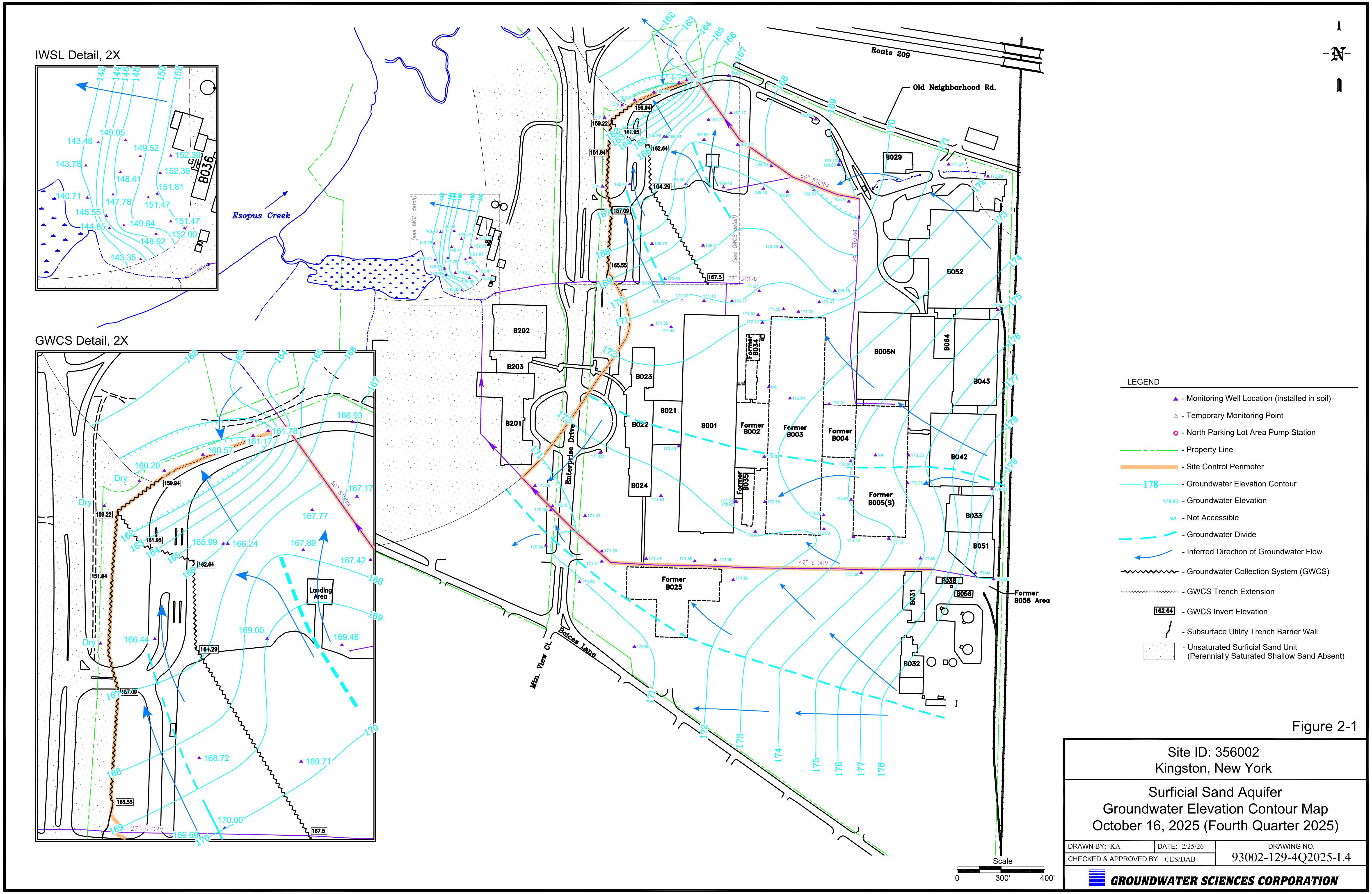


Figure 2-1

Site ID: 356002
Kingston, New York

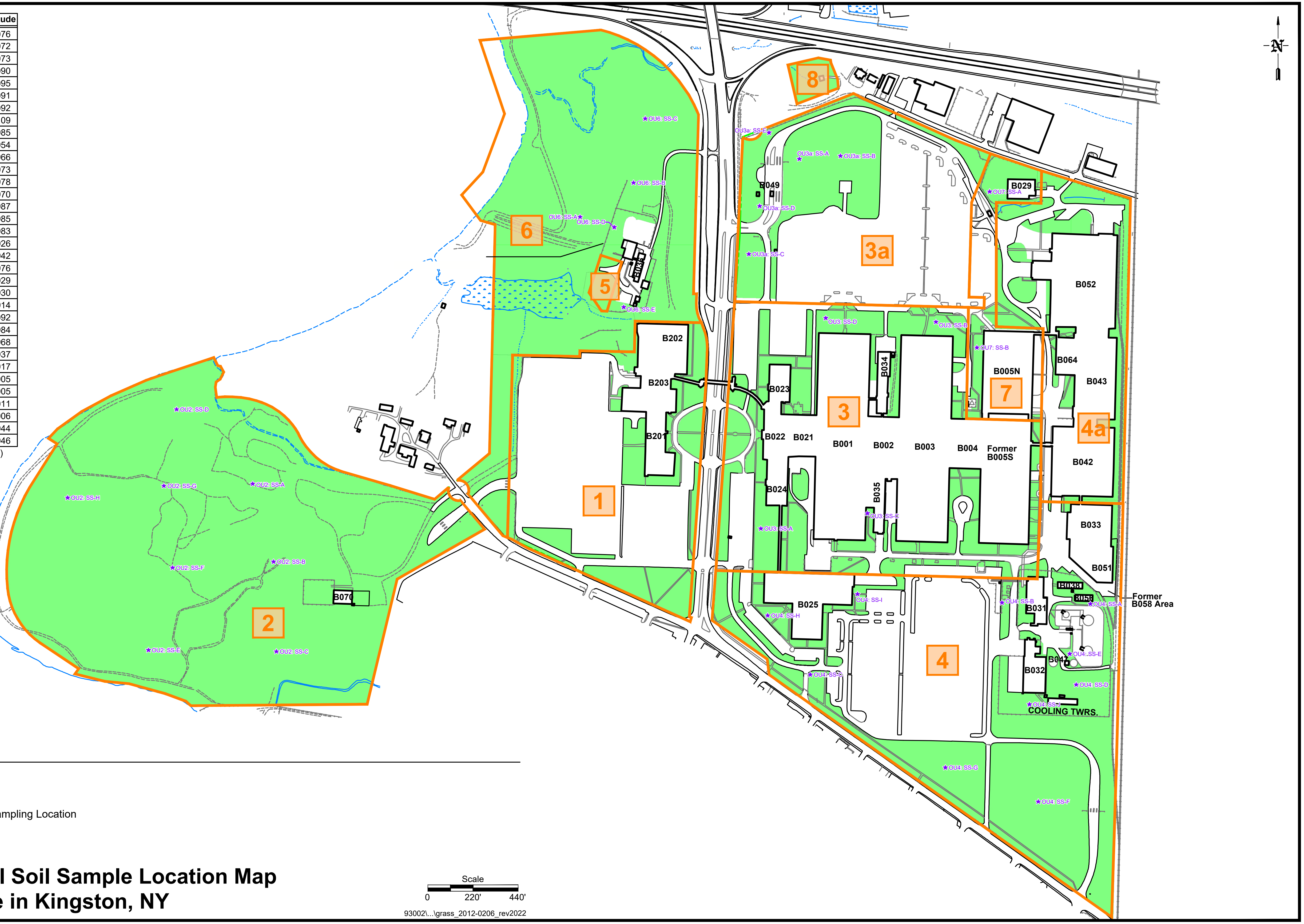
Surficial Sand Aquifer
Groundwater Elevation Contour Map
October 16, 2025 (Fourth Quarter 2025)

DRAWN BY: KA	DATE: 2/25/26	DRAWING NO.
CHECKED & APPROVED BY: CES/DAB		93002-129-4Q2025-L4

GROUNDWATER SCIENCES CORPORATION

Name	Latitude	Longitude
OU2: SS-A	41.9695	-74.0076
OU2: SS-B	41.9685	-74.0072
OU2: SS-C	41.9673	-74.0073
OU2: SS-D	41.9705	-74.0090
OU2: SS-E	41.9673	-74.0095
OU2: SS-F	41.9684	-74.0091
OU2: SS-G	41.9695	-74.0092
OU2: SS-H	41.9694	-74.0109
OU3: SS-A	41.9689	-73.9985
OU3: SS-B	41.9716	-73.9954
OU3: SS-C	41.9691	-73.9966
OU3: SS-D	41.9717	-73.9973
OU3a: SS-A	41.9738	-73.9978
OU3a: SS-B	41.9739	-73.9970
OU3a: SS-C	41.9726	-73.9987
OU3a: SS-D	41.9732	-73.9985
OU3a: SS-E	41.9742	-73.9983
OU4: SS-A	41.9679	-73.9926
OU4: SS-B	41.9679	-73.9942
OU4: SS-C	41.9669	-73.9976
OU4: SS-D	41.9668	-73.9929
OU4: SS-E	41.9672	-73.9930
OU4: SS-F	41.9685	-74.0914
OU4: SS-G	41.9694	-74.0092
OU4: SS-H	41.9677	-73.9984
OU4: SS-I	41.9680	-73.9968
OU4: SS-J	41.9665	-73.9937
OU6: SS-A	41.9731	-74.0017
OU6: SS-B	41.5842	-74.0005
OU6: SS-C	41.9744	-74.0005
OU6: SS-D	41.9729	-74.0011
OU6: SS-E	41.5831	-74.0006
OU7: SS-A	41.9734	-73.9944
OU7: SS-B	41.9713	-73.9946

Geographic Coordinates (NAD83)

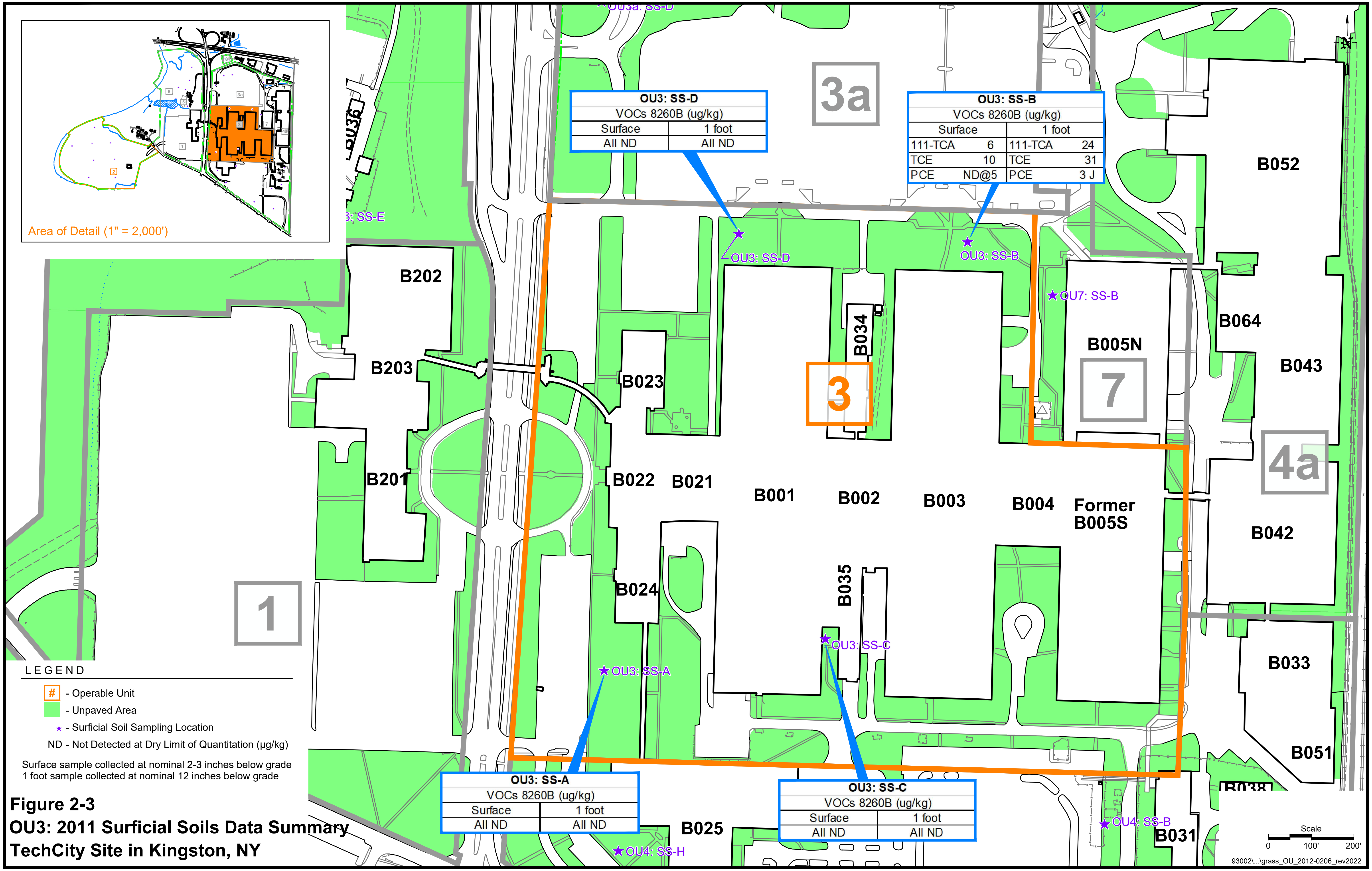


LEGEND

- # - Operable Unit
- 🟩 - Unpaved Area
- ★ - Surficial Soil Sampling Location

Figure 2-2
2011 Surficial Soil Sample Location Map
TechCity Site in Kingston, NY

93002\...\grass_2012-0206_rev2022



OU3: SS-D
VOCs 8260B (ug/kg)

Surface	1 foot
All ND	All ND

OU3: SS-B
VOCs 8260B (ug/kg)

Surface		1 foot	
111-TCA	6	111-TCA	24
TCE	10	TCE	31
PCE	ND@5	PCE	3 J

OU3: SS-A
VOCs 8260B (ug/kg)

Surface	1 foot
All ND	All ND

OU3: SS-C
VOCs 8260B (ug/kg)

Surface	1 foot
All ND	All ND

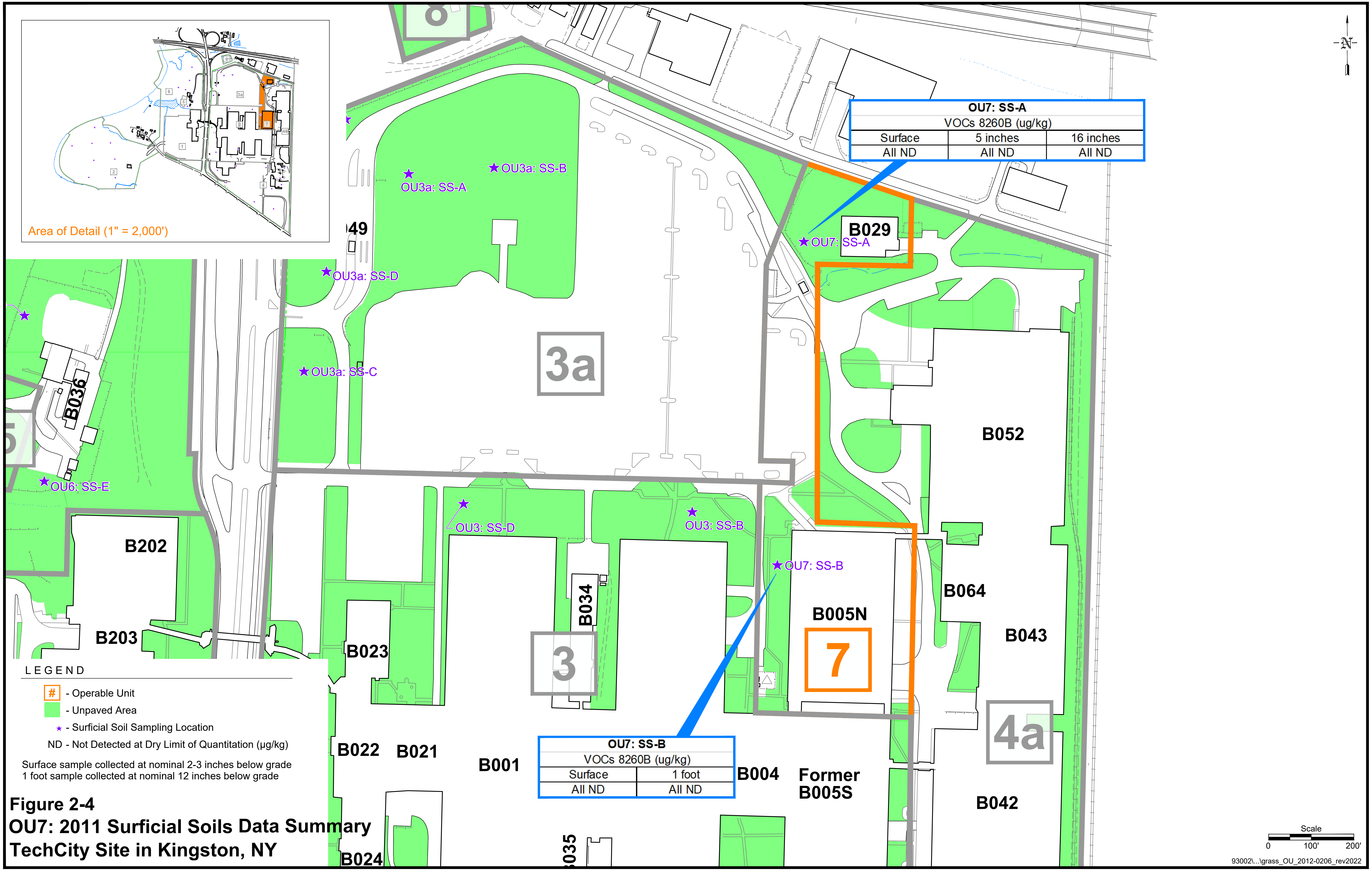
LEGEND

- # - Operable Unit
- 🟩 - Unpaved Area
- ★ - Surficial Soil Sampling Location

ND - Not Detected at Dry Limit of Quantitation (µg/kg)

Surface sample collected at nominal 2-3 inches below grade
1 foot sample collected at nominal 12 inches below grade

Figure 2-3
OU3: 2011 Surficial Soils Data Summary
TechCity Site in Kingston, NY



OU7: SS-A		
VOCs 8260B (ug/kg)		
Surface	5 inches	16 inches
All ND	All ND	All ND

OU7: SS-B	
VOCs 8260B (ug/kg)	
Surface	1 foot
All ND	All ND

LEGEND

- # - Operable Unit
- 🟩 - Unpaved Area
- ★ - Surficial Soil Sampling Location

ND - Not Detected at Dry Limit of Quantitation (µg/kg)

Surface sample collected at nominal 2-3 inches below grade
1 foot sample collected at nominal 12 inches below grade

Figure 2-4
OU7: 2011 Surficial Soils Data Summary
TechCity Site in Kingston, NY

93002\...\grass_OU_2012-0206_rev2022

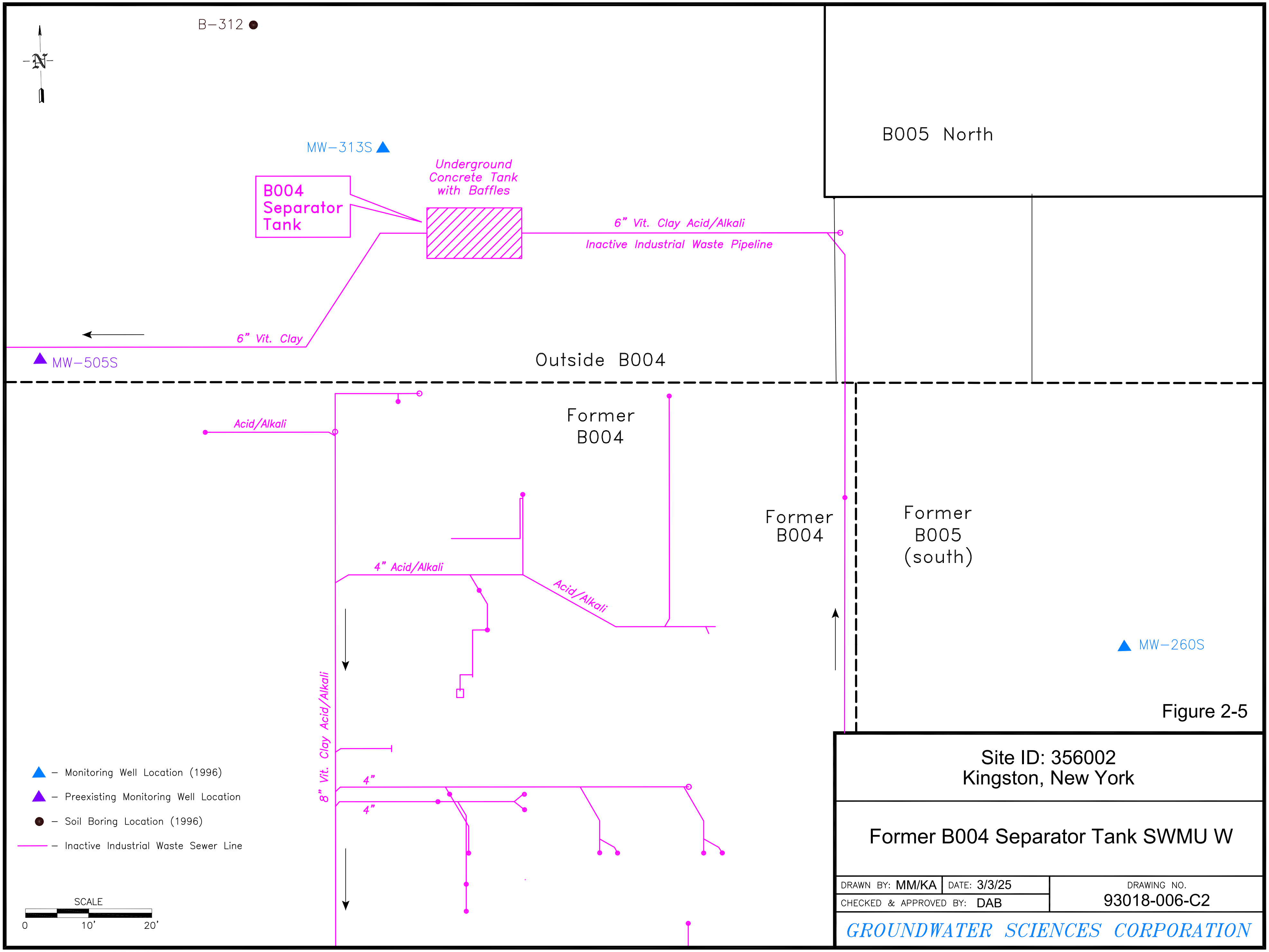


Figure 2-5

Site ID: 356002
Kingston, New York

Former B004 Separator Tank SWMU W

DRAWN BY: MM/KA
DATE: 3/3/25
CHECKED & APPROVED BY: DAB
DRAWING NO.
93018-006-C2

GROUNDWATER SCIENCES CORPORATION

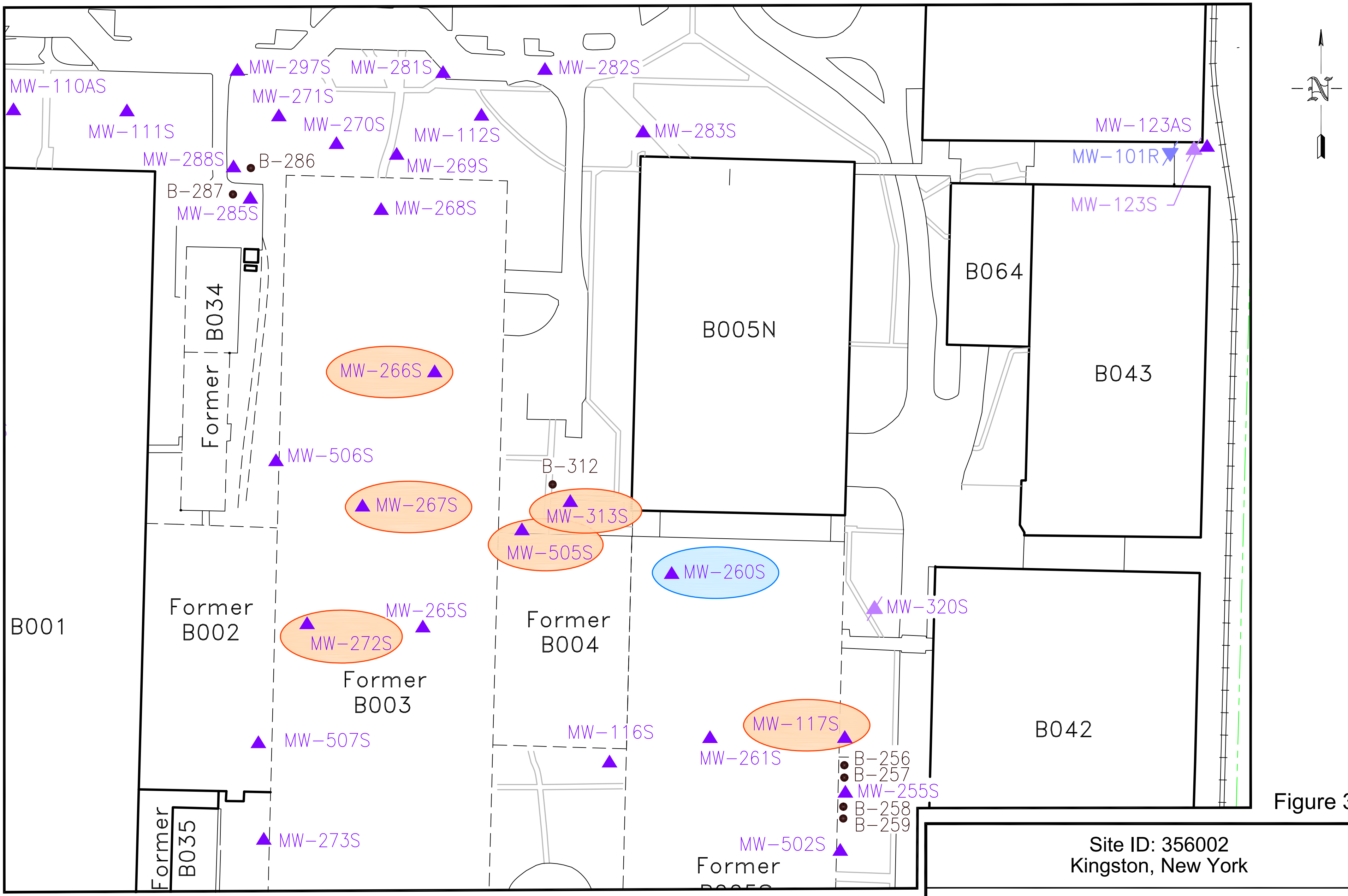


Figure 3-1

- 🟠 – Groundwater Monitoring Location for Emerging Contaminants (PFAS) Sampling
- 🔵 – Inaccessible Groundwater Monitoring Location due to construction debris piles
- ▲ – Monitoring Well Location (installed in soil)
- ▲ – Decommissioned Monitoring Well Location (installed in soil)
- ● – Soil Boring or Test Pit Location

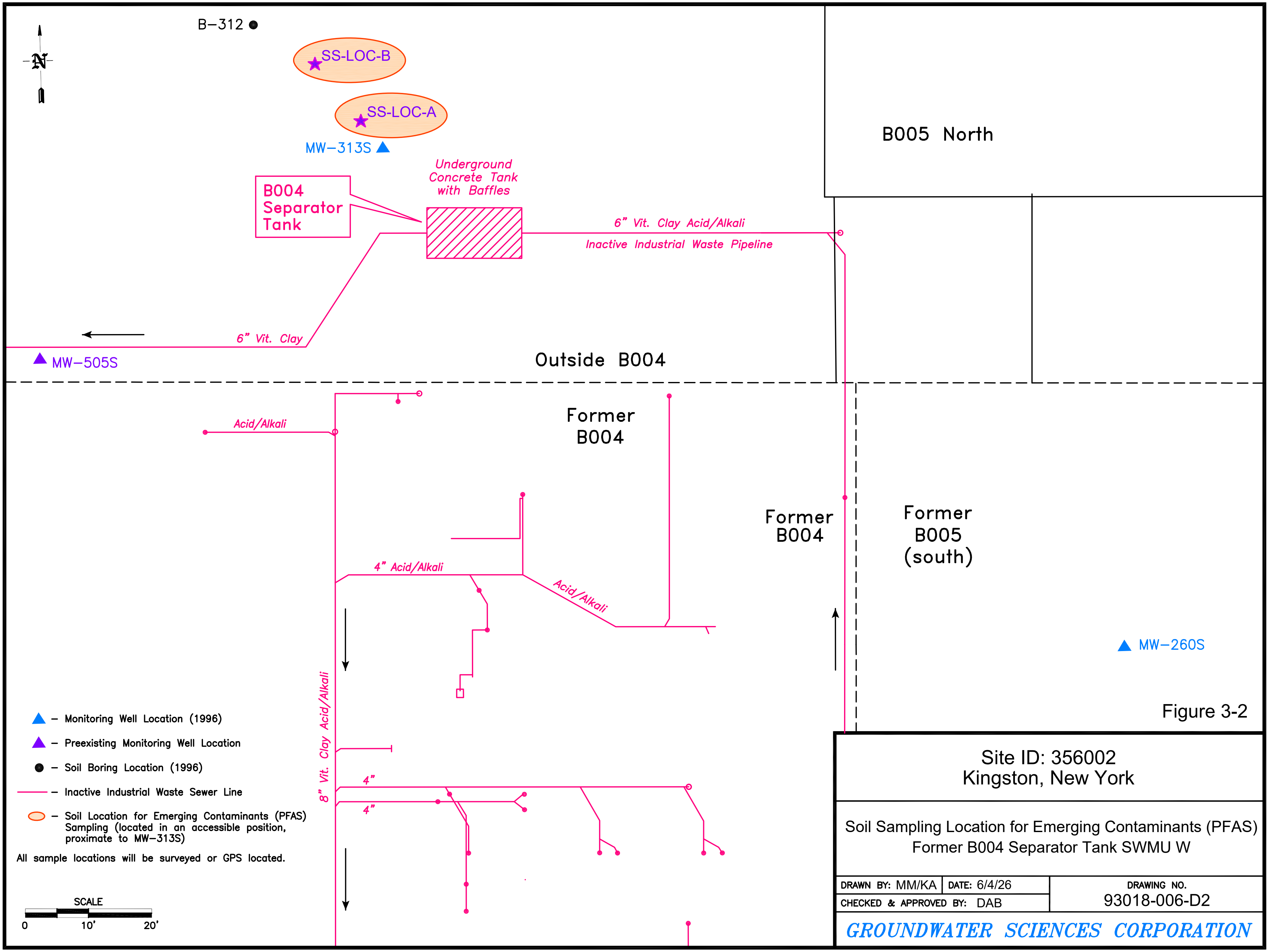
Scale
0 75' 150'

Site ID: 356002
Kingston, New York

MW-313S Area
Groundwater Monitoring Well Locations for Emerging Contaminants Sampling

DRAWN BY: KA	DATE: 3/4/25	DRAWING NO.
CHECKED & APPROVED BY: DAB		93002-A131-A2

GROUNDWATER SCIENCES CORPORATION



▲ – Monitoring Well Location (1996)

▲ – Preexisting Monitoring Well Location

● – Soil Boring Location (1996)

— – Inactive Industrial Waste Sewer Line

⬭ – Soil Location for Emerging Contaminants (PFAS) Sampling (located in an accessible position, proximate to MW–313S)

All sample locations will be surveyed or GPS located.

Figure 3-2

Site ID: 356002
Kingston, New York

Soil Sampling Location for Emerging Contaminants (PFAS)
Former B004 Separator Tank SWMU W

DRAWN BY: MM/KA	DATE: 6/4/26	DRAWING NO.
CHECKED & APPROVED BY: DAB		93018-006-D2

GROUNDWATER SCIENCES CORPORATION

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-204S 10/14/2020 410-17301-7 & 410-17270-6	
	Operable Unit		OU3a	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	ND	5.0
C-6	**PFHxS**	ng/L	ND	5.0
C-7	PFHpS	ng/L	ND	5.0
C-8	**PFOS**	ng/L	9.9	5.0
C-10	PFDS	ng/L	ND	5.0
C-4	PFBA	ng/L	ND	20
C-5	PFPeA	ng/L	ND	5.0
C-6	PFHxA	ng/L	ND	5.0
C-7	**PFHpA**	ng/L	ND	5.0
C-8	**PFOA**	ng/L	ND	5.0
C-9	**PFNA**	ng/L	ND	5.0
C-10	PFDA	ng/L	ND	5.0
C-11	PFUA/PFUdA	ng/L	ND	5.0
C-12	PFDoA	ng/L	ND	5.0
C-13	PFTriA/PFTrDA	ng/L	ND	5.0
C-14	PFTA/PFTeDA	ng/L	ND	5.0
C-8	6:2 FTS	ng/L	ND	20
C-10	8:2 FTS	ng/L	ND	10
C-8	FOSA	ng/L	ND	5.0
C-8	N-MeFOSAA	ng/L	ND	6.0
C-8	N-EtFOSAA	ng/L	ND	5.0
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		GWCS Influent 10/16/2020 410-17605-4 & 410-17604-4		GWCS Influent Duplicate 10/16/2020 410-17605-5 & 410-17604-5	
			GTF		GTF	
	Abbreviation	units	Result	MDL	Result	MDL
C-4	**PFBS**	ng/L	2.2	0.40	2.3	0.40
C-6	**PFHxS**	ng/L	10	0.40	11	0.40
C-7	PFHpS	ng/L	1.7	0.40	1.8	0.40
C-8	**PFOS**	ng/L	47	0.40	55	0.40
C-10	PFDS	ng/L	ND	0.40	ND	0.40
C-4	PFBA	ng/L	4.9	1.6	4.6	1.6
C-5	PFPeA	ng/L	6.5	0.40	5.5	0.40
C-6	PFHxA	ng/L	7.6	0.40	6.2	0.40
C-7	**PFHpA**	ng/L	2.3	0.40	2.2	0.40
C-8	**PFOA**	ng/L	7	0.40	6.4	0.40
C-9	**PFNA**	ng/L	0.58	0.40	0.58	0.40
C-10	PFDA	ng/L	ND	0.40	ND	0.40
C-11	PFUA/PFUdA	ng/L	ND	0.40	ND	0.40
C-12	PFDoA	ng/L	ND	0.40	ND	0.40
C-13	PFTriA/PFTrDA	ng/L	ND	0.40	ND	0.40
C-14	PFTA/PFTeDA	ng/L	ND	0.40	ND	0.40
C-8	6:2 FTS	ng/L	ND	1.6	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.81	ND	0.81
C-8	FOSA	ng/L	ND	0.40	ND	0.40
C-8	N-MeFOSAA	ng/L	ND	0.48	ND	0.48
C-8	N-EtFOSAA	ng/L	ND	0.40	ND	0.40
	14-Dioxane	ug/L	1	0.10	7.1	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		NPLA Influent 10/16/2020 410-17605-2 & 410-17604-2	
			GTF	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	4.7	0.40
C-6	**PFHxS**	ng/L	17	0.40
C-7	PFHpS	ng/L	7.2	0.40
C-8	**PFOS**	ng/L	470	4.0
C-10	PFDS	ng/L	ND	0.40
C-4	PFBA	ng/L	8.5	1.6
C-5	PFPeA	ng/L	7.9	0.40
C-6	PFHxA	ng/L	9.3	0.40
C-7	**PFHpA**	ng/L	6.2	0.40
C-8	**PFOA**	ng/L	19	0.40
C-9	**PFNA**	ng/L	1.3	0.40
C-10	PFDA	ng/L	0.53	0.40
C-11	PFUA/PFUdA	ng/L	ND	0.40
C-12	PFDoA	ng/L	ND	0.40
C-13	PFTriA/PFTrDA	ng/L	ND	0.40
C-14	PFTA/PFTeDA	ng/L	ND	0.40
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.80
C-8	FOSA	ng/L	ND	0.40
C-8	N-MeFOSAA	ng/L	ND	0.48
C-8	N-EtFOSAA	ng/L	ND	0.40
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		Municipal Water 10/16/2020 410-17605-6 & 410-17604-6	
			QAQC	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	ND	0.41
C-6	**PFHxS**	ng/L	ND	0.41
C-7	PFHpS	ng/L	ND	0.41
C-8	**PFOS**	ng/L	0.97	0.41
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	ND	1.6
C-5	PFPeA	ng/L	ND	0.41
C-6	PFHxA	ng/L	ND	0.41
C-7	**PFHpA**	ng/L	ND	0.41
C-8	**PFOA**	ng/L	ND	0.41
C-9	**PFNA**	ng/L	ND	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.82
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample ID		MW-275S 10/14/2020 410-17270-5	
	Operable Unit		OU3	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L		
C-6	**PFHxS**	ng/L		
C-7	PFHpS	ng/L		
C-8	**PFOS**	ng/L		
C-10	PFDS	ng/L		
C-4	PFBA	ng/L		
C-5	PFPeA	ng/L		
C-6	PFHxA	ng/L		
C-7	**PFHpA**	ng/L		
C-8	**PFOA**	ng/L		
C-9	**PFNA**	ng/L		
C-10	PFDA	ng/L		
C-11	PFUA/PFUdA	ng/L		
C-12	PFDoA	ng/L		
C-13	PFTriA/PFTrDA	ng/L		
C-14	PFTA/PFTeDA	ng/L		
C-8	6:2 FTS	ng/L		
C-10	8:2 FTS	ng/L		
C-8	FOSA	ng/L		
C-8	N-MeFOSAA	ng/L		
C-8	N-EtFOSAA	ng/L		
	14-Dioxane	ug/L	1	0.10

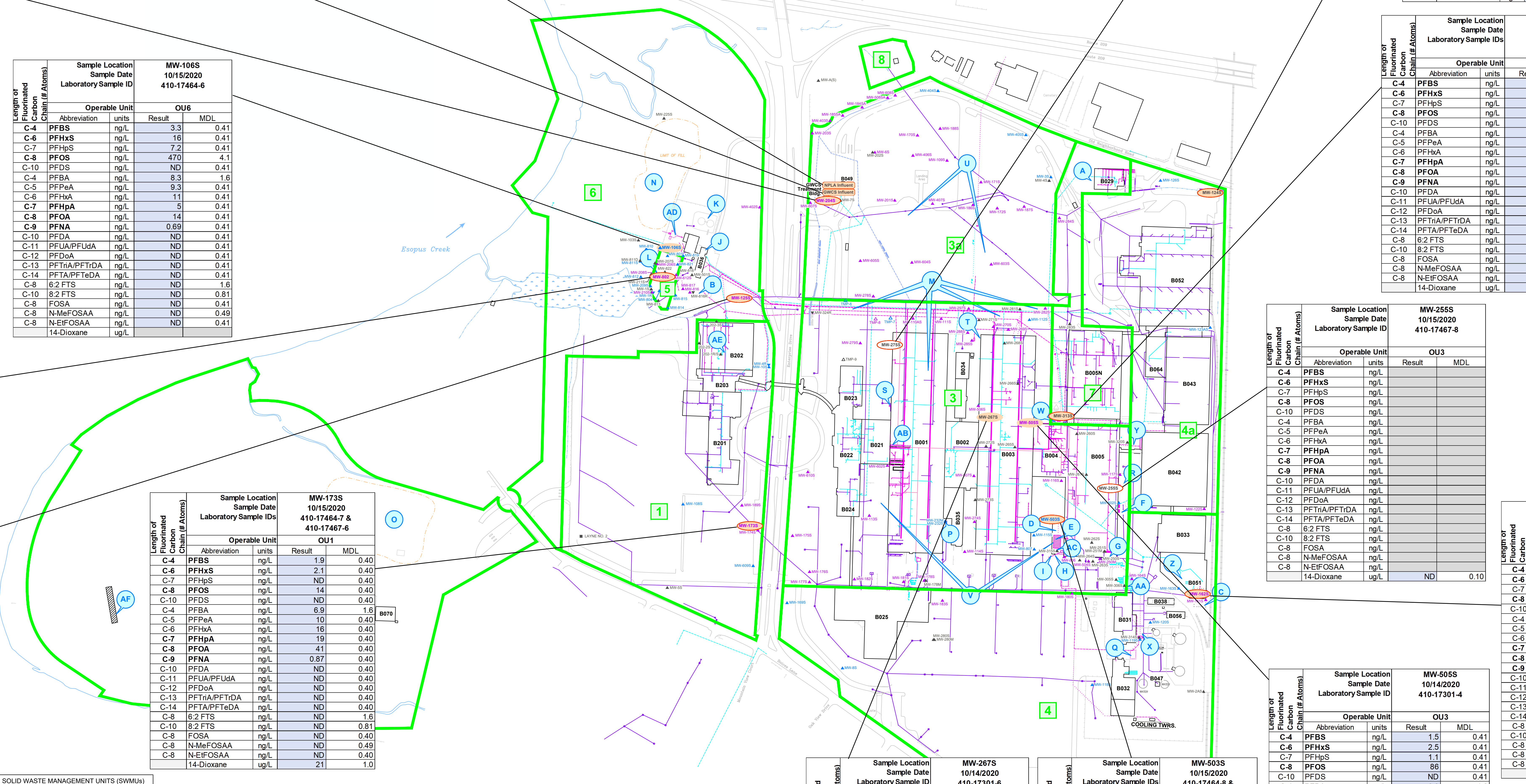
Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-124S 10/14/2020 410-17301-3 & 410-17270-3	
	Operable Unit		OU4a	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	0.46	0.41
C-6	**PFHxS**	ng/L	2.3	0.41
C-7	PFHpS	ng/L	ND	0.41
C-8	**PFOS**	ng/L	1.1	0.41
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	2.6	1.6
C-5	PFPeA	ng/L	1.5	0.41
C-6	PFHxA	ng/L	1.3	0.41
C-7	**PFHpA**	ng/L	ND	0.41
C-8	**PFOA**	ng/L	0.52	0.41
C-9	**PFNA**	ng/L	ND	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.82
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample ID		MW-106S 10/15/2020 410-17464-6	
	Operable Unit		OU6	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	3.3	0.41
C-6	**PFHxS**	ng/L	16	0.41
C-7	PFHpS	ng/L	7.2	0.41
C-8	**PFOS**	ng/L	470	4.1
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	8.3	1.6
C-5	PFPeA	ng/L	9.3	0.41
C-6	PFHxA	ng/L	11	0.41
C-7	**PFHpA**	ng/L	5	0.41
C-8	**PFOA**	ng/L	14	0.41
C-9	**PFNA**	ng/L	0.69	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.81
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L		

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-313S 10/14/2020 410-17301-5 & 410-17270-4	
	Operable Unit		OU7	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	10	0.41
C-6	**PFHxS**	ng/L	37	0.41
C-7	PFHpS	ng/L	20	0.41
C-8	**PFOS**	ng/L	4000	41
C-10	PFDS	ng/L	2	0.41
C-4	PFBA	ng/L	18	1.6
C-5	PFPeA	ng/L	19	0.41
C-6	PFHxA	ng/L	30	0.41
C-7	**PFHpA**	ng/L	20	0.41
C-8	**PFOA**	ng/L	51	0.41
C-9	**PFNA**	ng/L	1.7	0.41
C-10	PFDA	ng/L	0.49	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.82
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-802 10/15/2020 410-17464-5 & 410-17467-5	
	Operable Unit		OU5	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	4	0.41
C-6	**PFHxS**	ng/L	18	0.41
C-7	PFHpS	ng/L	8.4	0.41
C-8	**PFOS**	ng/L	580	4.1
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	9.8	1.7
C-5	PFPeA	ng/L	12	0.41
C-6	PFHxA	ng/L	13	0.41
C-7	**PFHpA**	ng/L	6.8	0.41
C-8	**PFOA**	ng/L	19	0.41
C-9	**PFNA**	ng/L	1.8	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.7
C-10	8:2 FTS	ng/L	ND	0.83
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.50
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L	4.3	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample ID		MW-255S 10/15/2020 410-17467-8	
	Operable Unit		OU3	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L		
C-6	**PFHxS**	ng/L		
C-7	PFHpS	ng/L		
C-8	**PFOS**	ng/L		
C-10	PFDS	ng/L		
C-4	PFBA	ng/L		
C-5	PFPeA	ng/L		
C-6	PFHxA	ng/L		
C-7	**PFHpA**	ng/L		
C-8	**PFOA**	ng/L		
C-9	**PFNA**	ng/L		
C-10	PFDA	ng/L		
C-11	PFUA/PFUdA	ng/L		
C-12	PFDoA	ng/L		
C-13	PFTriA/PFTrDA	ng/L		
C-14	PFTA/PFTeDA	ng/L		
C-8	6:2 FTS	ng/L		
C-10	8:2 FTS	ng/L		
C-8	FOSA	ng/L		
C-8	N-MeFOSAA	ng/L		
C-8	N-EtFOSAA	ng/L		
	14-Dioxane	ug/L	ND	0.10



Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-173S 10/15/2020 410-17464-7 & 410-17467-6	
	Operable Unit		OU1	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	1.9	0.40
C-6	**PFHxS**	ng/L	2.1	0.40
C-7	PFHpS	ng/L	ND	0.40
C-8	**PFOS**	ng/L	14	0.40
C-10	PFDS	ng/L	ND	0.40
C-4	PFBA	ng/L	6.9	1.6
C-5	PFPeA	ng/L	10	0.40
C-6	PFHxA	ng/L	16	0.40
C-7	**PFHpA**	ng/L	19	0.40
C-8	**PFOA**	ng/L	41	0.40
C-9	**PFNA**	ng/L	0.87	0.40
C-10	PFDA	ng/L	ND	0.40
C-11	PFUA/PFUdA	ng/L	ND	0.40
C-12	PFDoA	ng/L	ND	0.40
C-13	PFTriA/PFTrDA	ng/L	ND	0.40
C-14	PFTA/PFTeDA	ng/L	ND	0.40
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.81
C-8	FOSA	ng/L	ND	0.40
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.40
	14-Dioxane	ug/L	21	1.0

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-125S 10/15/2020 410-17464-3 & 410-17467-3	
	Operable Unit		OU6	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	ND	4.9
C-6	**PFHxS**	ng/L	ND	4.9
C-7	PFHpS	ng/L	ND	4.9
C-8	**PFOS**	ng/L	ND	4.9
C-10	PFDS	ng/L	ND	4.9
C-4	PFBA	ng/L	ND	20
C-5	PFPeA	ng/L	ND	4.9
C-6	PFHxA	ng/L	ND	4.9
C-7	**PFHpA**	ng/L	ND	4.9
C-8	**PFOA**	ng/L	ND	4.9
C-9	**PFNA**	ng/L	ND	4.9
C-10	PFDA	ng/L	ND	4.9
C-11	PFUA/PFUdA	ng/L	ND	4.9
C-12	PFDoA	ng/L	ND	4.9
C-13	PFTriA/PFTrDA	ng/L	ND	4.9
C-14	PFTA/PFTeDA	ng/L	ND	4.9
C-8	6:2 FTS	ng/L	ND	20
C-10	8:2 FTS	ng/L	ND	9.9
C-8	FOSA	ng/L	ND	4.9
C-8	N-MeFOSAA	ng/L	ND	5.9
C-8	N-EtFOSAA	ng/L	ND	4.9
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-162S 10/16/2020 410-17605-7 & 410-17604-7	
	Operable Unit		OU4	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	1.9	0.41
C-6	**PFHxS**	ng/L	1	0.41
C-7	PFHpS	ng/L	ND	0.41
C-8	**PFOS**	ng/L	8.6	0.41
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	3.8	1.6
C-5	PFPeA	ng/L	7.8	0.41
C-6	PFHxA	ng/L	6.6	0.41
C-7	**PFHpA**	ng/L	2.8	0.41
C-8	**PFOA**	ng/L	7.8	0.41
C-9	**PFNA**	ng/L	2.3	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.82
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L	ND	0.10

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample ID		MW-505S 10/14/2020 410-17301-4	
	Operable Unit		OU3	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	1.5	0.41
C-6	**PFHxS**	ng/L	2.5	0.41
C-7	PFHpS	ng/L	1.1	0.41
C-8	**PFOS**	ng/L	86	0.41
C-10	PFDS	ng/L	ND	0.41
C-4	PFBA	ng/L	6.2	1.6
C-5	PFPeA	ng/L	2.1	0.41
C-6	PFHxA	ng/L	2.8	0.41
C-7	**PFHpA**	ng/L	3.1	0.41
C-8	**PFOA**	ng/L	16	0.41
C-9	**PFNA**	ng/L	1.7	0.41
C-10	PFDA	ng/L	ND	0.41
C-11	PFUA/PFUdA	ng/L	ND	0.41
C-12	PFDoA	ng/L	ND	0.41
C-13	PFTriA/PFTrDA	ng/L	ND	0.41
C-14	PFTA/PFTeDA	ng/L	ND	0.41
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.81
C-8	FOSA	ng/L	ND	0.41
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.41
	14-Dioxane	ug/L		

SOLID WASTE MANAGEMENT UNITS (SWMUs)

A: B029 Chemical Distribution Center
B: B036 Container Storage Area
C: Former B058
D: Former Waste Acetone Storage Tank
E: Former Waste IPA Storage Tank
F: Former East Side Waste Tanks
G: Former Waste PCE Tank
H: Former East SRP Tank
I: Former West SRP
J: Wastewater Treatment Tanks
K: Emergency Wastewater Holding Tanks
L: Former Industrial Waste Sludge Lagoon
M: Industrial Waste Sewer Lines
N: Inactive B036 Construction and Debris Landfill
O: Salt Barn Parking Lot Sand Fill Area
P: Former B035 Dry Well
Q: Former B031 Lagoon
R: Former Waste TCA Tank (B005(S))
S: Former Waste TCA Tank (B001)
T: Former Waste Oil Tank
U: North Parking Lot Area Plume
V: B005 Plume
W: Former B004 Separator Tank
X: B031 Separator
Y: Former Fluoride Wastewater Ejector Tank
Z: Inactive B033 Septic System
AA: Inactive B031 Septic System
AB: Former B001 TCA Recovery Unit
AC: Former B005(S) Solvent Recovery Process Unit
AD: Former Fire Training Area
AE: B202 Elevator No. 2
AF: Inactive West Demolition Debris Fill Area

	CAS	Length of Fluorinated Carbon Chain (# Atoms)	Parameter Name	ParamCode
Perfluoroalkyl sulfonates	**375-73-5**	**C-4**	**Perfluorobutanesulfonic acid**	**PFBS**
	355-46-4	**C-6**	**Perfluorohexanesulfonic acid**	**PFHxS**
	375-92-8	C-7	Perfluoroheptanesulfonic acid	PFHpS
	1763-23-1	**C-8**	**Perfluorooctanesulfonic acid**	**PFOS**
	335-77-3	C-10	Perfluorodecanesulfonic acid	PFDS
Perfluoroalkyl carboxylates	375-22-4	C-4	Perfluorobutanoic acid	PFBA
	2706-90-3	C-5	Perfluoropentanoic acid	PFPeA
	307-24-4	C-6	Perfluorohexanoic acid	PFHxA
	375-85-9	**C-7**	**Perfluoroheptanoic acid**	**PFHpA**
	335-67-1	**C-8**	**Perfluorooctanoic acid**	**PFOA**
	375-95-1	**C-9**	**Perfluorononanoic acid**	**PFNA**
	335-76-2	C-10	Perfluorodecanoic acid	PFDA
	2058-94-8	C-11	Perfluoroundecanoic acid	PFUA/PFUdA
	307-55-1	C-12	Perfluorododecanoic acid	PFDoA
	72629-94-8	C-13	Perfluorotridecanoic acid	PFTriA/PFTrDA
	376-06-7	C-14	Perfluorotetradecanoic acid	PFTA/PFTeDA
Fluorinated Telomer Sulfonates	27619-97-2	C-8	6:2 Fluorotelomer sulfonic acid	6:2 FTS
	39108-34-4	C-10	8:2 Fluorotelomer sulfonic acid	8:2 FTS
Perfluorooctanesulfonamides	754-91-6	C-8	Perfluorooctanesulfonamide	FOSA
Perfluorooctane-sulfonamidoacetic acids	2355-31-9	C-8	NMeFOSAA	N-MeFOSAA
	2991-50-6	C-8	NEtFOSAA	N-EtFOSAA
SVOC	123-91-1		1,4-Dioxane	14-Dioxane

LEGEND

●	- PFAS Sampling Location
●	- PFAS and 1,4-Dioxane Sampling Location
○	- 1,4-Dioxane Sampling Location
▲	- GMP Water Quality Monitoring Location
▲	- GMP Hydraulic Effectiveness Monitoring Location (only)
▲	- Other Monitoring Location (not part of site GMP)
───	- Groundwater Collection System (GWCS)
//	- Subsurface Utility Trench Barrier Wall
┼┼┼┼	- Railroad
-------	- Active or Inactive Subsurface Industrial Waste Lines
───	- Overhead Active Industrial Waste Sewer Lines (approx.)
-------	- Sanitary Sewer Lines
───	- Storm Sewer Lines
○	- Solid Waste Management Unit
#	- Operable Unit

Note: Utilities are represented as solid lines inside buildings, dashed lines outside buildings.

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample ID		MW-267S 10/14/2020 410-17301-6	
	Operable Unit		OU3	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	0.97	0.40
C-6	**PFHxS**	ng/L	4	0.40
C-7	PFHpS	ng/L	2	0.40
C-8	**PFOS**	ng/L	83	0.40
C-10	PFDS	ng/L	ND	0.40
C-4	PFBA	ng/L	3.9	1.6
C-5	PFPeA	ng/L	1.9	0.40
C-6	PFHxA	ng/L	2.3	0.40
C-7	**PFHpA**	ng/L	2.8	0.40
C-8	**PFOA**	ng/L	17	0.40
C-9	**PFNA**	ng/L	0.59	0.40
C-10	PFDA	ng/L	ND	0.40
C-11	PFUA/PFUdA	ng/L	ND	0.40
C-12	PFDoA	ng/L	ND	0.40
C-13	PFTriA/PFTrDA	ng/L	ND	0.40
C-14	PFTA/PFTeDA	ng/L	ND	0.40
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.81
C-8	FOSA	ng/L	ND	0.40
C-8	N-MeFOSAA	ng/L	ND	0.49
C-8	N-EtFOSAA	ng/L	ND	0.40
	14-Dioxane	ug/L		

Length of Fluorinated Carbon Chain (# Atoms)	Sample Location Sample Date Laboratory Sample IDs		MW-503S 10/15/2020 410-17464-8 & 410-17467-7	
	Operable Unit		OU3	
	Abbreviation	units	Result	MDL
C-4	**PFBS**	ng/L	2.6	0.40
C-6	**PFHxS**	ng/L	3.1	0.40
C-7	PFHpS	ng/L	0.46	0.40
C-8	**PFOS**	ng/L	22	0.40
C-10	PFDS	ng/L	ND	0.40
C-4	PFBA	ng/L	4.5	1.6
C-5	PFPeA	ng/L	1.3	0.40
C-6	PFHxA	ng/L	2.7	0.40
C-7	**PFHpA**	ng/L	2.3	0.40
C-8	**PFOA**	ng/L	11	0.40
C-9	**PFNA**	ng/L	0.55	0.40
C-10	PFDA	ng/L	ND	0.40
C-11	PFUA/PFUdA	ng/L	ND	0.40
C-12	PFDoA	ng/L	ND	0.40
C-13	PFTriA/PFTrDA	ng/L	ND	0.40
C-14	PFTA/PFTeDA	ng/L	ND	0.40
C-8	6:2 FTS	ng/L	ND	1.6
C-10	8:2 FTS	ng/L	ND	0.80
C-8	FOSA	ng/L	ND	0.40
C-8	N-MeFOSAA	ng/L	ND	0.48
C-8	N-EtFOSAA	ng/L	ND	0.40
	14-Dioxane	ug/L	ND	0.10

Scale
0 150' 300'

Plate 1

IBM
Kingston, New York

Emerging Contaminants Groundwater Sampling Results
Per- and Polyfluoroalkyl Substances (PFAS)
and 1,4-Dioxane

DRAWN BY: KA	DATE: 11/9/22	DRAWING NO. 93002-130-B1
CHECKED & APPROVED BY: DAB		

GROUNDWATER SCIENCES CORPORATION

APPENDIX A: Limitations

LIMITATIONS

1. In preparing this work plan, GSC has relied on numerous sources of information as specified in the work plan text. The proposed scope of services contained in this work plan are based, in part, on our interpretation of data and information obtained by others as presented in reports and files made available to GSC for review. GSC did not attempt to independently verify the accuracy or completeness of the information reviewed during the preparation of this work plan. As additional data becomes available, it may be necessary to re-evaluate the proposed scope of services in this work plan.

2. The generalized soil and bedrock profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed in part on the data obtained from soil and groundwater samples from subsurface explorations observed and logged by others. The nature and extent of variations between these explorations may not become evident until further investigation or remediation.

3. Water level measurements have been recorded by GSC at times and under conditions stated within the text of this work plan. Note that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors not evident at the time measurements were made.

4. The proposed scope of services contained in this work plan are based, in part, upon various types of chemical data as well as historical and hydrogeologic information developed by previous investigators. While GSC has reviewed that data and information as stated in this plan, any of GSC's proposed scope of services that have relied on that information will be contingent on its validity. Should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by GSC and the proposed scope of services presented herein may be modified accordingly.

5. Sampling and quantitative laboratory testing was performed by others as part of past investigations as noted within the work plan. Where such analyses have been conducted by an outside laboratory, GSC has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.

6. This work plan has been prepared for and is intended for the exclusive use of the IBM Corporation. The contents of this plan should not be relied upon by any other party without the express written consent of IBM and GSC. No other warranty, express or implied, is made.

7. GSC is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or re-use of the subsurface data without the express written authorization of GSC and IBM.

APPENDIX B: Summary of Abbreviations Used in this Report

Summary of Abbreviations Used in this Report

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675,
EC	Emerging Contaminants consisting of Poly and Perfluoroalkyl Substances (PFAS) and 1,4-Dioxane
GMP	Groundwater Monitoring Plan
GSC	Groundwater Sciences Corporation, a Verdantas Company
GSPC	Groundwater Sciences, P.C., a Verdantas Company
GTF	Groundwater Treatment Facility
GWCS	Groundwater Collection System
IBM	International Business Machines Corporation
IWSL	Industrial Waste Sludge Lagoon
IWTP	Industrial Waste Treatment Plant
NPLA	North Parking Lot Area
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
PFAS	Poly and Perfluoroalkyl Substances (PFAS)
PFOA	Perfluorooctanoic acid (PFOA)
PFOS	Perfluorooctanessulfonic acid (PFOS)
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SPDES	State Pollutant Discharge Elimination System
SVOCs	Semi-volatile Organic Compounds
VOCs	Volatile Organic Compounds

APPENDIX C: Standard Operating Protocols

Appendix C-1	SOP-1: General Field Methods for PFAS Sampling
Appendix C-2	SOP-2: Groundwater Monitoring Well Purge Protocols
Appendix C-3	SOP-3: Groundwater Sampling Program Protocols
Appendix C-4	SOP-5: Soil Sampling Protocol for PFAS
Appendix C-5	SOP-6 Quality Assurance Quality Control Protocols
Appendix C-6	SOP-NY: Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC’s Part 373 Remedial Programs, April 2023

Appendix C-1: SOP-1: General Field Methods for PFAS Sampling

1 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be used during implementation of this Per- and Polyfluoroalkyl substance (PFAS) sampling program.

Due to the extremely low method detection limits associated with PFAS analysis (i.e., nanograms per liter [ng/l]) and the many potential sources of trace levels of PFASs, field personnel shall employ the greatest caution by strictly following the protocols described herein.

Frequent replacement of nitrile gloves and decontamination of non-dedicated sampling equipment in accordance with the appropriate procedures will reduce the potential for false detections of PFASs.

This SOP includes the following:

- Considerations regarding food packaging and food consumption during PFAS sampling programs;
- Field gear and clothing restrictions;
- Personal hygiene requirements;
- Sample area access restrictions; and
- Field equipment decontamination.

2 GENERAL FIELD METHODS

The following protocols shall be followed as part of the field routine during PFAS sampling. Many of the items involve preparations and procedures that will be followed prior to mobilization to the Site.

2.1 Food Consumption

Components of some food packages have been treated to resist wetting. Historically, this is achieved through the use of PFAS. Accordingly, field personnel shall avoid the use of paper bags and other paper packaging to transport food to the Site, including pre-wrapped foods and snacks (e.g. chocolate bars, energy bars, granola bars, potato chips, etc.). Field personnel shall not bring any fast food to the Site that uses any form of paper wrapping such as sandwiches or paper drinking cups. If possible, field personnel shall use hard plastic or stainless steel food containers. Field personnel shall not use aluminum foil, wax paper, or coated textiles to transport food to the Site.

The Teflon® coating on some frying pans contains fluorinated compounds and as such represents a potential source of PFAS. Field personnel shall not transport to or consume food at the Site that has been prepared using a Teflon® coated cooking utensil.

Field personnel shall not consume food or beverages in the field vehicle or in the immediate vicinity of the sample location. Prior to consuming food or beverages, field personnel shall remove their nitrile gloves and coveralls and move to a location a minimum distance of 35 feet away from the sample location, preferably in the downwind direction. When finished eating or drinking, field personnel shall wash their hands, put their coveralls back on and put on a new pair of nitrile gloves prior to returning to the work area.

2.2 Field Gear and Clothing Restrictions

Because treatments to provide water resistant, water proof or stain-resistant clothing include the use of PFAS, field personnel shall not wear any water resistant, water proof, stain-resistant treated clothing or Tyvek clothing during the field program. Permissible field clothing for PFAS sampling programs includes clothing made from natural fibers, preferably cotton. Clothing made of synthetic fibers shall be avoided (i.e., reflective vests).

Field clothing shall be laundered with a minimal amount of detergent and no fabric softener or scented products shall be used. Once field clothing has been washed appropriately, field clothing shall be washed a second time on a rinse-only cycle, using only water, prior to drying. Anti-static dryer sheets shall not be used when drying field clothing. Field clothing shall preferably be old cotton clothing that has been laundered many times, as new clothing may contain PFAS related treatments. Clothing containing Gore-Tex™ shall not be worn during the sampling program, as Gore-Tex™ clothing contains a PFAS membrane.

Waterproof field books shall not be used; field notes shall be recorded on loose paper using aluminum clip boards. Plastic clip boards, self-sticking notes, binders or spiral hard cover notebooks shall not be used. Field notes shall be recorded in pen or pencil. Markers shall not be used.

Most safety footwear is constructed of leather and synthetic materials that have been treated to provide some degree of waterproofing and/or increased durability. Therefore, footwear materials represent a potential source of trace PFAS. Field personnel contact with safety footwear including donning footwear or tying laces shall not occur within 35-feet of the sampling area. If footwear must be adjusted, field personnel shall re-locate to an area a minimum of 35-feet from the sampling area, preferably in a downwind direction, and make the necessary adjustments. Nitrile gloves shall be worn when contacting footwear. The nitrile gloves worn while contacting footwear shall be removed and new nitrile gloves shall be put on prior to re-entering the sampling area.

Disposable nitrile gloves shall be worn at all times. A new pair of nitrile gloves shall be donned prior to the following activities at each sample location:

- Contact with laboratory-supplied sample containers or PFAS-free water containers
- Decontamination of sampling equipment
- Insertion of anything into the well (e.g. HDPE tubing, HydraSleeve, bailer, etc.)
- Insertion of silicon tubing into the peristaltic pump
- Completion of monitoring well purging
- Sample collection
- Handling of QA/QC samples including field blanks and equipment blanks
- After the handling of any non-dedicated sampling equipment or contact with non-decontaminated surfaces

Because field vehicle seats may have been treated with PFAS-containing products for stain resistance, the seats of field vehicles shall be covered with a well laundered cotton sheet or blanker for the duration of the field program in order to avoid direct contact between field personnel clothing and vehicle seat fabric. Measures taken to mitigate field personnel contact with field vehicle seat fabric shall not in any way interfere with the functionality or impede the use of vehicle safety belts.

2.3 Personal Hygiene

Field personnel shall not use shampoo, conditioner, body gel, cosmetic cream, or hand cream as part of their personal showering routine on the day of a sampling event, as these products may contain surfactants and represent a potential source of PFAS. Field personnel shall follow their normal hygiene routine the night before a sampling event and then rinse with water only the morning before a sampling event. The use of bar soap is acceptable; however bar soap including moisturizers shall be avoided.

Field personnel shall not use moisturizers, cosmetics, dental floss, sunscreen, and/or insect repellent for the duration of the field program, either on-Site or off-Site, as these products may contain trace PFAS. Sunscreen and/or insect repellent shall be used only with prior product approval. Appropriate accommodation to address the prohibition of the use of these substances must be incorporated into a Site-specific HASP.

2.4 Sample Area Access

Visitors, including contractors or Site personnel, who are not following these general PFAS sampling program protocols shall not be allowed to approach within 35 feet of the sample area *to the extent practical* until PFAS sample collection activities are complete and the PFAS sample container has been enclosed in a Ziploc® storage bag and placed in the sample cooler.

2.5 Field Equipment Decontamination

Use the procedures in this section to decontaminate all non-dedicated sampling equipment (e.g., stainless steel spoons or trowels, stainless steel bowls, submersible pumps, bladder pump components, tubing shears, etc.) used to collect samples:

- Rinse thoroughly with Alconox®, Citranox® or Liquinox® solution
- Rinse thoroughly with de-ionized (DI) PFAS-free laboratory-supplied water
- Allow to air dry; and
- Store equipment in clean Ziploc® storage bag until needed for sampling

Decontamination fluids used to clean equipment including the Alconox®, Citranox® or Liquinox® solution and PFAS-free water shall not be reused during field decontamination and will be containerized and characterized for proper disposal.

Appendix C-2: SOP-2: Groundwater Monitoring Well Purge Protocols

1 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be followed during purging of monitoring wells prior to the collection of groundwater samples for analysis of Per- and Polyfluoroalkyl substance (PFAS) and 1,4-Dioxane.

This SOP includes the following:

- Monitoring Well Groundwater Elevation Measurement; and
- Monitoring Well Purging Protocols;

2 WATER LEVEL MEASUREMENT

Field personnel shall record a depth to water measurement in each well prior to initiating well purge procedures. Water level measurements shall be taken during the sampling of monitoring wells while utilizing low flow sampling methods.

3 MONITORING WELL PURGE PROCEDURES

Field personnel shall not use Teflon® or low density polyethylene (LDPE) tubing or other equipment containing these materials for purging or sample collection if practicable. High density polyethylene (HDPE) tubing is preferred. Field personnel shall not re-use materials between well sample locations. Following completion of monitoring well purge activities at a monitoring well location, field personnel shall place all disposable materials in heavy duty (i.e., lawn waste) garbage bags for disposal. Field personnel shall wear nitrile gloves at all times.

3.1 Monitoring Well Purge

Wells that have been sampled within the past year have dedicated equipment that may have Teflon® coatings. Prior to initiating sampling activities, wells selected for sampling will be redeveloped by purging 10 well volumes from the well using Teflon® free equipment. A well volume shall be equal to the volume of water present in the well based upon collection of depth to water measurement of static groundwater prior to initiating well purge activities. For wells that do not yield, the well will be evacuated three times using Teflon® free equipment.

3.1.1 Deep Wells

Wells that cannot be purged using a peristaltic pump and have sufficient water will be purged using a submersible pump and HDPE tubing or Waterra device with HDPE tubing and a stainless steel foot valve. If practicable, submersible pumps whose construction does not include any Teflon® components (e.g., check balls, O-rings, compression fittings, etc.) on the exterior of the pump will be used for sampling activities. New HDPE tubing shall be used to purge groundwater at each well. Field personnel shall decontaminate non-dedicated components and sampling equipment (including pumps, tubing shears, etc.) in accordance with SOP-1 between well purge locations.

Field personnel shall lower the submersible pump to the midpoint of the well screen or open bedrock interval to remove the required volume. If the water level is within the screened or open interval of the well, the submersible pump will be set at the midpoint of the standing water column. Purge water shall be collected and disposed of appropriately.

In the event that deep wells do not have sufficient water column to allow for the use of a submersible pump, these wells may be purged using an HDPE or PVC bailer or Waterra device with HDPE tubing and a stainless steel foot valve. If a bailer is used, the bailer cable will be free of Teflon® coating and low-flow stabilization techniques and groundwater quality parameter collection shall not be attempted.

3.1.2 Shallow Wells

Where possible, groundwater wells will be purged using a peristaltic pump and HDPE tubing or bailer or Waterra device with HDPE tubing and a stainless steel foot valve. New HDPE tubing shall be used to purge groundwater at each well. Field personnel shall decontaminate non-dedicated components and sampling equipment (including pumps, tubing shears, etc.) in accordance with SOP-1 between sample locations.

Field personnel shall place the end of the HDPE tubing to the approximate depth of the midpoint of the monitoring well screened or open interval. The HDPE tubing will be set at the midpoint of the standing water column if the water level is within the screened or open interval. Field personnel shall determine and cut the appropriate length of HDPE tubing to be used in each monitoring well using the previously measured arm span of the individual performing the monitoring well purge to avoid contact with any materials other than the monitoring well and peristaltic pump. Where sufficient water column exists, HDPE tubing shall be kept a minimum of two (2) feet from the base of the monitoring well to prevent intake of particulates. HDPE tubing may be placed just off of the bottom of the well for those locations with less than four feet of standing water. Low purge rates will be used to avoid intake of particulates. Purge water shall be collected and disposed of appropriately.

If a groundwater monitoring well purges dry before the required volume has been removed, field personnel shall terminate the well purge and allow a minimum of 24-hours for groundwater in the monitoring well to recover. Following groundwater recovery, field personnel shall immediately collect the groundwater sample using the equipment appropriate to that well. Low-flow stabilization techniques and groundwater quality parameter collection shall not be attempted.

Appendix C-3: SOP-3: Groundwater Sampling Program Protocols

1 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be followed during the collection of groundwater samples for analysis of Per- and Polyfluoroalkyl substance (PFAS) and 1,4-Dioxane.

This SOP includes the following

- Sample Container Considerations;
- Groundwater Sample Collection Procedures; and
- Sample Shipping Requirements.

2 GROUNDWATER SAMPLING PROCEDURES

The following procedures pertain to the collection, storage, and shipping of samples**.**

2.1 Water Level Measurement

Water level measurements would normally be taken at the completion of purging, prior to sample collection. However, due to the extremely low detection limits for PFAS, water levels will not be taken after the start of purging to help mitigate the possibility of cross-contamination. Water level measurements will be collected as part of the low-flow sampling method.

2.2 Sample Containers

All groundwater samples shall be collected in properly preserved, sample containers provided by the laboratory specifically for use in the collection of samples for the specified analysis.

2.2.1 PFAS Sample Containers

All groundwater samples shall be collected in properly preserved, high density polyethylene (HDPE) sample containers provided by the laboratory specifically for use in the collection of samples for analysis of PFAS (i.e., HDPE without a Telfon® liner). Glass containers shall not be used due to the potential for loss of PFAS through adsorption. Field personnel shall wash their hands and put on a new pair of nitrile gloves prior to sample collection. Once the nitrile gloves are put on, field personnel shall not handle papers, pens, clothes, etc. prior to the collection of groundwater samples. If field personnel need to take notes or handle anything other than the sample container prior to collecting the sample, the old nitrile gloves with which contact was made shall be removed and new nitrile gloves put on.

Sample container lids shall remain on the sample container until immediately prior to sample collection and lids shall be resealed immediately following sample collection. Field personnel shall hold the sample container lid in their hand until the lid is replaced on the sample container. Field personnel shall not rinse groundwater sample container bottles during groundwater sample collection. Groundwater sample container labels shall be completed using a pen or a pencil after the lid has been re-secured on the sample container.

All sampling materials shall be treated as single use and disposed of following completion of groundwater sampling at each monitoring well location.

2.2.2 1,4-Dioxane Sample Containers

All groundwater samples shall be collected in 250mL (8oz) amber glass narrow mouth bottle with a Telfon® lined cap.

To mitigate the potential for cross-contamination of the PFAS samples from the 1,4-dioxane sample container Telfon® lined cap, field personnel shall not handle the 1,4-dioxane sample containers until after all PFAS samples have been collected for the location. Sample containers for 1,4-dioxane shall be segregated in separate coolers for transport from the lab, during sample preparation activities and also during sample shipment to the lab.

In addition, as with the protocol for PFAS sampling, field personnel shall wash their hands and put on a new pair of nitrile gloves prior to sample collection. Once the nitrile gloves are put on, field personnel shall not handle papers, pens, clothes, etc. prior to the collection of groundwater samples. If field personnel need to take notes or handle anything other than the sample container prior to collecting the sample, the old nitrile gloves with which contact was made shall be removed and new nitrile gloves put on.

Sample container lids shall remain on the sample container until immediately prior to sample collection and lids shall be resealed immediately following sample collection. Field personnel shall hold the sample container lid in their hand until the lid is replaced on the sample container. Field personnel shall not rinse groundwater sample container bottles during groundwater sample collection. Groundwater sample container labels shall be completed using a pen or a pencil after the lid has been re-secured on the sample container.

All sampling materials shall be treated as single use and disposed of following completion of groundwater sampling at each monitoring well location.

2.3 Groundwater Sample Collection

Monitoring well samples will be collected in the order of least contamination to most contaminated as best practice. The collection of samples shall occur in the order described in the approved work plan.

Field personnel shall follow low-flow purge and sampling techniques per the US EPA "Low Stress (low flow) purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells" and the ASTM "Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations".

Field personnel shall use a peristaltic pump, submersible pump or Waterra pump equipped with a stainless steel foot valve to perform low-flow parameter stabilization, as appropriate based on groundwater depth. Field personnel shall install HDPE tubing in each well to an approximate depth equal to the midpoint of the screened interval or the midpoint of the open bedrock interval. HDPE tubing may be placed just off of the bottom of the well for those locations with less than four feet of standing water. Field personnel shall use a piece of silicon tubing not to exceed 2-inches in length to direct purge water through a flow-through cell to collect field parameter measurements of pH, conductivity, temperature, dissolved oxygen and turbidity, if those measurements are required. Field personnel shall calibrate the instrument in the field prior to use and the instrument and flow-through cell shall be decontaminated in accordance with SOP-1 at each monitoring well location prior to purging. Field personnel shall collect groundwater samples upon stabilization of field parameters. Field personnel shall disconnect the silicon tubing from the input end of the flow-through cell to allow for the collection of groundwater directly from the HDPE tubing.

If the monitoring well purges dry during low-flow stabilization, field personnel shall terminate pumping and allow a minimum of 24-hours for groundwater in the monitoring well to recover. Following groundwater recovery, field personnel shall immediately collect the groundwater sample using equipment appropriate to that well. Low-flow stabilization techniques and groundwater quality parameter collection shall not be attempted. Details relating to the purging of a well, including if the well purges dry during low-flow stabilization shall be included on all field sampling documentation.

Prior to sample collection, but following disconnection of the HPDE tubing from the flow-through cell, field personnel shall collect a small volume (approximately 25 milliliters) of groundwater in a disposable container. Field personnel shall shake the container and note if any foaming results. The “shaker test” container and groundwater shall be disposed of following completion of the “shaker test”. Results of the “shaker test” shall be recorded on the groundwater sample collection field form.

During sample collection field personnel shall not adjust the peristaltic pump, submersible pump or Waterra pump flow rate or incline the sample bottle neck to reduce the potential for volatilization from the sample and reduce the potential for entrainment of suspended solids in the sample. Field personnel shall hold the sample container in such a manner that the sample container does not come in direct contact with the HDPE tubing or pump equipment. The sampling container shall be filled completely. If field personnel observe suspended solids in the collected groundwater sample, a new sample shall be collected, if possible. If it is not possible to collect a sample with minimal suspended solids (i.e., no evidence of solids settling at the bottom of the sampling container), field personnel shall contact the project manager and, if the sample is submitted for analysis, indicate the presence of suspended solids as a note on the Field Sampling Data Sheet.

Groundwater samples shall be placed directly into the laboratory-supplied HDPE containers. Once the groundwater sample container lid has been resealed, groundwater sample containers are to be placed into individual new Ziploc® storage bags. Following groundwater sample collection, groundwater sample containers enclosed within their Ziploc® storage bags shall be placed on ice in the laboratory-provided sample cooler. Field personnel shall minimize sample exposure to sunlight during sample handling and storage.

To mitigate the potential for cross-contamination of the PFAS samples from the 1,4-dioxane sample container Telfon® lined cap, field personnel shall not handle the 1,4-dioxane sample containers nor collect 1,4-dioxane samples until after all PFAS samples have been collected for the location. In addition, sample containers for 1,4-dioxane shall be segregated in separate coolers for transport from the lab, during sample preparation activities and also during sample shipment to the lab.

Groundwater sampling and field logs shall be included in the report.

2.4 Sample Shipping

Groundwater sample containers shall be stored on ice and maintained at approximately 4 +/- 2 degrees Celsius (ºC) and transported by overnight courier to the laboratory. Only ice may be used in sample coolers. Reusable chemical or gel ice packs shall not be used, as these may contain PFAS.

Sample containers for PFAS and 1,4-dioxane shall be segregated in separate coolers for transport from the lab, during sample preparation activities and also during sample shipment to the lab to mitigate the potential for cross-contamination of the PFAS samples from the 1,4-dioxane sample container Telfon® lined cap.

Samples shall be shipped via courier service with priority overnight delivery. All shipments shall be tracked to ensure their timely delivery.

Appendix C-4: SOP-5: Soil Sampling Protocol for PFAS

1 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures that shall be followed during the collection of soil samples for analysis of Per- and Polyfluoroalkyl substance (PFAS).

This SOP includes the following:

- Sample Container Considerations;
- Soil Sample Collection Procedures; and
- Sample Shipping Requirements.

2 SOIL SAMPLING PROCEDURES

Equipment blanks shall be collected at a rate of one per day for non-dedicated sampling equipment (e.g., trowels, augers, etc.).

2.1 Sample Containers and Handling

Soil sample containers shall not be handled without first donning a new, clean pair of nitrile gloves. Soil samples shall only be collected in new polypropylene or high density polyethylene (HDPE) containers provided by the laboratory specifically for use in the collection samples for analysis of PFAS (i.e., HDPE without a Telfon® liner).

Glass containers shall not be used due to the potential for loss of PFAS through adsorption.

Soil sample container labels shall be completed after collection of the soil sample using a pen or a pencil. The soil sample shall be collected first and the lid to the sample container shall be re-sealed before the sample container label is completed.

2.2 Sample Collection

Field personnel shall collect soil samples for analysis of PFASs as follows:

- Decontaminate a stainless steel trowel or spoon in accordance with the procedure described in Section 2.3.
- Using the stainless steel trowel or spoon, remove surface debris and vegetation to expose the top of the soil.
- Excavate soil below ground surface (bgs), removing any organic material such as grass, root material, etc. from excavated soil.
- Place soil from the sampling interval directly into separate laboratory-provided HDPE sample containers.

- Sampling intervals for the MW-313S Area are described in Table 3-3 of this Work Plan as described below:
    - 0-2 inches below ground surface (bgs)
    - 0-1 foot bgs
    - 0-2 feet bgs
    - soil / groundwater interface
- Replace and re-seal the lid on the soil sample container and then complete the sample container label.

If, based on site activities and/or operations, areas with the potential to have a greater degree of PFAS impacts can be identified, field personnel shall collect soil samples starting in the area(s) of lowest anticipated potential impact and then move to areas with progressively increasing degrees of potential impact.

A new pair of nitrile gloves shall be worn prior to the collection of each sample. Soil samples collected for analysis of PFAS shall be obtained using clean, decontaminated stainless steel spoons or trowels. All non-dedicated sampling equipment shall be decontaminated prior to sampling activities and before each subsequent sample location in accordance with the decontamination procedures described in Section 2.3.

Soil samples are to be placed directly into the laboratory-supplied HDPE containers. Once the soil sample container lid has been resealed, soil sample containers are to be placed into individual new Ziploc® storage bags. Following soil sample collection, soil sample containers enclosed within their Ziploc® storage bags shall be placed on ice in the laboratory-provided sample cooler. Field personnel shall minimize sample exposure to sunlight during sample handling and storage.

Soil samples shall be collected in the order described in the approved work plan.

Should resistance be encountered while using a hand auger to reach the groundwater interface, NYSDEC will be notified and a geoprobe or other drill method will be utilized to obtain the soil sample at the soil / groundwater interface

Details relating to sampling shall be included on all field sampling documentation. All field logs shall be included in the report.

Each soil sample location included in this work plan will be surveyed or located using GPS.

2.3 Field Equipment Decontamination

Use the procedures in this section to decontaminate all non-dedicated sampling equipment (e.g., stainless steel spoons or trowels) used to collect soil samples:

- Clean with a brush to remove particulate matter and surface films
- Rinse thoroughly with Citranox solution

- Rinse thoroughly with de-ionized (DI) PFAS-free laboratory-supplied water
- Rinse with methanol
- Rinse with de-ionized (DI) PFAS-free laboratory-supplied water
- Allow to air dry; and
- Store equipment in clean Ziploc® storage bag until needed for sampling

Decontamination fluids used to clean equipment including Citranox, PFAS-free water, and methanol shall not be reused during field decontamination and shall be collected and stored in DOT-approved 55-gallon drums for proper disposal at the on-site groundwater treatment facility.

2.4 Sample Shipping

Soil sample containers shall be stored on ice and maintained at approximately 4 degrees Celsius (ºC) and transported by overnight courier to the laboratory. Only ice may be used in sample coolers. Reusable chemical or gel ice packs shall not be used, as these may contain PFAS.

Soil samples for PFAS shall be segregated in separate coolers for transport from the lab, during sample preparation activities and also during sample shipment to the lab to mitigate the potential for cross-contamination of the samples.

Samples shall be shipped via courier service with priority overnight delivery. All shipments shall be traced to ensure their timely delivery.

Appendix C-5: SOP-6: Quality Assurance Quality Control Protocols

1 GENERAL APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to describe the Quality Assurance / Quality Control (QA/QC) samples that shall be collected during the Per- and Polyfluoroalkyl substance (PFAS) and 1,4-Dioxane sampling activities.

This SOP includes protocols for the collection of the following QA/QC samples:

- Equipment Blanks;
- Field Duplicates (groundwater only);
- Field Blanks:
- Trip Blanks; and
- Analytical QA/QC.

2 QA/QC PROTOCOLS

The following QA/QC protocols shall be followed during the collection of PFAS and 1,4-dioxane samples.

2.1 Equipment Blanks

Equipment blanks shall be collected at a rate of one per day for non-dedicated sampling equipment (e.g., tubing, bailers, submersible pumps, water level indicators, dip samplers, trowels, augers etc.).

2.1.1 PFAS

Equipment blanks shall be collected using laboratory-supplied PFAS-free water and shall be collected in laboratory-supplied high density polyethylene (HDPE) containers. Equipment blank container lids shall remain in the hand of field personnel until they are replaced on the sample container. Sample container labels shall be completed using a pen or pencil after the sample container lid has been resealed. Field personnel shall not use markers to complete sample container labels.

Equipment blanks shall be collected from non-dedicated soil sampling equipment such as trowels and augers. If non-dedicated sampling equipment is used, field personnel may collect equipment blanks by pouring the laboratory supplied PFAS-free water over the equipment and into a new and unused HDPE sample bottle.

In the instance of a peristaltic pump, field personnel may collect peristaltic pump tubing equipment blanks by pouring the laboratory supplied PFAS-free water into a new and unused HDPE sample bottled and then pumping the PFAS-free water through new HDPE tubing and new silicone tubing with the peristaltic pump into the sample container.

If a submersible pump is used, field personnel shall inquire of the manufacturer and identify a pump model whose construction does not include any Teflon® components (e.g., check balls, O-rings, compression fittings, etc.) on the exterior of the pump. Submersible pump equipment blanks will be collected by pouring the laboratory supplied PFAS-free water into a new and unused HDPE sample bottle and then pumping the PFAS-free water through new HDPE tubing and new silicon tubing with the submersible pump into the sample container. Re-seal the sample container and complete the sample container label as described above.

2.1.2 1,4-Dioxane

Equipment blanks shall be collected using laboratory-supplied analyte free water and shall be collected into laboratory-supplied 250mL (8oz) amber glass narrow mouth bottle with a Telfon® lined cap. Equipment blank container lids shall remain in the hand of field personnel until they are replaced on the sample container. Sample container labels shall be completed using a pen or pencil after the sample container lid has been resealed. Field personnel shall not use markers to complete sample container labels.

Equipment blanks shall be collected from non-dedicated soil sampling equipment such as trowels and augers by pouring the laboratory supplied analyte-free water into a new and unused laboratory-supplied 250mL (8oz) amber glass narrow mouth bottle with a Telfon® lined cap and then pumping the analyte-free water through new HDPE tubing and new silicone tubing with the peristaltic pump into the sample container.

Equipment blanks shall be collected from non-dedicated groundwater sampling equipment such as peristaltic pump tubing or a submersible pump. If a peristaltic pump is used, field personnel may collect peristaltic pump tubing equipment blanks by pouring the laboratory supplied analyte-free water into a new and unused sample bottle and then pumping the analyte-free water through new HDPE tubing and new silicon tubing with the peristaltic pump into the sample container.

If a submersible pump is used, field personnel shall inquire of the manufacturer and identify a pump model whose construction does not include any Teflon® components (e.g., check balls, O-rings, compression fittings, etc.) on the exterior of the pump. Submersible pump equipment blanks will be collected by pouring the laboratory supplied analyte-free water into a new and unused sample bottle and then pumping the PFAS-free water through new HDPE tubing and new silicon tubing with the submersible pump into the sample container. Re-seal the sample container and complete the sample container label as described above.

2.2 Field Duplicates (Groundwater)

Field personnel shall collect duplicate to serve as a check on the validity of the sample, sampling technique, and laboratory precision. A duplicate sample will be collected at a minimum for each 20 environmental samples for PFAS and 1,4-dioxane.

Field personnel shall collect field duplicates immediately after collecting the primary field samples. Field duplicates shall be collected in the laboratory-supplied PFAS-free HDPE sample containers. Field duplicate container lids shall remain in the hand of field personnel until they are replaced on the sample container. Sample container labels shall be completed using a pen or pencil after the sample container lid has been resealed. Field personnel shall not use markers to complete sample container labels.

Field personnel shall collect one groundwater field duplicates for analysis of PFAS and 1,4-dioxane using the following procedures:

- Field personnel shall stabilize groundwater parameters in accordance with SOP-3.
- Field personnel shall collect the primary PFAS sample in accordance with SOP-3.
- Following collection of the primary PFAS sample, change gloves and prepare to collect the field duplicate.

- The field duplicate sample for PFAS shall be collected immediately following collection of the primary sample for PFAS.
- Completely fill the laboratory-provided HDPE groundwater sample container.
- Replace and re-seal the lid on the sample containers and then complete the sample container label as described above.
- Place the PFAS sample and PFAS field duplicate sample into the PFAS sample cooler.
- Following collection of the PFAS samples, change gloves and prepare to collect the 1,4-dioxane primary sample and field duplicate.
- Field personnel shall collect the primary 1,4-dioxane sample in accordance with SOP-3.
- The field duplicate sample for 1,4-dioxane shall be collected immediately following collection of the primary sample for 1,4-dioxane.
- Completely fill the laboratory-provided sample container.
- Replace and re-seal the lid on the groundwater sample containers and then complete the sample container label as described above.
- Place the 1,4-dioxane sample and duplicate into the 1,4-dioxane sample cooler.

2.3 Field Blanks

Field personnel shall submit one field blank per day of sampling and at a minimum, one field blank will be collected at the Site background groundwater location. Field blank samples will be collected for PFAS and 1,4-dioxane.

2.3.1 PFAS Field Blanks

PFAS field blanks shall consist of PFAS-free water containerized in an HDPE sample container filled at the laboratory prior to beginning the field program. Field blank sample containers shall be opened during the collection of a sample and the laboratory-supplied PFAS-free water contained therein shall be poured directly into a laboratory-supplied HDPE sample container and then resealed. Field blank container lids shall remain in the hand of field personnel until replaced on the sample container. Sample container labels shall be completed using a pen or pencil after the sample container lid has been resealed. Field personnel shall not use markers to complete sample container labels.

2.3.2 1,4-Dioxane Field Blanks

1,4-Dioxane field blanks shall consist of analyte-free water containerized in a sample container filled at the laboratory prior to beginning the field program. Field blank sample containers shall be opened during the collection of a sample and the laboratory-supplied analyte-free water contained therein shall be poured directly into a laboratory-supplied 250mL (8oz) amber glass narrow mouth bottle with a Telfon® lined cap. sample container and then resealed. Field blank container lids shall remain in the hand of field personnel until replaced on the sample container. Sample container labels shall be completed using a pen or pencil after the sample container lid has been resealed. Field personnel shall not use markers to complete sample container labels.

2.4 Trip Blanks

Field personnel shall submit one laboratory supplied trip blank per sample cooler transported to the laboratory. Separate trip blanks shall be submitted for PFAS and 1,4-Dioxane analysis.

2.4.1 PFAS

Field personnel shall submit one laboratory-supplied PFAS trip blank per PFAS sample cooler transported to the laboratory. Trip blanks shall consist of PFAS-free water containerized in an HDPE sample container filled at the laboratory prior to the beginning of the field program. Field personnel shall place one PFAS trip blank in the PFAS sample cooler at the beginning of the day and the PFAS trip blank shall remain in the cooler for the duration of sampling activities conducted on that day. PFAS trip blank containers shall be submitted to the laboratory with the sample shipment.

2.4.2 1,4-Dioxane

Field personnel shall submit one laboratory-supplied trip blank per 1,4-dioxane sample cooler transported to the laboratory. Trip blanks shall consist of analyte-free water containerized in an 250mL (8oz) amber glass narrow mouth bottle with a Telfon® lined cap sample container filled at the laboratory prior to the beginning of the field program. Field personnel shall place one trip blank in the 1,4-dioxane sample cooler at the beginning of the day and the 1,4-dioxane trip blank shall remain in the cooler for the duration of sampling activities conducted on that day. Trip blank containers shall be submitted to the laboratory with the sample shipment.

2.5 Sample Shipping

QA/QC samples shall be stored on ice and maintained at a temperature of approximately 4 ºC during shipping. Only ice may be used in sample coolers. Reusable chemical or gel ice packs shall not be used, as these may contain PFAS.

Sample containers for PFAS and 1,4-dioxane shall be segregated into separate coolers for transport from the lab, during sample preparation activities and also during sample shipment back to the lab to mitigate the potential for cross-contamination of the PFAS samples from the 1,4-dioxane sample container Telfon® lined cap.

Samples shall be shipped via courier service with priority overnight delivery. All shipments shall be tracked to ensure their timely delivery.

Appendix C-6: SOP-NY: Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 373 Remedial Programs, April 2023

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023

www.dec.ny.gov

Table of Contents

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

April 2023

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

---

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

---

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an “Analytical Methods/Quality Assurance Summary Table” specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation’s Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled “General Fish Handling Procedures for Contaminant Analysis” (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

1. Project and Site Name.

2. DEC Region.

3. All personnel (and affiliation) involved in the collection.

4. Method of collection (gill net, hook and line, etc.)

5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

3. Date collected.

4. Sample location (waterway and nearest prominent identifiable landmark).

5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **<u>The Bureau of Ecosystem Health will supply the bags.</u>** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs. Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

page ______ of ______

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name ____ DEC Region ____________

Collections made by (include all crew) ____

Sampling Method: ☐Electrofishing ☐Gill netting ☐Trap netting ☐Trawling ☐Seining ☐Angling ☐Other ______________________

Preservation Method: ☐Freezing ☐Other ____________________ Notes (SWFDB survey number): ______________________

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, ______________________________, of ____ collected the
(Print Name) (Print Business Address)

following on ____________________, 20____ from ____
(Date) (Water Body)

in the vicinity of ____
(Landmark, Village, Road, etc.)

Town of ____, in __________________________________ County.

Item(s) ____

____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on ____________________________________, 20______.

____ ____________________________
Signature Date

I, ___________________________________, received the above mentioned sample(s) on the date specified and assigned identification number(s) ____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

____ ____________________
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

APPENDIX D: Health and Safety Plan
Groundwater Monitoring and Remediation Program

FORMER IBM KINGSTON REMEDIATION

TOWN OF ULSTER, ULSTER COUNTY NEW YORK
SITE ID: 356002
ORDER ON CONSENT INDEX: D3-10023-6-11

HEALTH AND SAFETY PLAN

GROUNDWATER MONITORING AND REMEDIATION PROGRAM

Original: October 2011
Last Revised: October 2024

Prepared by:
Groundwater Sciences, P.C.
Groundwater Sciences Corporation

2550 Interstate Drive, Suite 303
Harrisburg, Pennsylvania 17110

560 Route 52, Suite 202
Beacon, New York 12508

1108 Vestal Parkway East, Suite 2
Vestal, New York

Table of Contents

Table of Appendices

Appendix A	*NIOSH Pocket Guide to Chemical Hazards* Information for Significant VOCs and PCBs
Appendix B	Relative Response of Field Monitoring Equipment to Selected Organic Compounds
Appendix C	Confined Space Entry Permit (sample)
Appendix D	Hospital Route Map

1.0 SITE DESCRIPTION

Groundwater Sciences Corporation (GSC) has prepared this Health and Safety Plan for the TechCity Site (Site) under requirements set forth in Exhibit C of the Order on Consent (Order), Index # D3-10023-6-11, for Site 356002.

1.1 Site Location & Background Information

The Site is located north of the City of Kingston in the Town of Ulster, Ulster County, New York and is bounded by John M. Clarke Drive and Route 9W to the east, Old Neighborhood Road and Route 209 to the north, Esopus Creek to the west and Boices Lane to the south (see Figure 1). The total area of the Site is comprised of three Operable Units as detailed in the Order and is approximately 66.3 acres.

The Site is currently listed as a Class 4 Site on the New York State Department of Environmental Conservation, Inactive Hazardous Waste Registry, Site Code 356002.

1.2 Potential Hazards

Potential hazards are listed in the following subsections.

1.2.1 Chemical Hazards

The primary chemicals of concern at this Site include chlorinated ethenes, chlorinated ethanes, and other compounds in groundwater. The significant chemicals at the Site are described below. The primary chemical safety concerns are inhalation of vapor-phase contamination originating from contaminated groundwater as well as dermal contact with contaminated groundwater. The chemical hazards associated with contaminated groundwater and soils are evaluated in Section 4: Chemical Hazard Evaluation.

1.2.2 Physical Hazards

1.2.2.1 Utilities

Electrical shock or electrocution can result from exposed wiring, electrical panels, extension cords, and motors. Extension cords shall be inspected for fraying and shall not be used in a way that creates a tripping hazard. GFCI outlets shall be used whenever possible. Appropriate lock-out/tag-out procedures must be followed prior to servicing electrical equipment (see Section 9, Lock-out/Tag-out/Control of Hazardous Energy).

1.2.2.2 Confined Space/Excavation

If entry into a confined space is necessary, proper confined space procedures, including the use of a permit, will be followed. The safety concerns in these confined spaces are lack of oxygen and possible inhalation of vapors. These concerns are addressed in Section 8: Confined Space Entry Procedures.

1.2.2.3 Slipping/tripping and uneven terrain

Wet floors in the various groundwater treatment facilities may be slippery when wet. In addition, metal floor grates must be kept in place.

1.2.3 Mechanical Hazards

Heavy equipment, including drilling rigs, tender vehicles, backhoes, and dump trucks, may be used during certain Site activities. Loose clothing that could become entangled during operation of devices equipped with cables, chains, or belts shall be removed. Generators shall not be refueled while they are operating. Extension cords shall be inspected for fraying and shall not be used in a way that creates a tripping hazard.

1.2.4 Biological Hazards

Mosquitoes, bees, and wasps are expected to be present throughout the spring and summer. Avoid direct contact with animals.

1.2.5 Noise Hazards

Hearing protection such as earplugs or earmuffs shall be used during the operation of power tools and equipment that create percussive sounds, particularly in confined areas. Hearing protection shall also be used during drilling, construction, maintenance, testing, and waste management activities where required by Section 7.1 of this HASP.

1.2.6 Eye Hazard

Protective eyewear shall be worn during activities such as welding, cutting, or sawing, and other field activities where a splash hazard exists. A portable eyewash must be present at all times during such activities.

1.2.7 Heat Stress and Fatigue Hazard

Heat stress monitoring of pulse rates and heat stress/hydration breaks shall be required for personnel in Tyvek or other protective clothing when the ambient temperature exceeds 85°F. If heat stress or heat stroke symptoms are identified, then immediate medical attention is required.

1.2.8 Cold Stress – Hypothermia and Frostbite

Personnel conducting field activities in exceptionally cold temperatures should take the appropriate precautions to prevent hypothermia or frostbite. Warm, dry clothing should be worn at all times while working in cold temperatures.

Hypothermia usually is caused by extended exposure to cold. Hypothermia results when more heat is lost than the body can generate. Common causes include being outside without enough covering in winter, wearing wet clothing for an extended period of time in windy or very cold weather, or heavy exertion, or poor fluid or food intake in cold weather, even in above-freezing temperatures. The onset of symptoms is usually slow. There is likely to be a gradual loss of mental acuity and physical ability. The person experiencing hypothermia, in fact, may be unaware that he or she is in a state that requires emergency medical treatment. Symptoms of hypothermia include apathy, lethargy, confusion, drowsiness, loss of coordination, pale skin, slowing of breathing, slurred speech, uncontrollable shivering, and weakness. It requires immediate emergency medical attention.

Frostbite is, literally, frozen body tissue - usually skin but sometimes deeper - and must be handled carefully to prevent permanent tissue damage or loss. You can help prevent frostbite in cold weather by dressing in layers, making sure you come indoors at regular intervals, and watching for frostnip, frostbite's early warning signal. Frostnip usually affects areas that are exposed to the cold, such as the cheeks, nose, ears, fingers, and toes, leaving them white and numb. Frostbite is characterized by white, waxy skin that feels numb and hard. It requires immediate emergency medical attention.

1.2.9 Affected Area and Control Measures

The work zones typically associated with a health and safety plan (exclusion zone, contaminant reduction zone, and support zone) are required for some anticipated field activities.

The work areas requiring possible perimeter control measures are primarily in the immediate vicinity of the well drilling sites, groundwater monitoring and groundwater extraction and treatment system sampling locations. The areas where soil and/or groundwater contamination may be present, and where the greatest potential for chemical exposure and physical injury exists, are in the immediate vicinity of drilling and sampling operations. Perimeter control measures will be set up at each drilling or sampling location. The perimeter control area will be determined individually for each location by the Project Manager, Assistant Project Manager, or Field Team Leader and will be based on the proximity to roads and structures, and on the general nature of the surrounding area. Perimeter control measures shall include one or more of the following: traffic cones, safety fence, caution tape, or fencing. Only OSHA-trained personnel necessary for completion of the specific task will be allowed inside of the bounded areas.

All field personnel and samplers in particular, shall use appropriate personal protective equipment and health and safety measures detailed in this HASP to minimize exposure to contaminated vapor, groundwater or soil.

2.0 WORK OBJECTIVES

Various work plans and sampling plans prepared describe the field activities that will be performed by GSC and others. These activities may include:

1. Surveying and reconnaissance activities such as topographic mapping.
2. Drilling of monitoring wells, extraction wells, and soil borings.
3. Construction of monitoring wells and extraction wells.
4. Hydraulic testing.
5. Sampling of soil, groundwater, surface water, sewer, and soil vapor.
6. Management of soil, water, and drill cuttings.
7. Measurement of groundwater elevations in monitoring wells.
8. Maintenance, repair, and installation of groundwater transport piping, treatment facilities, and associated equipment.
9. Well rehabilitation and decommissioning activities.

3.0 ORGANIZATION, COORDINATION, AND SITE ACCESS

The following personnel are designated to carry out the stated job functions. (Note: One person may carry out more than one job function.)

Project Director:	Dorothy A. Bergmann
Project Managers:	C. Edward Stoner Mitchell W. Ruchin
Assistant Project Managers	C. Edward Stoner
Project Quality Assurance Manager:	Dorothy A. Bergmann
GSC Health and Safety Officer:	Charles A. Rine
GSC Field Team Leaders/Members:	Matthew T. Luckman Charles A. Rine Mitchell W. Ruchin C. Edward Stoner Christopher J. Shannon Matthew Sorrell Stephanie Serritello Robert C. Watson
Client Representatives:	Stephen Brown

Project personnel may be rotated, added, or dropped as needed. All personnel conducting field activities shall be authorized to do so by GSC. GSC field personnel will advise IBM employees, subcontractors, and other persons without proper personal protective equipment or health and safety training that they will not be allowed on the Site.

3.1 Distribution of the HASP

All subcontractors working at the Site, or who otherwise could be exposed to health and safety hazards, will be advised of known hazards through distribution of this Health and Safety Plan. They shall be solely responsible for the health and safety of their employees and shall comply with applicable state and federal health and safety laws and regulations. All GSC personnel and subcontractors of GSC working at the Site shall review this Health and Safety Plan in its entirety and shall read and sign Section 11 of this HASP.

3.2 Contractor's Conduct

All relevant procedures described in the *Health and Safety Plan* shall be followed. Smoking and use of chewing tobacco is prohibited during work activities associated with this HASP.

4.0 CHEMICAL HAZARD EVALUATION

Ten volatile organic compounds (VOCs) have been identified as significant with regard to concentration and lateral distribution in groundwater at the Site. Only low concentrations in soil vapor are expected to be encountered during field activities because the source of the vapor is typically partitioning from groundwater. In addition, Poly Chlorinate Biphenyls (PCBs or Arochlors) have been identified in soils and groundwater at the Site, specifically in wells associated with SWMU T, the Former Waste Oil Tank located proximal to the northern end of Building 003.

Information from the *NIOSH Pocket Guide to Chemical Hazards* for each of the ten VOCs and PCBs are presented in Appendix A. These significant VOCs are listed below with their Chemical Abstract Service Registration Numbers (CASRN).

Substances	**CASRN**
Tetrachloroethene (PCE)*	**127-18-4**
Trichloroethene* (TCE)*	**79-01-6**
cis-1,2-Dichloroethene	**540-59-0**
Vinyl Chloride*	**75-01-4**
1,1,1-Trichloroethane (Methyl Chloroform)	**71-55-6**
1,1,2-Trichloroethane*	**79-00-5**
1,1-Dichloroethane	**75-34-3**
1,1-Dichloroethene*	**75-35-4**
1,2-Dichloroethane*	**107-06-2**
Chloroform*	**67-66-3**
*** - NIOSH potential occupational carcinogen.**	

This information in Appendix A includes primary routes of exposure and exposure limits. Time-weighted averages (TWAs) and/or short-term exposure limits (STELs) for these and other substances are also summarized in Appendix B of this HASP.

Potential chemical exposures from the work activities detailed in Section 2 of this HASP are via skin contact with, and inhalation of, contaminated media.

Appropriate personal protective equipment will be required as described in Section 7 of this HASP.

5.0 DECONTAMINATION PROCEDURES

Items that come into contact with potentially contaminated soil and groundwater will be disposed of or decontaminated as described in an approved Work Plan or the Quality Assurance Project Plan.

5.1 Personal

Because the degree of contamination is known and the potential for transfer is judged to be minimal, scrubbing and rinsing of personal protective equipment (PPE) generally will not be necessary. PPE, including gloves will be removed, placed in labeled plastic bags, and disposed of properly.

5.2 Equipment

Non-disposable groundwater gauging equipment, such as interface probes and water level meters, will be decontaminated as specified in an approved Work Plan, the Groundwater Monitoring Plan or the Quality Assurance Project Plan.

Non-disposable drilling equipment (such as augers, sampling spoons, drill rods, etc.), excavating equipment and all other non-disposable tools that come into contact with Site soils and/or groundwater will be decontaminated as specified in the relevant drilling procedure of the Quality Assurance Project Plan.

5.3 Disposable Items

Decontamination shall not be required for disposable items. Disposable items shall be placed into labeled plastic bags or containers and disposed of properly.

6.0 AIR MONITORING

VOC concentrations in the breathing air in all work areas during normal work activities (not including confined space entry and drilling activities) are expected to be minimal (less than 1 part per million as measured by an organic vapor analyzer in the breathing zone). During typical groundwater sampling and testing activities, continuous and periodic air monitoring for VOCs will not be performed.

If air monitoring for VOCs is required (confined space entry and drilling activities) or otherwise deemed necessary due to noticeable odor or suspected elevated levels of VOCs in water or soil, then this air monitoring will be performed either continuously or at periodic intervals (at least every 15 minutes) in the breathing zone using a photoionization detector (PID) or flame ionization detector equipped with an 11.7 eV lamp. If a PID with a lower eV rating is used (e.g., 10.2 eV), then the user must be aware that TCA will not be detectable by the PID. The FID or PID will be calibrated according to the manufacturer's instructions. If persistent concentrations greater than 5 ppm above background are measured in the breathing zone, then workers will leave the area until the contamination dissipates or until alternative protection measures, such as high volume fan ventilation or Level C or B respiratory protection, are established (refer to Section 7). The air monitoring frequency may be changed at the discretion of the Health and Safety Officer or Field Team Leader.

Prior to entering a confined space such as a well pit, air monitoring for oxygen content and combustible gases shall be performed as described in Section 8.3.

7.0 PERSONAL PROTECTIVE EQUIPMENT

Based on an evaluation of potential hazards, level D protection will be designated to perform most sampling, maintenance and monitoring activities. Modified level D (with Tyvek, Saranex, or chemical-resistant apron) protection maybe designated where splash protection is necessary. Appropriate ventilation or Level B or C respiratory protection will be required where organic vapor concentrations, as measured with a PID, exceed 5 ppm above background in the breathing zone. The following levels of personal protection have been designated for the applicable work areas or tasks:

Location	Activity	Level of Protection
Well Drilling Sites	Monitoring well drilling, construction, and related activities	D, Mod. D, C, or B depending on the organic vapor concentration in the breathing zone and the presence of VC in groundwater
Monitoring Well Sites	Purging and sampling; hydraulic testing	D
Confined spaces	Activities requiring entry into an GAC units, pits, tanks, or excavations determined to be a confined space	D, Mod. D or B, depending on O_2 level
Groundwater Extraction System	Operation, maintenance, and monitoring of groundwater treatment systems	D or Mod. D, except for confined space work

Specific levels of protective equipment for each level of protection are as follows:

7.1 Level D

Clothing: Regular work clothes, not loose fitting, shall be worn. Shirt sleeves shall preferably cover the entire arm. Shorts are not permitted.

Hearing protection: Earplugs or earmuffs shall be worn during operations where the 8-hour time-weighted average sound level (slow response) is greater than 85 dB. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level, with or without hearing protection.

Eye protection: Wraparound glasses or goggles shall be worn when operating percussion tools and during sampling activities where the potential for a splash hazard exists. Welding glasses or goggles specifically designed for use during welding or torch cutting shall be used for those activities.

Footwear: Steel toe boots or shoes shall be worn at all times.

Hand protection: Chemical resistant gloves shall be worn for sampling-related activities. Disposable vinyl or nitrile surgical-type gloves are acceptable. Where a puncture risk exists, protective leather or neoprene outer gloves shall be worn over the vinyl inner gloves.

Head protection: ANSI spec hard hats shall be worn while working around heavy equipment.

7.2 Modified Level D

Includes all of the items listed in Level D plus Tyvek coveralls for particulate protection or Tyvek Saranex for splash protection. Disposable boots or boot covers may also be worn. Gloves and boots may be taped to coveralls using duct tape.

7.3 Level C

Includes all of the items listed for Level D and modified Level D plus a chemical cartridge respirator with organic vapor cartridge(s) or a powered, air-purifying respirator with organic vapor cartridge(s).

7.4 Level B

Includes all of the items listed for Level D and modified Level D plus (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode or (2) a supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Facial hair which interferes with the operation and fit of the respirator face piece shall be removed prior to using such equipment. Contact lenses are not compatible with SCBA or airline respirators and shall not be worn. Eyeglass lens inserts shall be used instead.

Each SCBA and airline respirator unit will be fit- and pressure-tested prior to use. The contact surfaces of all respiratory protection equipment will be cleaned with rubbing alcohol after each use.

Personal protective equipment may be modified at the discretion of the Health and Safety Officer or Field Team Leader. No changes to the specified levels of protection shall be made without the approval of the Health and Safety Officer or Field Team Leader.

8.0 CONFINED SPACE ENTRY PROCEDURES

Confined spaces at the Site may include shored excavations that are deeper than they are wide and certain areas of the groundwater treatment system such as well pits and tanks. Confined space entry is defined as inserting any part of the body past the plane of the portal to the confined space. For example, putting one's arm into a large tank constitutes confined space entry; looking into the tank from outside the manway does not.

All confined spaces are presumed to be potentially dangerous, and entry will require the issuance of a confined space entry permit. Appropriate safety measures shall be taken before entering a confined space or vessel. Under no circumstances is a vessel to be entered without an authorized confined space permit.

Confined spaces may be entered for various sampling and maintenance purposes. These activities will be conducted by personnel who have received specific confined space entry training in addition to the required 40-hour HAZWOPER training (with 8-hour annual refresher training, where applicable).

8.1 Confined Space Entry Permit

A confined space entry permit is a written document provided to allow and control entry into a permit-required space. In the case of a non-permit-required space, the entry permit will serve as the written certification required by OSHA that the space is safe for entry. The form presented in Appendix C of this HASP, or an equivalent form, shall be completed for all permit-required confined spaces. No one shall enter a permit-required confined space unless a permit, authorized for the specific location and activity, has been completed by the field team leader or other trained professional. A new confined space permit will be required daily, or when an activity stops and starts again after a delay.

Confined space activities on this property require a confined space permit.

8.2 Personal Protective Equipment

Personal protective equipment shall be as described in Section 7. A body harness attached to a lifeline should be used if the other end of the lifeline can be securely anchored to a tripod, hoist or other device outside the confined space.

8.3 Monitoring Equipment

Prior to entry into a confined space, an attempt shall be made to ventilate the confined space. Ventilation may be accomplished by the use of a fan designed for this purpose. The confined space atmosphere shall be checked and continuous monitoring shall occur as long as the entrant is within the confined space. The atmosphere will be checked for oxygen content and lower explosive limit (LEL). Continuous monitoring of oxygen levels is not necessary if the entrant is using SCBA or an airline respirator.

Oxygen levels are to be between 19.5 and 23 percent prior to entry into the confined space. If the oxygen concentration within the confined space, as determined by continuous monitoring, is not within this range while the entrant is in the confined space, then the entrant will immediately exit the confined space unless using a supplied air device. The oxygen meter shall be calibrated at an elevation similar to the elevation of the confined space.

After the oxygen content of the confined space is determined to be between 19.5 and 23 percent, the LEL will be measured. If the LEL is less than 10 percent, then the confined space may be entered. Where an explosive vapor hazard is expected, the LEL will be monitored continuously while the entrant is in the confined space, and if the concentration increases to greater than 10 percent, then the entrant shall immediately exit the confined space.

8.4 Role of Attendant

An attendant shall be present outside of the confined space for the entire time that the entrant is in the confined space. The entrant shall be within sight of the attendant at all times or shall otherwise make verbal contact at approximately one-minute intervals. The attendant is not permitted to perform entry-type rescue unless relieved of the attending responsibilities and by a properly trained and equipped person. The attendant is not to perform any procedure that would detract from the attendant's ability to recognize and warn of unsafe conditions and is in no instance allowed to break the plane of the confined space. This does not preclude the attendant from performing such tasks as getting tools and sampling equipment and passing them to the persons working in the confined space. The attendant will also perform the role of supervisor with all of the necessary responsibilities. The attendant will, therefore, be responsible for adherence to standard operating procedures, and for preventing unauthorized personnel from entering the confined space.

8.5 Emergency Response

In the event that an emergency situation arises within the confined space, the attendant shall immediately notify the emergency number (refer to Section 10). The attendant is then to return to the confined space unless the emergency is of such a nature that the safety of the attendant would be threatened. The attendant is to render only non-entry assistance until such time as the emergency response personnel arrive at the confined space.

9.0 LOCK-OUT/TAG-OUT/CONTROL OF HAZARDOUS ENERGY

To ensure that all individuals working on the Site are protected from accidental or unexpected activation of mechanical and/or electrical equipment during maintenance, repair, cleaning, servicing, or adjusting of prime movers, machinery, or equipment, a lock-out/tag-out procedure must be followed.

The term “lock-out” refers to the practice of using keyed or combination security devices ("locks") to prevent the unwanted activation of mechanical or electrical equipment. The term “tag-out” refers to the practice of using tags in conjunction with locks to increase the visibility and awareness that equipment is not to be energized or activated until such devices are removed.

Lock-out/tag-out requirements are specified by OSHA in 29CFR1910.147. Specific lock-out/tag-out procedures for operation, maintenance, and monitoring of the groundwater treatment facilities are described in the following sections.

9.1 Preparation for Lock-out/Tag-out

Make a survey to locate and identify all isolating devices to be certain which switches, valves, or other energy isolating devices apply to the equipment to be locked and tagged out. More than one energy source (electrical, mechanical, stored energy, or others) may be involved.

9.2 Sequence of Lock-out or Tag-out System Procedure

Notify affected employees that a lock-out or tag-out system is used and the reason for its use. The authorized employee shall know the type and magnitude of energy that the machine or equipment uses and shall understand the hazards associated with the machine or equipment.

If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).

Operate the switch, valve, or other energy isolating devices so that the equipment is isolated from its energy sources. Stored energy (such as in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure) must be dissipated or restrained by methods such as repositioning, blocking, or bleeding down.

Lock-out/tag-out the energy-isolating devices with assigned individual locks or tags.

To verify that all energy sources have been disconnected, operate the push button or other normal operating controls to make certain the equipment will not operate. CAUTION: Return operating controls to neutral or off position after the test.

The equipment is now locked out or tagged out.

9.3 Restoring Machines or Equipment to Normal Operations

After the maintenance activity is complete and equipment is ready for normal operations, check the area around the machines or equipment to ensure that no one is exposed.

After all tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, remove all lock-out or tag-out devices. Operate the energy-isolating devices to restore energy to the machine or equipment.

9.4 Electrical Safety and Lock-out/Tag-out

In the preceding steps, if more than one individual is required to lock-out or tag-out equipment, each shall place his own personal lock-out/tag-out device on the energy-isolating devices. When an energy-isolating device cannot accept multiple locks or tags, a multiple lock-out or tag-out device such as a hasp may be used. If lock-out is used, a single lock may be used to lock out the machine or equipment with the key being placed in a lock-out box or cabinet that allows the use of multiple locks to secure it. Each employee will then use his own lock to secure the box or cabinet. As each person no longer needs to maintain his lock-out protection, that person will remove his lock from the box or cabinet.

9.5 Temporary Removal of Lock-out/Tag-out Devices

In situations where lock-out/tag-out devices must be temporarily removed from the energy-isolating device and the machine or equipment energized to test or position the machine, equipment, or component, the following sequence of actions will be followed:

1. Remove non-essential items and ensure that the machine or equipment components are operationally intact.
2. Notify affected employees that the lock-out/tag-out devices have been removed and ensure that all employees have been safely positioned or removed from the area.
3. Have employees who applied the lock-out/tag-out devices remove the lock-out/tag-out devices.
4. Energize and proceed with testing or positioning.
5. De-energize all systems and reapply energy control measures in accordance with section 9.1.2 of these procedures.

9.6 Common Pitfalls of Lock-out/Tag-out

The lock-out/tag-out procedure is to be adhered to in all situations when working on electrically powered equipment. The following is a list of common pitfalls of lock-out/tag-out systems that are to be avoided:

1. Failure to use the lock.
2. Locking through another lock instead of through the device to be locked out.
3. Leaving the key in the lock.
4. Asking others to attach the lock.
5. Failure to use tags.
6. Failure to check inside the switch box to confirm with a voltage meter that the power has been disconnected.
7. Pulling fuses without performing a lock out.
8. Failure to identify all switches and disconnects in-line with equipment.
9. Assuming the equipment is inoperable and failing to lock out.
10. Assuming the job is too small to merit locking out.

10.0 EMERGENCY PROCEDURES AND EQUIPMENT

10.1 Emergency Contacts and Directions

Emergency Phone Numbers:

AMBULANCE:	***911***
FIRE:	***911***

Nearest Hospital: HealthAlliance Hospital Mary's Avenue

Address: *105 Marys Ave, Kingston, NY 12401*
(845) 338-2500

A Hospital Route Map is attached to this HASP as Appendix D.

Driving directions to HealthAlliance Hospital Mary's Avenue (Kingston, NY) (estimated driving time 11 minutes, distance 3.4 miles):	
Head **South** on **Enterprise Drive** toward **Boices Lane**	
Turn **Left** onto **Boices Lane**	0.4 miles
Turn **Right** onto **Ulster Avenue**	0.9 miles
Continue onto **E Chester St / Rt 9W South**	0.4 miles
Continue **Straight** onto **E Chester St**	
Turn **Right** onto **Marys Avenue**	1.1 miles
Turn **Left** onto **Webster St, Hospital will be on the right**	285 feet

Additional Emergency Phone Numbers:

Agency for Toxic Substances and Disease Registry: 404-639-0615

National Poison Control Center: 800-764-7661

10.2 Emergency Equipment

First aid equipment is available at the following locations:

Fire Extinguisher: In all GSC vehicles.

Emergency Eye Wash: In all GSC vehicles.

First Aid Kit: In all GSC vehicles.

10.3 Exposure Symptoms for Chemicals

Emergency medical information for the Site's principal substances is included in Appendix A. This information is from the NIOSH Pocket Guide online at http://www.cdc.gov/niosh/npg.

10.4 First Aid

First aid for contact with materials or groundwater contaminated with the ten substances listed as significant in this HASP is described below.

10.4.1 Eye Contact

If contaminated groundwater contacts the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids.

10.4.2 Skin Contact

If contaminated groundwater contacts the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates the clothing, promptly remove the clothing and wash the skin with soap and water.

10.4.3 Inhalation

If a person breathes in significant VOC vapors, move the exposed person to fresh air at once.

10.4.4 Ingestion

Ingestion is not considered to be a likely route of exposure.

10.4.5 Contact with Separate-Phase Solvent

In case of contact with separate-phase solvent, follow the first aid procedures described above and get medical attention immediately. If breathing has stopped as a result of vapor inhalation, perform rescue breathing. Keep the affected person warm and at rest and get medical attention immediately.

10.5 Emergency Procedures

10.5.1 Personnel Injury

All injuries, no matter how minor, shall be reported to the Project Manager or Health and Safety Officer and will be logged and recorded.

Upon notification of an injury, work will cease and the injured person will be removed from the work area. The Site Safety Officer and/or field team members will assess the nature of the injury, will initiate the appropriate first aid, and will arrange for transportation to the designated medical facility, if required. If the injury increases the risk to other Site workers, activities on site will not resume until the added risk is removed or minimized.

10.5.2 Fire Explosion

In the event of fire or explosion, all personnel will immediately evacuate the site and will move to a safe distance from the affected area. The emergency phone number (911) shall be contacted. If it is safe to do so, site personnel may use firefighting equipment available on-site to control or extinguish the fire, and may attempt to isolate flammable materials that may contribute to the fire.

10.5.3 Equipment Failure

If equipment, including personal protective equipment, fails to operate properly, the Site Safety Officer or Project Manager will determine the effect of this failure on continuing the planned activity. If the failure affects the safety of personnel or prevents completion of tasks, work will cease until the equipment is repaired or until other appropriate actions are taken.

Following all emergency situations, work will not resume until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. This Health and Safety Plan has been reviewed.
4. Site personnel have been briefed on changes to this Health and Safety Plan.

11.0 ACKNOWLEDGMENT OF PLAN

All site workers performing intrusive work activities shall have completed 40 hours of HAZWOPER safety training under the requirements of 29 CFR 1910.120 and 8 hours of annual HAZWOPER refresher training within the past 12 months. Certificates shall be supplied and kept on file with GSC.

By signing in the designated space below, GSC personnel acknowledge that they have read this Health and Safety Plan and are familiar with its provisions.

Name	Title	Signature

If a subcontractor does not have a site-specific health and safety plan, then they may accept and acknowledge this HASP with their modifications, if any, or prepare a HASP at least as stringent as this HASP. If the subcontractor chooses to accept this HASP for its own use, then the subcontractor shall sign this HASP in the designated space below. In so doing, the subcontractor accepts full responsibility for the use of this HASP by the subcontractor and subcontractor's employees. The subcontractor agrees to fully indemnify GSC and IBM from any and all liability arising out of reliance on this HASP by the subcontractor's employees.

Name	**Company**	**Signature**

APPENDIX A

NIOSH POCKET GUIDE TO CHEMICAL HAZARDS INFORMATION FOR SIGNIFICANT VOCs and PCBs

Tetrachloroethylene

SYNONYMS & TRADE NAMES

Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene

CAS NO.

127-18-4

RTECS NO.

KX3850000

DOT ID & GUIDE

1897 160

FORMULA

$Cl_2C=CCl_2$

CONVERSION

1 ppm = 6.78 mg/m^3

IDLH

Ca [150 ppm]
See: 127184

EXPOSURE LIMITS

NIOSH REL
Ca Minimize workplace exposure concentrations. See Appendix A
OSHA PEL

TWA 100 ppm
C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm
See Appendix G

MEASUREMENT METHODS

NIOSH 1003;
OSHA 1001
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a mild, chloroform-like odor.

MOLECULAR WEIGHT

165.8

BOILING POINT

250°F

FREEZING POINT

-2°F

SOLUBILITY

0.02%

VAPOR PRESSURE

14 mmHg

IONIZATION POTENTIAL

9.32 eV

SPECIFIC GRAVITY

1.62

FLASH POINT

NA

UPPER EXPLOSIVE LIMIT

NA

LOWER EXPLOSIVE LIMIT

NA

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, liver, kidneys, central nervous system

CANCER SITE

[in animals: liver tumors]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0076 MEDICAL TESTS: 0179

Page last reviewed: October 30, 2019

Trichloroethylene

SYNONYMS & TRADE NAMES

Ethylene trichloride, TCE, Trichloroethene, Trilene

CAS NO.

79-01-6

RTECS NO.

KX4550000

DOT ID & GUIDE

1710 160

FORMULA

$ClCH=CCl_2$

CONVERSION

1 ppm = 5.37 mg/m^3

IDLH

Ca [1000 ppm]
See: 79016

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A See Appendix C
OSHA PEL
TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours) See Appendix G

MEASUREMENT METHODS

NIOSH 1022 , 3800;
OSHA 1001
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid (unless dyed blue) with a chloroform-like odor.

MOLECULAR WEIGHT

131.4

BOILING POINT

189°F

FREEZING POINT

-99°F

SOLUBILITY

0.1%

VAPOR PRESSURE

58 mmHg

IONIZATION POTENTIAL

9.45 eV

SPECIFIC GRAVITY

1.46

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

(77°F): 10.5%

LOWER EXPLOSIVE LIMIT

(77°F): 8%

Combustible Liquid, but burns with difficulty.

INCOMPATIBILITIES & REACTIVITIES

Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system

CANCER SITE

[in animals: liver & kidney cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0081   MEDICAL TESTS: 0236

Page last reviewed: October 30, 2019

Promoting productive workplaces through safety and health research

1,2-Dichloroethylene

SYNONYMS & TRADE NAMES

Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene

CAS NO.

540-59-0

RTECS NO.

KV9360000

DOT ID & GUIDE

1150 130P

FORMULA

ClCH=CHCl

CONVERSION

1 ppm = 3.97 mg/m^3

IDLH

1000 ppm
See: 540590

EXPOSURE LIMITS

NIOSH REL
TWA 200 ppm (790 mg/m^3)
OSHA PEL
TWA 200 ppm (790 mg/m^3)

MEASUREMENT METHODS

NIOSH 1003;
OSHA 7
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.

MOLECULAR WEIGHT

97.0

BOILING POINT

118-140°F

FREEZING POINT

-57 to -115°F

SOLUBILITY

0.4%

VAPOR PRESSURE

180-265 mmHg

IONIZATION POTENTIAL

9.65 eV

SPECIFIC GRAVITY

(77°F): 1.27

FLASH POINT

36-39°F

UPPER EXPLOSIVE LIMIT

12.8%

LOWER EXPLOSIVE LIMIT

5.6%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]

EXPOSURE ROUTES

inhalation, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, respiratory system; central nervous system depression

TARGET ORGANS

Eyes, respiratory system, central nervous system

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH/OSHA

Up to 1000 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode£
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)£
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0436

Page last reviewed: October 30, 2019

Vinyl chloride

SYNONYMS & TRADE NAMES

Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, VCM, Vinyl chloride monomer (VCM)

CAS NO.

75-01-4

RTECS NO.

KU9625000

DOT ID & GUIDE

1086 116P(inhibited)

FORMULA

$CH_2=CHCl$

CONVERSION

1 ppm = 2.56 mg/m^3

IDLH

Ca [N.D.]
See: IDLH INDEX

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A
OSHA PEL

[1910.1017] TWA 1 ppm C 5 ppm [15-minute]

MEASUREMENT METHODS

NIOSH 1007;
OSHA 4 , 75
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MOLECULAR WEIGHT

62.5

BOILING POINT

7°F

FREEZING POINT

-256°F

SOLUBILITY

(77°F): 0.1%

VAPOR PRESSURE

3.3 atm

IONIZATION POTENTIAL

9.99 eV

FLASH POINT

NA (Gas)

UPPER EXPLOSIVE LIMIT

33.0%

LOWER EXPLOSIVE LIMIT

3.6%

RELATIVE GAS DENSITY

2.21

Flammable Gas

INCOMPATIBILITIES & REACTIVITIES

Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

EXPOSURE ROUTES

inhalation, skin and/or eye contact (liquid)

SYMPTOMS

lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

TARGET ORGANS

Liver, central nervous system, blood, respiratory system, lymphatic system

CANCER SITE

[liver cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

FIRST AID

(See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

RESPIRATOR RECOMMENDATIONS

(See Appendix E)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0082   MEDICAL TESTS: 0241

Page last reviewed: October 30, 2019

Was this page helpful?

Yes   Partly   No

Promoting productive workplaces through safety and health research

Methyl chloroform

SYNONYMS & TRADE NAMES

Chlorothene, 1,1,1-Trichloroethane, 1,1,1-Trichloroethane (stabilized)

CAS NO.

71-55-6

RTECS NO.

KJ2975000

DOT ID & GUIDE

2831 160

FORMULA

CH_3CCl_3

CONVERSION

1 ppm = 5.46 mg/m^3

IDLH

700 ppm
See: 71556

EXPOSURE LIMITS

NIOSH REL
C 350 ppm (1900 mg/m^3) [15-minute] See Appendix C (Chloroethanes)
OSHA PEL
TWA 350 ppm (1900 mg/m^3) See Appendix G

MEASUREMENT METHODS

NIOSH 1003
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a mild, chloroform-like odor.

MOLECULAR WEIGHT

133.4

BOILING POINT

165°F

FREEZING POINT

-23°F

SOLUBILITY

0.4%

VAPOR PRESSURE

100 mmHg

IONIZATION POTENTIAL

11.00 eV

SPECIFIC GRAVITY

1.34

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

12.5%

LOWER EXPLOSIVE LIMIT

7.5%

Combustible Liquid, but burns with difficulty.

INCOMPATIBILITIES & REACTIVITIES

Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]

EXPOSURE ROUTES

inhalation, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage

TARGET ORGANS

Eyes, skin, central nervous system, cardiovascular system, liver

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH/OSHA

Up to 700 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0079 MEDICAL TESTS: 0141

Page last reviewed: October 30, 2019

1,1,2-Trichloroethane

SYNONYMS & TRADE NAMES

Ethane trichloride, β-Trichloroethane, Vinyl trichloride

CAS NO.

79-00-5

RTECS NO.

KJ3150000

DOT ID & GUIDE

FORMULA

$CHCl_2CH_2Cl$

CONVERSION

1 ppm = 5.46 mg/m^3

IDLH

Ca [100 ppm]
See: 79005

EXPOSURE LIMITS

NIOSH REL
Ca TWA 10 ppm (45 mg/m^3) [skin] See Appendix A See Appendix C (Chloroethanes)
OSHA PEL
TWA 10 ppm (45 mg/m^3) [skin]

MEASUREMENT METHODS

NIOSH 1003;
OSHA 11
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a sweet, chloroform-like odor.

MOLECULAR WEIGHT

133.4

BOILING POINT

237°F

FREEZING POINT

-34°F

SOLUBILITY

0.4%

VAPOR PRESSURE

19 mmHg

IONIZATION POTENTIAL

11.00 eV

SPECIFIC GRAVITY

1.44

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

15.5%

LOWER EXPLOSIVE LIMIT

6%

Combustible Liquid, forms dense soot.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers & caustics; chemically-active metals (such as aluminum, magnesium powders, sodium & potassium)

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]

TARGET ORGANS

Eyes, respiratory system, central nervous system, liver, kidneys

CANCER SITE

[in animals: liver cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0080   MEDICAL TESTS: 0235

Page last reviewed: October 30, 2019

Promoting productive workplaces through safety and health research

1,1-Dichloroethane

SYNONYMS & TRADE NAMES

Asymmetrical dichloroethane, Ethylidene chloride, 1,1-Ethylidene dichloride

CAS NO.

75-34-3

RTECS NO.

KI0175000

DOT ID & GUIDE

2362 130

FORMULA

$CHCl_2CH_3$

CONVERSION

1 ppm = 4.05 mg/m^3

IDLH

3000 ppm
See: 75343

EXPOSURE LIMITS

NIOSH REL
TWA 100 ppm (400 mg/m^3) See Appendix C (Chloroethanes)
OSHA PEL
TWA 100 ppm (400 mg/m^3)

MEASUREMENT METHODS

NIOSH 1003;
OSHA 7
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless, oily liquid with a chloroform-like odor.

MOLECULAR WEIGHT

99.0

BOILING POINT

135°F

FREEZING POINT

-143°F

SOLUBILITY

0.6%

VAPOR PRESSURE

182 mmHg

IONIZATION POTENTIAL

11.06 eV

SPECIFIC GRAVITY

1.18

FLASH POINT

2°F

UPPER EXPLOSIVE LIMIT

11.4%

LOWER EXPLOSIVE LIMIT

5.4%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers, strong caustics

EXPOSURE ROUTES

inhalation, ingestion, skin and/or eye contact

SYMPTOMS

irritation skin; central nervous system depression; liver, kidney, lung damage

TARGET ORGANS

Skin, liver, kidneys, lungs, central nervous system

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap flush promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH/OSHA

Up to 1000 ppm:
(APF = 10) Any supplied-air respirator

Up to 2500 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 3000 ppm:
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0249

Page last reviewed: October 30, 2019

Vinylidene chloride

SYNONYMS & TRADE NAMES

1,1-DCE, 1,1-Dichloroethene, 1,1-Dichloroethylene, VDC, Vinylidene chloride monomer, Vinylidene dichloride

CAS NO.

75-35-4

RTECS NO.

KV9275000

DOT ID & GUIDE

1303 130P(inhibited)

FORMULA

$CH_2=CCl_2$

CONVERSION

IDLH

Ca [N.D.]
See: IDLH INDEX

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A
OSHA PEL
none See Appendix G

MEASUREMENT METHODS

NIOSH 1015;
OSHA 19
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor.

MOLECULAR WEIGHT

96.9

BOILING POINT

89°F

FREEZING POINT

-189°F

SOLUBILITY

0.04%

VAPOR PRESSURE

500 mmHg

IONIZATION POTENTIAL

10.00 eV

SPECIFIC GRAVITY

1.21

FLASH POINT

-2°F

UPPER EXPLOSIVE LIMIT

15.5%

LOWER EXPLOSIVE LIMIT

6.5%

Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.

INCOMPATIBILITIES & REACTIVITIES

Aluminum, sunlight, air, copper, heat [Note: Polymerization may occur if exposed to oxidizers, chlorosulfonic acid, nitric acid, or oleum. Inhibitors such as the monomethyl ether of hydroquinone are added to prevent polymerization.]

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, central nervous system, liver, kidneys

CANCER SITE

[in animals: liver & kidney tumors]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap flush immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION   ICSC CARD: 0083

Page last reviewed: October 30, 2019

Ethylene dichloride

SYNONYMS & TRADE NAMES

1,2-Dichloroethane, Ethylene chloride, Glycol dichloride

CAS NO.

107-06-2

RTECS NO.

KI0525000

DOT ID & GUIDE

1184 131

FORMULA

$ClCH_2CH_2Cl$

CONVERSION

1 ppm = 4.05 mg/m^3

IDLH

Ca [50 ppm]
See: 107062

EXPOSURE LIMITS

NIOSH REL
Ca TWA 1 ppm (4 mg/m^3) ST 2 ppm (8 mg/m^3) See Appendix A See Appendix C (Chloroethanes)
OSHA PEL
TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours] See Appendix G

MEASUREMENT METHODS

NIOSH 1003;
OSHA 3
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.]

MOLECULAR WEIGHT

99.0

BOILING POINT

182°F

FREEZING POINT

-32°F

SOLUBILITY

0.9%

VAPOR PRESSURE

64 mmHg

IONIZATION POTENTIAL

11.05 eV

SPECIFIC GRAVITY

1.24

FLASH POINT

56°F

UPPER EXPLOSIVE LIMIT

16%

LOWER EXPLOSIVE LIMIT

6.2%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers & caustics; chemically-active metals such as magnesium or aluminum powder, sodium & potassium; liquid ammonia [Note: Decomposes to vinyl chloride & HCl above 1112°F.]

EXPOSURE ROUTES

inhalation, ingestion, skin absorption, skin and/or eye contact

SYMPTOMS

irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, kidneys, liver, central nervous system, cardiovascular system

CANCER SITE

[in animals: forestomach, mammary gland & circulatory sys cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0250 MEDICAL TESTS: 0104

Page last reviewed: October 30, 2019

Chloroform

SYNONYMS & TRADE NAMES

Methane trichloride, Trichloromethane

CAS NO.

67-66-3

RTECS NO.

FS9100000

DOT ID & GUIDE

1888 151

FORMULA

$CHCl_3$

CONVERSION

1 ppm = 4.88 mg/m^3

IDLH

Ca [500 ppm]
See: 67663

EXPOSURE LIMITS

NIOSH REL
Ca ST 2 ppm (9.78 mg/m^3) [60-minute] See Appendix A
OSHA PEL
C 50 ppm (240 mg/m^3) See Appendix G

MEASUREMENT METHODS

NIOSH 1003
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a pleasant odor.

MOLECULAR WEIGHT

119.4

BOILING POINT

143°F

FREEZING POINT

-82°F

SOLUBILITY

(77°F): 0.5%

VAPOR PRESSURE

160 mmHg

IONIZATION POTENTIAL

11.42 eV

SPECIFIC GRAVITY

1.48

FLASH POINT

NA

UPPER EXPLOSIVE LIMIT

NA

LOWER EXPLOSIVE LIMIT

NA

Noncombustible Liquid

INCOMPATIBILITIES & REACTIVITIES

Strong caustics; chemically-active metals such as aluminum or magnesium powder, sodium & potassium; strong oxidizers [Note: When heated to decomposition, forms phosgene gas.]

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]

TARGET ORGANS

Liver, kidneys, heart, eyes, skin, central nervous system

CANCER SITE

[in animals: liver & kidney cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0027 MEDICAL TESTS: 0047

Page last reviewed: October 30, 2019

Was this page helpful?

Yes Partly No

Chlorodiphenyl (54% chlorine)

SYNONYMS & TRADE NAMES

Aroclor® 1254, PCB [Chlorodiphenyl (54% chlorine)], Polychlorinated biphenyl [Chlorodiphenyl (54% chlorine)]

CAS NO.

11097-69-1

RTECS NO.

TQ1360000

DOT ID & GUIDE

2315 171

FORMULA

$C_6H_3Cl_2C_6H_2Cl_3$ (approx)

CONVERSION

IDLH

Ca [5 mg/m^3]
See: IDLH INDEX

EXPOSURE LIMITS

NIOSH REL
Ca TWA 0.001 mg/m^3 See Appendix A [*Note: The REL also applies to other PCBs.]
OSHA PEL
TWA 0.5 mg/m^3 [skin]

MEASUREMENT METHODS

NIOSH 5503;
OSHA PV2088
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor.

MOLECULAR WEIGHT

326 (approx)

BOILING POINT

689-734°F

FREEZING POINT

50°F

SOLUBILITY

Insoluble

VAPOR PRESSURE

0.00006 mmHg

IONIZATION POTENTIAL

?

SPECIFIC GRAVITY

(77°F): 1.38

FLASH POINT

NA

UPPER EXPLOSIVE LIMIT

NA

LOWER EXPLOSIVE LIMIT

NA

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]

TARGET ORGANS

Skin, eyes, liver, reproductive system

CANCER SITE

[in animals: tumors of the pituitary gland & liver, leukemia]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0939 MEDICAL TESTS: 0176

Page last reviewed: October 30, 2019

APPENDIX B

RELATIVE RESPONSE TABLE FOR FIELD MONITORING EQUIPMENT

Table 1. Relative Response of Field Monitoring Equipment to Selected Compounds

Compound	IP (eV)	PID (<10.2eV)	FID (<15.4eV)	%LEL	Odor Threshold (ppm)	TWA (ppm)	STEL (ppm)
p-xylene	8.44	E	E	1.1	NA	100	150
o,m-xylene	8.56	E	E	0.9	NA	100	150
ethylbenzene	8.76	E	E	0.8	0.092-0.60	100	125
toluene	8.82	E	E	1.1	0.16-37	100 (C300)	150
1,2-dichlorobenzene	9.06	E	NA	2.2	0.70	C50	NA
chlorobenzene	9.07	E	NA	1.3	1.3	75	NA
benzene	9.24	E	E	1.2	34-119	0.1	1
tetrachloroethene	9.32	G	F		47	25 (C200)	NA
trichloroethene	9.45	G	G	8.0	82	50 (C200)	200
methyl ethyl ketone (2-butanone)	9.54	G	G	1.4	1-30	200	300
cis/trans-1,2-dichloroethene	9.65	G	NA	5.6	0.08-17	200	NA
acetone (2-propanone)	9.69	G	E	2.5	3.6-653	250	NA
vinyl chloride	9.99	F	F	3.6	10-20	1 (C5)	NA
1,1-dichloroethene	10.00	G	NA	6.5	NA	1	NA
chloroethane	10.97	NR	E	3.8	4.2	1000	NA
1,1,1-trichloroethane	11.00	NR	E	7.5	390	C350	NA
1,1,2-trichloroethane	11.00	NR	NA	6.0	0.5-167	10	NA
1,2-dichloroethane	11.05	NR	G	6.2	6-185	1	2
1,1-dichloroethane	11.06	NR	NA	5.4	49-1359	100	NA
methylene chloride	11.32	NR	G-E	13	160	25	125
chloroform	11.42	NR	G	NR	133-276		2
dichlorodifluoromethane (Freon 12)	11.75	NR	F-P	NR	NA	1000	NA
trichlorofluoromethane (Freon 11)	11.77	NR	F-P	NR	5-100	C1000	NA
1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)	11.99	NR	G	NR	0.5-200	1000	1250

IP = ionization potential
PID = photoionization detector
FID = flame ionization detector
%LEL = percent lower explosive limit (for explosimeter)
ppm = parts per million
TWA = 8-hour time-weighted average: value listed is the lowest of NIOSH and OSHA values
STEL = short-term exposure limit: value listed is the lowest of NIOSH and OSHA values
C = ceiling value, do not exceed
NR = no response (i.e., compound is not flammable or has a higher IP than the detector)
NA = not available
Response relative to methane standard for PID or benzene standard for FID:
E = excellent G = good F = fair P = poor

APPENDIX C

CONFINED SPACE ENTRY PERMIT (sample)

Groundwater Sciences Corporation Confined Space Entry Permit

Date ☐ **Start Time** ☐ AM ☐ PM ☐

Emergency # (notified prior to entry √)
Phone number: ☐

Location of Work: ____________________

Nature of Work (describe): ____________________

Personnel Trained In	Y	N	NA		Y	N	NA
Emergency Entry & Exit Procedures	☐	■	■	First Aid	☐	☐	☐
Use of Appropriate Respirators	☐	☐	☐	Rescue Procedures & First Aid	☐	☐	☐
When & How to Exit the Space	☐	■	■	Use of Confined Space Equipment	☐	■	■
Review of Material Data Sheets (MSDS's)	☐	☐	☐	Means of Communication	☐	■	■
How hazards are Controlled	☐	■	■	Non-routine Tasks ____________	☐	☐	☐
Signs & Symptoms of Chemical Exposure	☐	■	☐	Lockout Tagout Procedures	☐	☐	☐
Other: ____________	☐	☐	☐	Safe Work Practices	☐	■	■

Potential Confined Space Hazards	Y	N	NA		Y	N	NA
Oxygen Deficient/Enriched Atmosphere	☐	☐	☐	Mechanical	☐	☐	☐
Flammable/Explosive Atmosphere	☐	☐	☐	Electrical	☐	☐	☐
Equipment Hazards	☐	☐	☐	Humidity/Temperature	☐	☐	☐
Toxic Gases/Fumes	☐	☐	☐	Chemical	☐	☐	☐

Confined Space Preparation Checklist	Y	N	NA		Y	N	NA
Blanking/Disconnecting Lines	☐	☐	☐	Full Body Harness w/'D' Ring	☐	■	☐
Electrical Lockout	☐	☐	☐	Emergency Escape Retreval Equip.	☐	☐	☐
Mechanical Lockout	☐	☐	☐	Lifelines	☐	☐	☐
Purge-Flush & Vent	☐	☐	☐	Fire Extinguisher(s)	☐	☐	☐
Secure Area (baracade, post & flag)	☐	☐	☐	Lighting (explosion proof)	☐	☐	☐
Calibrated of Confined Space Meter	☐	☐	☐	Protective Clothing ____________	☐	☐	☐
Forced Air Ventilation	☐	■	■	Respirator(s) (air purifying)/supplied air	☐	☐	☐
Breathing Apparatus	☐	■	☐	Burning & Welding Permit	☐	■	☐
Ground Fault Protection (GFCI)	☐	■	☐	Hazards Identified & Explained	☐	■	■
Authorized Attendant	☐	■	■	Fall Protection	☐	■	☐
Other:	☐	☐	☐	Area Free of Flammables, Toxic Chemicals	☐	■	☐
				Communication System Tested/On-site	☐	■	■

Meter Bump Check

Meter Serial Number ____________________

Conducted by (*print name*): ____________________

Bump Check Readings:	**%O_2**	**%LEL**	**H_2S (ppm)**	**CO (ppm)**	**Other Toxic:**

Atmospheric testing shall be continous throughout entry - document the readings every two hours

Time	**%O_2** *19.5 - 23.5 %*	**%LEL** *<10%*	**H_2S** *< 10 ppm*	**CO** *< 35 ppm*	**Other Toxic Gases/Fumes:** *< 2 ppm*	**Initials**

Name *(print clearly)*		**Signature**
Entry Supervisor:	____________	____________
Attendant:	____________	____________
Entrant:	____________	____________
Entrant:	____________	____________
Entrant:	____________	____________
Entrant:	____________	____________

Authorization/Approval (Director, Manager, or Supervisor): ____________ **Date:** ____________

This permit cannot be issued for a time period exceeding one uninterrupted work shift.

APPENDIX D

HOSPITAL ROUTE MAP

A Enterprise Dr, Kingston, NY 12401
B HealthAlliance Hospital Emergency Department
105 Mary's Ave E, Kingston, NY 12401

13 min , 4.6 miles

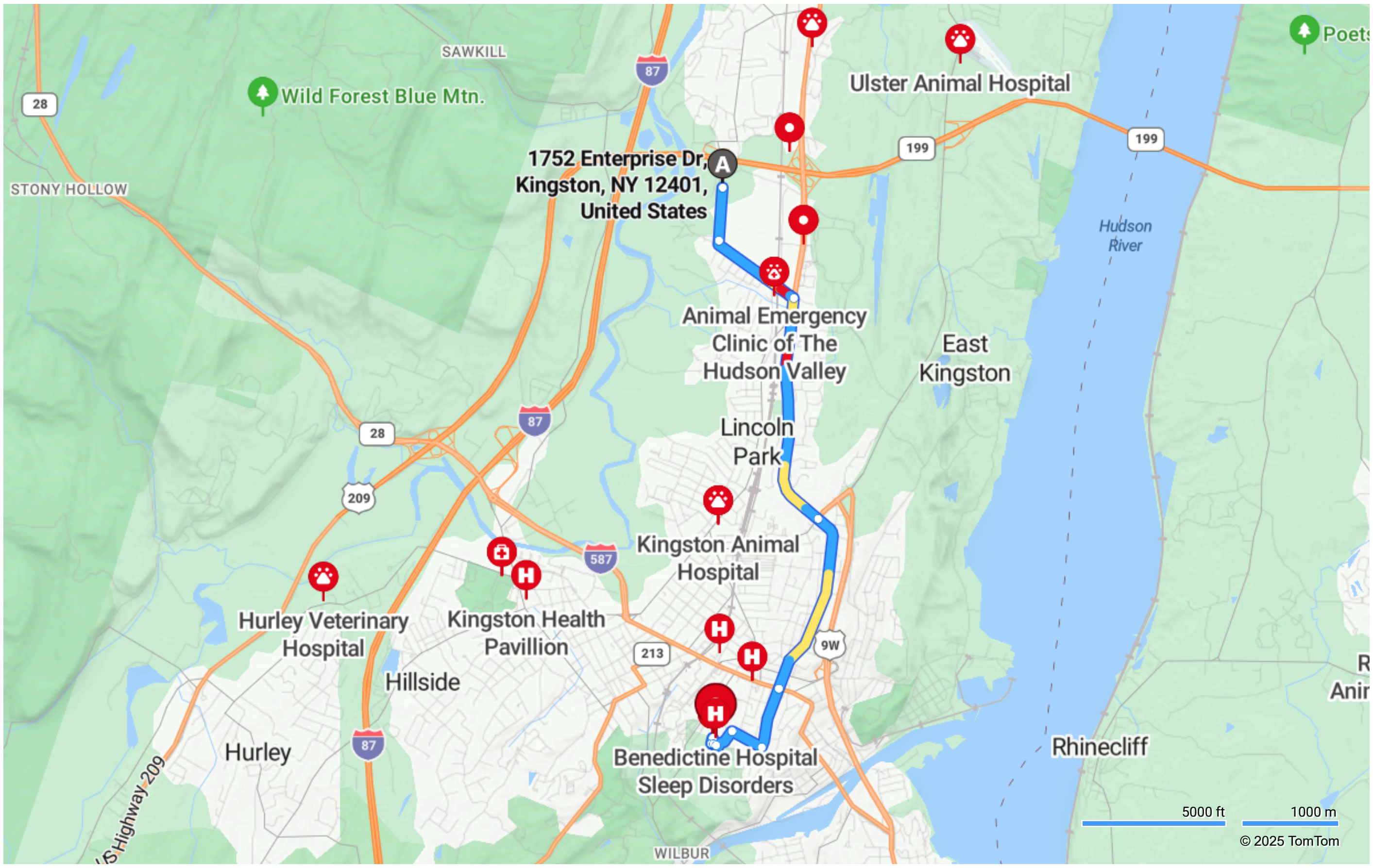
Via US-9W S, E Chester St

A **Enterprise Dr, Kingston, NY 12401, United States**

↑	1.	Depart and turn **left** onto **Enterprise Dr**	0.3 mi
↰	2.	Turn **left** onto **Boices Ln**	0.6 mi
↱	3.	Turn **right** onto **US-9W S / Ulster Ave** Popeyes Louisiana Kitchen on the corner	1.5 mi
↑	4.	Keep **straight** to get onto **E Chester St**	1.2 mi
↑	5.	Road name changes to **W Chester St**	0.4 mi
↱	6.	Turn **right** onto **Marys Ave**	0.2 mi
↰	7.	Turn **left** onto **Webster St**	0.2 mi
↱	8.	Turn **right**	200 ft
↱	9.	Turn **right**	79 ft
↱	10.	Turn **right**	207 ft
	11.	Arrive at destination	

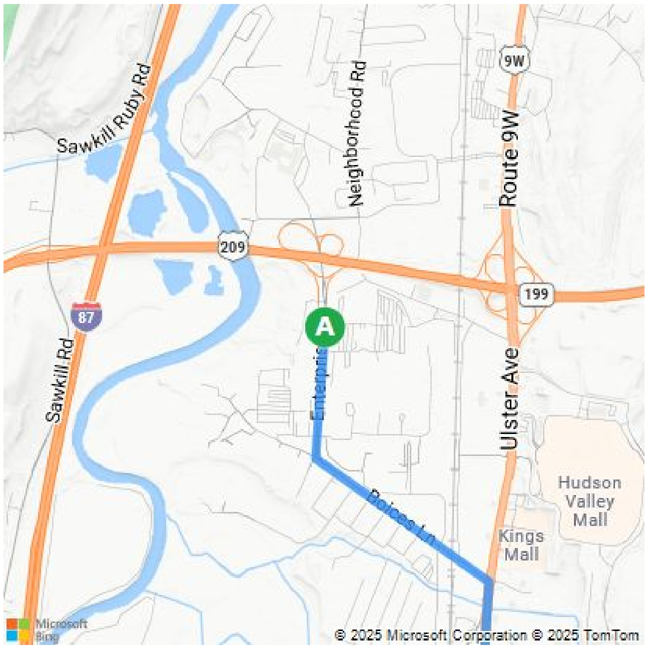
B **HealthAlliance Hospital Emergency Department**

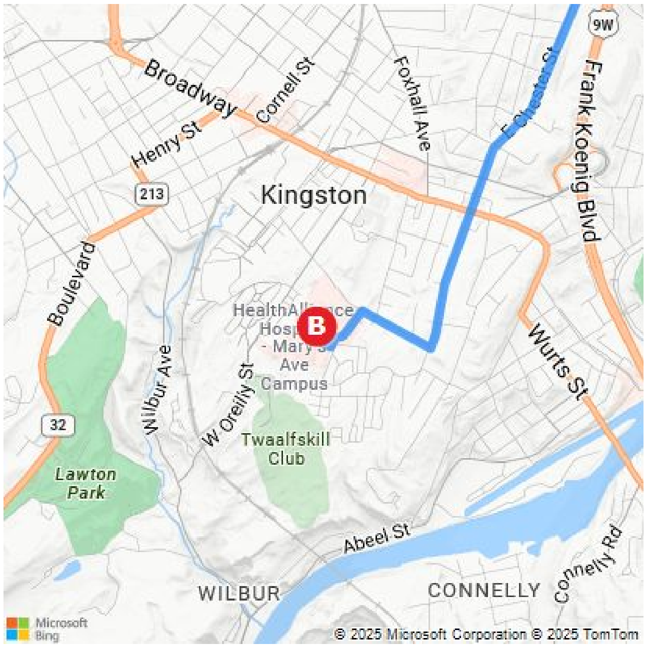
105 Marys Avenue E, Kingston NY 12401
(845) 338-2500



A **Enterprise Dr, Kingston, NY 12401, U...**

B **HealthAlliance Hospital Emergency Depar...**





APPENDIX E: Supporting Documentation

Appendix E-1: NYSDEC, September 15, 2022, Request for Additional Emerging Contaminants Sampling and Water Treatment System Upgrade, Former IBM-Kingston Site, NYSDEC Site Number 356002, Kingston, Ulster County, NY

Appendix E-2: NYSDEC, September 18, 2024, Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

Appendix E-3: NYSDEC, January 15, 2025, Supplemental Site Characterization Emerging Contaminants Soil Sampling Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

Appendix E-4 NYSDEC, May 8, 2026, Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

Appendix E-5: NYSDOH, April 1, 2026, Eurofins Lancaster Laboratories Environment Testing, LLC of Lancaster, Pennsylvania, NYSDOH Certificate of Approval for Laboratory Service

Appendix E-1: NYSDEC, September 15, 2022, Request for Additional Emerging Contaminants Sampling and Water Treatment System Upgrade, Former IBM-Kingston Site, NYSDEC Site Number 356002, Kingston, Ulster County, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 12th Floor, Albany, NY 12233-7014
P: (518) 402-9662 I F: (518) 402-9722
www.dec.ny.gov

Via Electronic Mail Only

September 15, 2022

Stephen Brown, P.E.
Program Manager – Environmental Engineering
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109
Stephen.Brown2@ibm.com

RE: Request for Additional Emerging Contaminants Sampling
and Water Treatment System Upgrade
Former IBM-Kingston Site
NYSDEC Site No. 356002
Kingston, Ulster County, NY

Dear Mr. Brown:

The New York State Departments of Environmental Conservation (NYSDEC) and Health (NYSDOH) have reviewed the submittal *Emerging Contaminants Poly- and Perfluoroalkyl Substances (PFAS) and 1,4-Dioxane Sampling Report* (report), dated January 29, 2021, for the above-referenced site. The results of the on-site groundwater monitoring conducted in October 2020 for emerging contaminants (ECs) found perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and 1,4-dioxane levels in excess of the screening levels (drinking water maximum contaminant levels) for these compounds. Based on these findings, the NYSDEC is requesting the following:

1. Please develop a sampling work plan to further delineate the nature and extent of PFAS and 1,4-dioxane contamination in the various environmental media on-site, including
   a. the site soil,
      - 0 to 2 inches bgs (human health exposure),
      - 0 to 1 foot or 0 to 2 feet bgs depending on planned use (commercial or restricted-residential), and
      - at depth (e.g., groundwater interface).
   b. the potential source area surrounding MW-313S, and
   c. all SPDES outfall discharges.

2. Please provide a plan to upgrade the existing groundwater treatment system to address the elevated levels of PFAS and 1,4-dioxane found in the on-site groundwater. Based on our recent discussions, it appears IBM is already making preparations to upgrade the on-site groundwater treatment system.

The agencies understand that IBM will need to coordinate activities regarding the requested work plans and treatment system upgrades with the new property owners. Please provide the agencies within 60 days draft plans to upgrade the existing groundwater treatment system. If you have any questions or wish to discuss these requests, please feel free to contact me at (518) 402-9652, or e-mail at daniel.lanners@dec.ny.gov.

Sincerely,

Daniel R Lanners

Daniel R. Lanners, P.E.
Project Manager
Remedial Bureau C, Section D

ec: Amen Omorogbe, NYSDEC
David Pollock, NYSDEC R3
Daniel Bendell, NYSDEC R3
Justin Deming, NYSDOH
Melissa Doroski, NYSDOH
Julia Kenney, NYSDOH
Dean Chartrand, Groundwater Sciences (dchartrand@groundwatersciences.com)
Dorothy Bergmann, Groundwater Sciences (dbergmann@groundwatersciences.com)
Christopher Hemingway, WSP-Golder (chris_hemingway@golder.com)
DECDocs

Appendix E-2: NYSDEC, September 18, 2024, Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
P: (845) 256-3000 | F: (845) 255-2987
www.dec.ny.gov

Transmitted via e-mail

September 18, 2024

Stephen Brown, P.E.
Program Manager – Environmental Engineering
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109
Stephen.Brown2@ibm.com

Re: Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan
Site: Former IBM-Kingston Site
Site No: 356002
Location: Kingston, Ulster County, NY

Dear Stephen,

The New York State Department of Environmental Conservation (the NYSDEC) in conjunction with the New York State Department of Health (NYSDOH) has completed a review of the Emerging Contaminants (EC) Supplemental Site Characterization (SSC) MW-313S Area Work Plan (work plan) dated November 14, 2022 for the Former IBM-Kingston (site), Site No.: 356002, under the Inactive Hazardous Waste Program. In accordance with 6 NYCRR Part 375 1.6(d)(3) the NYSDEC requests the following modifications be made to the work plan:

Modification 1, Certification Page, Page 2: Beginning January 1, 2024, DER-10 certifications for workplans will be required as follows:

For a work plan:

> *"I _____ certify that I am currently a [NYS registered professional engineer or Qualified Environmental Professional as defined in 6 NYCRR Part 375] and that this Report [Remedial Design, Remedial Action Work Plan] was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (Der-31).";*

Modification 2: Change all references of USEPA Method 537 to USEPA Method 1633. Update pertinent sections of work plan, such as Table 3-1: PFAS Target Analyte List.

Modification 3: Please use and follow the NYSDEC's Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) guidance document dated April 2023. Please use Appendix G- PFAS Analyte List in this work plan, in addition to analyzing for 1,4-Dioxane.

Modification 4, Section 3.0, Page 21: The scope of work objectives includes the task of selecting sample locations based on historical monitoring data and knowledge of Site activities, current Site conditions and accessibility. Select soil sample locations that are in the vicinity of MW-313S that will be analyzed for PFAS. Collect a soil sample from the groundwater interface from one of these soil sample locations, down gradient from MW-313S, in addition to the surface soil samples. Ensure these locations are shown on Figure 3-2.

Modification 5, Section 3.1.1, Page 22: Add MW-260S to the groundwater sampling plan. This well is underneath a pile of material placed by iPark 87. This well should be sampled after the pile is removed.

Modification 6, Section 3.1.1, Page 22: Add MW-117s to the groundwater sampling plan.

Modification 7, Section 3.1.2, Page 23: Soil sampling for background conditions is not appropriate, remove all references to background locations and only discuss sample locations that are shown on the sample location figures.

Modification 8, Section 3.1.2, Page 23: Revise the sampling intervals for the Operable Units (OU) to be 0-2in below ground surface (bgs) and 0-1ft bgs for Commercial Use parcels and 0-2in bgs, 0-1ft bgs, and 0-2ft bgs for Restricted Residential Use parcels.

Modification 9, SOP-2, Section 2, Page 49: Water level measurements should be taken during the sampling of monitoring wells while utilizing low flow sampling methods. Revise this SOP and other sections of the work plan to reflect this.

Modification 10, SOP-3, Section 2.1, Page 52: Water levels should be collected as part of the low flow sampling method. Monitoring wells samples should be collected in order of most contaminated to least contaminated as a best management practice.
If you are concerned that decontamination procedures will not be enough to prevent cross contamination between monitoring wells then an equipment blank sample should be taken off the water level meter.

Modification 11, SOP-3, Section 2.3, Page 54: When a monitoring well purges dry during low-flow stabilization, field personnel need to document when this occurs on a field or sampling log. Include all groundwater sampling and field logs in the Emerging Contaminant Sampling Investigation Report.

Modification 12, SOP-5, Section 1, Page 57: This Standard Operating Procedures (SOP) is for soil sampling procedures. Please remove the bullet “Groundwater Sample Collection Procedures; and” for the list of what is included in this SOP.

Modification 13, SOP-5, Section 2.2, Page 58: Please spell out acronyms the first instance or include them in Table A: Summary of Abbreviations Used in this Report. “PFC” has not been defined in this work plan.

Modification 14: Revise this work plan to say that all sample locations will be surveyed or GPS located.

Modification 15, QAPP: In accordance with DER-10 - 2.4 (a)(2)(V) an “Analytical Methods/Quality Assurance Summary Table” which must include the following information for all environmental, performance evaluation and quality control samples:

1. matrix type;
2. number of frequency of samples to be collected per matrix;
3. number of field and trip blanks per matrix;
4. analytical parameters to be measured per matrix;
5. analytical methods to be used per matrix with minimum reporting requirements;
6. number and type of matrix spike duplicate samples to be collected;
7. number and type of duplicate samples to be collected;
8. sample preservation to be used per analytical method and sample matrix;
9. sample container volume and type to be used per analytical method and sample matrix; and
10. sample holding time to be used per analytical method and sample matrix.

In accordance with 6 NYCRR Part 375-1.6(d)(3) should the respondent elect to modify the work plan, please notify the NYSDEC in writing within 15 days of receipt of this letter and provide a revised work plan within 30 days of the receipt of this letter. In your response, please include a response to comment letter which indicates how modifications have been incorporated into the revised work plan.

If you have any questions or concerns, please feel free to contact me at (845) 256-3112 or via email at alexander.malamet@dec.ny.gov.

Sincerely,

Alexander Malamet
Assistant Geologist
Region 3
Division of Environmental Remediation

ec:
D. Bergmann, Groundwater Sciences (dbergmann@groundwatersciences.com)

D. Chartrand, Groundwater Sciences (dchartrand@groundwaterscienes.com)
C. Hemingway, WSP-Golder (chris.hemingway@wsp.com)
J, Kenney, NYSDOH (Julia.Kenney@health.ny.gov)
M. Doroski, NYSDOH (melissa.doroski@health.ny.gov)
S. McCague, DEC (Steven.McCague@dec.ny.gov)
D. Pollock, DEC (david.pollock@dec.ny.gov)
J. Petronella, DEC (John.petronella@dec.ny.gov)
DECDOCS

Appendix E-3: NYSDEC, January 15, 2025, Supplemental Site Characterization Emerging Contaminants Soil Sampling Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
P: (845) 256-3000 | F: (845) 255-2987
www.dec.ny.gov

Transmitted via e-mail

January 15, 2025

Stephen Brown, P.E.
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109
Stephen.Brown2@IBM.com

Re: Supplemental Site Characterization Emerging Contaminants Soil Sampling Work Plan
Site: Former IBM-Kingston Site
Site No: 356002
Location: Kingston, Ulster County, NY

Dear Stephen,

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has completed a review of the December 5, 2024 email, supplemental suggestions and discussions sent in response to the Supplemental Site Characterization Emerging Contaminant Sampling Work Plan Modification Letters dated September 18, 2024. The NYSDEC tentatively accepts the revisions proposed by IBM with the exception of the following from each work plan:

- Background Sample Locations – The NYSDEC will not allow sample locations to be called background locations. “Background locations” are defined in DER-10 and the description used in the work plans or discussions provided does not match with the one in DER-10. Please see DER-10 Sections 3.5.3 and 3.7.3 for more guidance on how site-specific background evaluations must be implemented. All instances of “Background Locations” should be removed.
- Soil Modification 4 – The NYSDEC agrees with the recommendation to move the sample identified as 4b but disagrees with the request to remove sample 4a from the sample locations. The NYSDEC is looking to collect samples from across the site and sample 4a represents a northeastern location that is greater than 500ft from the next closest sample.
- Soil Modification 5 – The NYSDEC agrees with moving sample 5a to be closer to MW-283S. Instead of removing location 5b, have it moved to the northeastern corner of B005N, in the grassy area.
- Soil Modification 9 – The NYSDEC disagrees with the recommendation to remove this added soil sample location. This area of reworked soil was not

remediated with a focus on PFAS and temperatures used during the in situ thermal desorption interim corrective measure were not hot enough to destroy PFAS compounds.

- Soil Modification 12 – The NYSDEC disagrees with the recommendation to remove this soil sample location. There is plenty of undisturbed ground east of the groundwater treatment facility that could be sampled. Weekly field reports indicate that area’s soil has been mostly untouched during the groundwater treatment facility improvement project.
- Soil Modification 14 – The NYSDEC disagrees with the recommendation to remove this soil sample location. This sample location was added to investigate the northern most portion of OU-4 to ensure appropriate sampling coverage of the site. The location of sample 14 can be moved to a grassy area if taking the sample in a paved area is an issue.

If you have any questions or concerns, please feel free to contact me at (845) 256-3112.

Sincerely,

Alex Malamet

Alexander Malamet
Assistant Geologist
Region 3
Division of Environmental Remediation

ec:
D. Bergmann, Groundwater Sciences (dbergmann@groundwatersciences.com)
D. Chartand, Groundwater Sciences (dchartrand@groundwatersciences.com)
C. Hemingway, WSP-Golder (chris.hemingway@wsp.com)
J. Kenny, NYSDOH (julia.kenny@health.ny.gov)
M. Doroski, NYSDOH (melissa.dorosky@health.ny.gov)
D. Lanners, NYSDEC (daniel.lanners@dec.ny.gov)
S. McCague, NYSDEC (steven.mccague@dec.ny.gov)
D. Pollock, NYSDEC (david.pollock@dec.ny.gov)
J. Petronella, NYSDEC (john.petronella@dec.ny.gov)
DECDOCS

Appendix E-4: NYSDEC, May 8, 2026, Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan, Former IBM Kingston Site, Site No. 356002, Kingston, Ulster County, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
P: (845) 256-3000 | F: (845) 255-2987
www.dec.ny.gov

Transmitted via e-mail

May 8, 2026

Stephen Brown, P.E.
Program Manager – Environmental Engineering
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109
Stephen.Brown2@ibm.com

Re: Emerging Contaminants Supplemental Site Characterization MW-313S Area Work Plan
Site: Former IBM-Kingston Site
Site No: 356002
Location: Kingston, Ulster County, NY

Dear Stephen,

The New York State Department of Environmental Conservation (the DEC) in conjunction with the New York State Department of Health (NYSDOH) has completed a review of the Emerging Contaminants (EC) Supplemental Site Characterization (SSC) MW-313S Area Work Plan (work plan) dated March 31, 2025 for the Former IBM-Kingston (site), Site No.: 356002, under the Inactive Hazardous Waste Program. In accordance with 6 NYCRR Part 375 1.6(d)(3) the NYSDEC requests the following modifications be made to the work plan:

Modification X, Section 3.1.2, Page 23: Describe the soil sample locations in more detail. Clarify which location will be selected for the groundwater-interface sample location. That sample location should be closer to MW-313s. Both soil sample locations should be downgradient of MW-313s. Both sample locations should be precisely located on Figure 3-2 in order to see their relative position to each other.
Modification X, SOP-5, Section 2.2, Page 69: Revise the sampling intervals to be concurrent with section 3.1.2.

Modification X, SOP-5, Section 2.2, Page 69: Should resistance be encountered while using a hand auger to reach the groundwater-interface, a geoprobe or other drill method should be utilized. It may be wise to expand the locations or soil sampling plan if a geoprobe is brought on site to collect more data while it is available on site.

In accordance with 6 NYCRR Part 375-1.6(d)(3) should the respondent elect to modify the work plan, please notify the DEC in writing within 15 days of receipt of this letter and provide a revised work plan within 30 days of the receipt of this letter. In your response, please include a response to comment letter which indicates how modifications have been incorporated into the revised work plan.

If you have any questions or concerns, please feel free to contact me at (845) 256-3112 or via email at alexander.malamet@dec.ny.gov.

Sincerely,

Alexander Malamet
Assistant Geologist
Region 3
Division of Environmental Remediation

ec:
D. Bergmann, Groundwater Sciences (dbergmann@groundwatersciences.com)
D. Chartrand, Groundwater Sciences (dchartrand@groundwaterscienes.com)
C. Hemingway, WSP-Golder (chris.hemingway@wsp.com)
J, Kenney, NYSDOH (Julia.Kenney@health.ny.gov)
M. Doroski, NYSDOH (melissa.doroski@health.ny.gov)
S. McCague, DEC (Steven.McCague@dec.ny.gov)
D. Pollock, DEC (david.pollock@dec.ny.gov)
J. Petronella, DEC (John.petronella@dec.ny.gov)
DECDOCS

Appendix E-5: NYSDOH, April 1, 2026, Eurofins Lancaster Laboratories Environment Testing, LLC of Lancaster, Pennsylvania, NYSDOH Certificate of Approval for Laboratory Service

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:

Acrylates

Acetonitrile	EPA TO-15
Acrylonitrile	EPA TO-15
Ethyl acrylate	EPA TO-15
Methyl methacrylate	EPA TO-15

Chlorinated Hydrocarbons

1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Hexachloroethane	EPA TO-15

Polynuclear Aromatics

Naphthalene	EPA TO-15

Purgeable Aromatics

1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15
o-Xylene	EPA TO-15
Styrene	EPA TO-15
Toluene	EPA TO-15
Total Xylenes	EPA TO-15

Serial No.: 71901

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:

Purgeable Halocarbons

1,1,1-Trichloroethane	EPA TO-15
1,1,2,2-Tetrachloroethane	EPA TO-15
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-15
1,1,2-Trichloroethane	EPA TO-15
1,1-Dichloroethane	EPA TO-15
1,1-Dichloroethene	EPA TO-15
1,2-Dibromo-3-chloropropane	EPA TO-15
1,2-Dibromoethane	EPA TO-15
1,2-Dichloroethane	EPA TO-15
1,2-Dichloropropane	EPA TO-15
3-Chloropropene (Allyl chloride)	EPA TO-15
Bromodichloromethane	EPA TO-15
Bromoform	EPA TO-15
Bromomethane	EPA TO-15
Carbon tetrachloride	EPA TO-15
Chloroethane	EPA TO-15
Chloroform	EPA TO-15
Chloromethane	EPA TO-15
cis-1,2-Dichloroethene	EPA TO-15
cis-1,3-Dichloropropene	EPA TO-15
Dibromochloromethane	EPA TO-15
Dichlorodifluoromethane	EPA TO-15
Methylene chloride	EPA TO-15
Tetrachloroethene	EPA TO-15
trans-1,2-Dichloroethene	EPA TO-15
trans-1,3-Dichloropropene	EPA TO-15
Trichloroethene	EPA TO-15

Serial No.: 71901

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:

Purgeable Halocarbons

Trichlorofluoromethane	EPA TO-15
Vinyl bromide	EPA TO-15
Vinyl chloride	EPA TO-15

Volatile Chlorinated Organics

Benzyl chloride	EPA TO-15

Volatile Organics

1,2-Dichlorotetrafluoroethane	EPA TO-15
1,3-Butadiene	EPA TO-15
1,4-Dioxane	EPA TO-15
2,2,4-Trimethylpentane	EPA TO-15
2-Butanone (Methylethyl ketone)	EPA TO-15
4-Methyl-2-Pentanone	EPA TO-15
Acetone	EPA TO-15
Acrolein (Propenal)	EPA TO-15
Carbon Disulfide	EPA TO-15
Cyclohexane	EPA TO-15
Hexane	EPA TO-15
Isopropanol	EPA TO-15
Methyl iodide	EPA TO-15
Methyl tert-butyl ether	EPA TO-15
n-Heptane	EPA TO-15
tert-butyl alcohol	EPA TO-15
Vinyl acetate	EPA TO-15

Serial No.: 71901

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Dissolved Gases

Acetylene	RSK-175
Ethane	RSK-175
Ethene (Ethylene)	RSK-175
Methane	RSK-175
Propane	RSK-175

Fuel Additives

Methyl tert-butyl ether	EPA 524.2
Naphthalene	EPA 524.2

Metals I

Arsenic, Total	EPA 200.8 Rev. 5.4
Barium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Cadmium, Total	EPA 200.8 Rev. 5.4
Chromium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Copper, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Iron, Total	EPA 200.7 Rev. 4.4
Lead, Total	EPA 200.8 Rev. 5.4
Manganese, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Mercury, Total	EPA 245.1 Rev. 3.0
Selenium, Total	EPA 200.8 Rev. 5.4
Silver, Total	EPA 200.7 Rev. 4.4
Zinc, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Metals II

Aluminum, Total	EPA 200.8 Rev. 5.4
Antimony, Total	EPA 200.8 Rev. 5.4
Beryllium, Total	EPA 200.8 Rev. 5.4
Molybdenum, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Nickel, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Thallium, Total	EPA 200.8 Rev. 5.4
Vanadium, Total	EPA 200.7 Rev. 4.4

Metals III

Calcium, Total	EPA 200.7 Rev. 4.4
Magnesium, Total	EPA 200.7 Rev. 4.4
Potassium, Total	EPA 200.7 Rev. 4.4
Sodium, Total	EPA 200.7 Rev. 4.4

Methylcarbamate Pesticides

3-Hydroxy Carbofuran	EPA 531.1
Aldicarb	EPA 531.1
Aldicarb Sulfone	EPA 531.1
Aldicarb Sulfoxide	EPA 531.1
Carbaryl	EPA 531.1
Carbofuran	EPA 531.1
Methomyl	EPA 531.1
Oxamyl	EPA 531.1

Miscellaneous

2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 1613B
Methyl iodide	EPA 524.2

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Organic Carbon, Total	SM 21-23 5310C (-00)
Surfactant (MBAS)	SM 21-23 5540C (-00)
Turbidity	SM 21-23 2130 B (-01)
	EPA 180.1 Rev. 2.0

Non-Metals

Alkalinity	SM 21-23 2320B (-97)
Calcium Hardness	SM 18-22 2340C (-97)
	SM 18-22 2340B (-97)
Chloride	EPA 300.0 Rev. 2.1
Color	SM 21-23 2120B (-01)
Cyanide	EPA 335.4 Rev. 1.0
Fluoride, Total	EPA 300.0 Rev. 2.1
	SM 21-23 4500-F C (-97)
Nitrate (as N)	EPA 353.2 Rev. 2.0
	EPA 300.0 Rev. 2.1
Nitrite (as N)	EPA 353.2 Rev. 2.0
	EPA 300.0 Rev. 2.1
Orthophosphate (as P)	SM 19, 21-23 4500-P E (-99)
Silica, Total	SM 21-23 4500-SiO2 C (-97)
Solids, Total Dissolved	SM 21-23 2540C (-97)
Specific Conductance	SM 21-23 2510B (-97)
Sulfate (as SO4)	EPA 300.0 Rev. 2.1

Perfluorinated Alkyl Acids

11Cl-PF3OUdS	EPA 533
	EPA 537.1, Version 2
4:2FTS	EPA 533

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids

6:2FTS	EPA 533
8:2FTS	EPA 533
9Cl-PF3ONS	EPA 533
	EPA 537.1, Version 2
ADONA	EPA 533
	EPA 537.1, Version 2
HFPO-DA (GenX)	EPA 533
	EPA 537.1, Version 2
NEtFOSAA	EPA 537.1, Version 2
NFDHA	EPA 533
NMeFOSAA	EPA 537.1, Version 2
Perflourotridecanoic Acid (PFTrDA)	EPA 537.1, Version 2
Perfluordecanoic Acid (PFDA)	EPA 533
	EPA 537.1, Version 2
Perfluoro-3-Methoxypropanoic Acid (F	EPA 533
Perfluoro-4-Methoxybutanoic Acid (PF	EPA 533
Perfluorobutanesulfonic Acid (PFBS)	EPA 533
	EPA 537.1, Version 2
Perfluorobutanoic Acid (PFBA)	EPA 533
Perfluorododecanoic Acid (PFDoA)	EPA 533
	EPA 537.1, Version 2
Perfluoroheptanesulfonic Acid (PFHpS	EPA 533
Perfluoroheptanoic Acid (PFHpA)	EPA 533
	EPA 537.1, Version 2
Perfluorohexanesulfonic Acid (PFHxS	EPA 533
	EPA 537.1, Version 2
Perfluorohexanoic Acid (PFHxA)	EPA 533

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids

Perfluorohexanoic Acid (PFHxA)	EPA 537.1, Version 2
Perfluorononanoic Acid (PFNA)	EPA 533
	EPA 537.1, Version 2
Perfluorooctanesulfonic Acid (PFOS)	EPA 533
	EPA 537.1, Version 2
Perfluorooctanoic Acid (PFOA)	EPA 533
	EPA 537.1, Version 2
Perfluoropentanesulfonic Acid (PFPeS	EPA 533
Perfluoropentanoic Acid (PFPeA)	EPA 533
Perfluorotetradecanoic Acid (PFTeDA)	EPA 537.1, Version 2
Perfluoroundecanoic Acid (PFUnA)	EPA 533
	EPA 537.1, Version 2
PFEESA	EPA 533

Trihalomethanes

Bromodichloromethane	EPA 524.2
Bromoform	EPA 524.2
Chloroform	EPA 524.2
Dibromochloromethane	EPA 524.2
Total Trihalomethanes	EPA 524.2

Volatile Aromatics

1,2,3-Trichlorobenzene	EPA 524.2
1,2,4-Trichlorobenzene	EPA 524.2
1,2,4-Trimethylbenzene	EPA 524.2
1,2-Dichlorobenzene	EPA 524.2
1,3,5-Trimethylbenzene	EPA 524.2
1,3-Dichlorobenzene	EPA 524.2

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics

1,4-Dichlorobenzene	EPA 524.2
2-Chlorotoluene	EPA 524.2
4-Chlorotoluene	EPA 524.2
Benzene	EPA 524.2
Bromobenzene	EPA 524.2
Chlorobenzene	EPA 524.2
Ethyl benzene	EPA 524.2
Hexachlorobutadiene	EPA 524.2
Isopropylbenzene	EPA 524.2
n-Butylbenzene	EPA 524.2
n-Propylbenzene	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 524.2
sec-Butylbenzene	EPA 524.2
Styrene	EPA 524.2
tert-Butylbenzene	EPA 524.2
Toluene	EPA 524.2
Total Xylenes	EPA 524.2

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 524.2
1,1,1-Trichloroethane	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 524.2
1,1,2-Trichloroethane	EPA 524.2
1,1-Dichloroethane	EPA 524.2
1,1-Dichloroethene	EPA 524.2
1,1-Dichloropropene	EPA 524.2
1,2,3-Trichloropropane	EPA 524.2
1,2-Dichloroethane	EPA 524.2

Serial No.: 71898

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Volatile Halocarbons

1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 524.2
2,2-Dichloropropane	EPA 524.2
Bromochloromethane	EPA 524.2
Bromomethane	EPA 524.2
Carbon tetrachloride	EPA 524.2
Chloroethane	EPA 524.2
Chloromethane	EPA 524.2
cis-1,2-Dichloroethene	EPA 524.2
cis-1,3-Dichloropropene	EPA 524.2
Dibromomethane	EPA 524.2
Dichlorodifluoromethane	EPA 524.2
Methylene chloride	EPA 524.2
Tetrachloroethene	EPA 524.2
trans-1,2-Dichloroethene	EPA 524.2
trans-1,3-Dichloropropene	EPA 524.2
Trichloroethene	EPA 524.2
Trichlorofluoromethane	EPA 524.2
Vinyl chloride	EPA 524.2

Serial No.: 71898

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Acrylates

Acrolein (Propenal)	EPA 8260D
	EPA 624.1
Acrylonitrile	EPA 8260D
	EPA 624.1
Ethyl methacrylate	EPA 8260D
Methyl acrylonitrile	EPA 8260D
Methyl methacrylate	EPA 8260D

Amines

1,2-Diphenylhydrazine	EPA 625.1
	EPA 8270E
1-Naphthylamine	EPA 8270E
2,3-Dichloroaniline	EPA 625.1
2-Naphthylamine	EPA 8270E
2-Nitroaniline	EPA 8270E
3-Nitroaniline	EPA 8270E
4,4'-Methylenebis(2-chloroaniline)	EPA 8270E
4-Chloroaniline	EPA 8270E
4-Nitroaniline	EPA 8270E
5-Nitro-o-toluidine	EPA 8270E
Aniline	EPA 625.1
	EPA 8270E
Carbazole	EPA 625.1
	EPA 8270E
Diphenylamine	EPA 8270E
Pronamide	EPA 8270E
Propionitrile	EPA 8260D
Pyridine	EPA 625.1

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Amines

Pyridine	EPA 8270E

Benzidines

3,3'-Dichlorobenzidine	EPA 625.1
	EPA 8270E
3,3'-Dimethylbenzidine	EPA 8270E
Benzidine	EPA 625.1
	EPA 8270E

Chlorinated Hydrocarbon Pesticides

4,4'-DDD	EPA 8081B
	EPA 608.3
	EPA 8270E
4,4'-DDE	EPA 8081B
	EPA 608.3
	EPA 8270E
4,4'-DDT	EPA 8081B
	EPA 608.3
	EPA 8270E
Aldrin	EPA 8081B
	EPA 608.3
	EPA 8270E
alpha-BHC	EPA 8081B
	EPA 608.3
	EPA 8270E
alpha-Chlordane	EPA 8081B
	EPA 608.3
	EPA 8270E

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Chlorinated Hydrocarbon Pesticides

beta-BHC	EPA 8081B
	EPA 608.3
	EPA 8270E
Chlordane Total	EPA 8081B
	EPA 608.3
Chlorobenzilate	EPA 8270E
delta-BHC	EPA 8081B
	EPA 608.3
	EPA 8270E
Diallate	EPA 8270E
Dieldrin	EPA 8081B
	EPA 608.3
	EPA 8270E
Endosulfan I	EPA 8081B
	EPA 608.3
	EPA 8270E
Endosulfan II	EPA 8081B
	EPA 608.3
	EPA 8270E
Endosulfan sulfate	EPA 8081B
	EPA 608.3
	EPA 8270E
Endrin	EPA 8081B
	EPA 608.3
	EPA 8270E
Endrin aldehyde	EPA 8081B
	EPA 608.3

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Chlorinated Hydrocarbon Pesticides

Endrin aldehyde	EPA 8270E
Endrin Ketone	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608.3
	EPA 8270E
Heptachlor epoxide	EPA 8081B
	EPA 608.3
	EPA 8270E
Isodrin	EPA 8270E
Kepone	EPA 8081B
	EPA 8270E
Lindane	EPA 8081B
	EPA 608.3
	EPA 8270E
Methoxychlor	EPA 8081B
	EPA 608.3
	EPA 8270E
Mirex	EPA 8081B
	EPA 608.3
PCNB	EPA 8270E
Toxaphene	EPA 8081B
	EPA 608.3
trans-Chlordane	EPA 8081B
	EPA 608.3
	EPA 8270E

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260D

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Chlorinated Hydrocarbons

1,2,4,5-Tetrachlorobenzene	EPA 8270E
1,2,4-Trichlorobenzene	EPA 625.1
	EPA 8270E
1-Chloronaphthalene	EPA 8270E
2-Chloronaphthalene	EPA 625.1
	EPA 8270E
Hexachlorobenzene	EPA 625.1
	EPA 8270E
Hexachlorobutadiene	EPA 625.1
	EPA 8270E
Hexachlorocyclopentadiene	EPA 625.1
	EPA 8270E
Hexachloroethane	EPA 625.1
	EPA 8270E
Hexachloropropene	EPA 8270E
Pentachlorobenzene	EPA 8270E

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
	EPA 8321B
2,4,5-TP (Silvex)	EPA 8151A
	EPA 8321B
2,4-D	EPA 8151A
	EPA 8321B
2,4-DB	EPA 8151A
	EPA 8321B
Dalapon	EPA 8151A
	EPA 8321B

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Chlorophenoxy Acid Pesticides

Dicamba	EPA 8151A
	EPA 8321B
Dichloroprop	EPA 8151A
	EPA 8321B
Dinoseb	EPA 8151A
	EPA 8270E
	EPA 8321B
Pentachlorophenol	EPA 8151A

Demand

Biochemical Oxygen Demand	SM 5210B-2016
Carbonaceous BOD	SM 5210B-2016
Chemical Oxygen Demand	EPA 410.4, Rev. 2.0 (1993)

Dioxins and Furans

1,2,3,4,6,7,8,9-Octachlorodibenzofura	EPA 8290A
	EPA 1613B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-d	EPA 8290A
	EPA 1613B
1,2,3,4,6,7,8-Heptachlorodibenzofura	EPA 8290A
	EPA 1613B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-di	EPA 8290A
	EPA 1613B
1,2,3,4,7,8,9-Heptachlorodibenzofura	EPA 8290A
	EPA 1613B
1,2,3,4,7,8-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxi	EPA 8290A

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Dioxins and Furans

1,2,3,4,7,8-Hexachlorodibenzo-p-dioxi	EPA 1613B
1,2,3,6,7,8-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxi	EPA 8290A
	EPA 1613B
1,2,3,7,8,9-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxi	EPA 8290A
	EPA 1613B
1,2,3,7,8-Pentachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	EPA 8290A
	EPA 1613B
2,3,4,6,7,8-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
2,3,4,7,8-Pentachlorodibenzofuran	EPA 8290A
	EPA 1613B
2,3,7,8-Tetrachlorodibenzofuran	EPA 8290A
	EPA 1613B
2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 8290A
	EPA 1613B

Dissolved Gases

Acetylene	RSK-175
Ethane	RSK-175
Ethene (Ethylene)	RSK-175
Methane	RSK-175
Propane	RSK-175

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Fuel Oxygenates

Di-isopropyl ether	EPA 8260D
Ethanol	EPA 1671
	EPA 8260D
	EPA 8015D
	EPA 8015C
Methyl tert-butyl ether	EPA 8260D
	EPA 624.1
tert-amyl alcohol	EPA 8260D
tert-amyl methyl ether (TAME)	EPA 8260D
tert-butyl alcohol	EPA 1666A
	EPA 8260D
	EPA 624.1
tert-butyl ethyl ether (ETBE)	EPA 8260D

Haloethers

2,2'-Oxybis(1-chloropropane)	EPA 625.1
	EPA 8270E
4-Bromophenylphenyl ether	EPA 625.1
	EPA 8270E
4-Chlorophenylphenyl ether	EPA 625.1
	EPA 8270E
Bis(2-chloroethoxy)methane	EPA 625.1
	EPA 8270E
Bis(2-chloroethyl)ether	EPA 625.1
	EPA 8270E

Low Level Halocarbons

1,2-Dibromo-3-chloropropane, Low Le	EPA 8011

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Low Level Halocarbons

1,2-Dibromoethane, Low Level	EPA 8011

Low Level Polynuclear Aromatics

Acenaphthene Low Level	EPA 8270E SIM
Acenaphthylene Low Level	EPA 8270E SIM
Anthracene Low Level	EPA 8270E SIM
Benzo(a)anthracene Low Level	EPA 8270E SIM
Benzo(a)pyrene Low Level	EPA 8270E SIM
Benzo(b)fluoranthene Low Level	EPA 8270E SIM
Benzo(g,h,i)perylene Low Level	EPA 8270E SIM
Benzo(k)fluoranthene Low Level	EPA 8270E SIM
Chrysene Low Level	EPA 8270E SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270E SIM
Fluoranthene Low Level	EPA 8270E SIM
Fluorene Low Level	EPA 8270E SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270E SIM
Naphthalene Low Level	EPA 8270E SIM
Phenanthrene Low Level	EPA 8270E SIM
Pyrene Low Level	EPA 8270E SIM

Metals I

Barium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Cadmium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Metals I

Cadmium, Total	EPA 200.8, Rev. 5.4 (1994)
Calcium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Chromium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Copper, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Iron, Total	SM 3500-Fe B-2011
	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Lead, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Magnesium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Manganese, Total	EPA 200.7, Rev. 4.4 (1994)

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Metals I

Manganese, Total	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Nickel, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Potassium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Silver, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Sodium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Strontium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)

Metals II

Aluminum, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Metals II

Aluminum, Total	EPA 200.8, Rev. 5.4 (1994)
Antimony, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Arsenic, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Beryllium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Chromium VI	EPA 218.6, Rev. 3.3 (1994)
	EPA 7196A
	EPA 7199
	SM 3500-Cr B-2011
Mercury, Total	EPA 245.1, Rev. 3.0 (1994)
	EPA 7470A
Selenium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Vanadium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Metals II

Zinc, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)

Metals III

Cobalt, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Molybdenum, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Thallium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Tin, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Titanium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Uranium (Mass)	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Mineral	
Acidity	SM 2310B-2011
Alkalinity	SM 2320B-2011
Chloride	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-Cl- C-2011
	EPA 9056A
Fluoride, Total	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-F- C-2011
	EPA 9056A
Hardness, Total	SM 2340C-2011
	SM 2340B-2011
Sulfate (as SO4)	EPA 300.0, Rev. 2.1 (1993)
	EPA 9056A
Miscellaneous	
Boron, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
Bromide	EPA 300.0, Rev. 2.1 (1993)
	EPA 9056A
Color	SM 2120B-2011
Cyanide, Available	OIA-1677-09
Cyanide, Free	OIA-1677-09
Cyanide, Total	EPA 335.4, Rev. 1.0 (1993)
	EPA 9012B
	ASTM D7511-12
Formaldehyde	EPA 8315A
non-Polar Extractable Material (TPH)	EPA 1664A
	EPA 1664B
Oil and Grease Total Recoverable	EPA 1664A

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Oil and Grease Total Recoverable	EPA 1664B
Organic Carbon, Total	SM 5310C-2014
	EPA 9060A
Perchlorate	EPA 6850
Phenols	EPA 420.4, Rev. 1.0 (1993)
	EPA 9066
Silica, Dissolved	SM 4500-SiO2 C-2011
Specific Conductance	SM 2510B-2011
	EPA 9050A
Sulfide (as S)	SM 4500-S2- F-2011
	SM 4500-S2- D-2011
Surfactant (MBAS)	SM 5540C-2011
Total Organic Halides	EPA 9020B
Turbidity	SM 2130 B-2011
	EPA 180.1, Rev. 2.0 (1993)

Nitroaromatics and Isophorone

1,3,5-Trinitrobenzene	EPA 8270E
	EPA 8330B
1,3-Dinitrobenzene	EPA 8270E
	EPA 8330B
1,4-Naphthoquinone	EPA 8270E
2,4,6-Trinitrotoluene	EPA 8330B
2,4-Dinitrotoluene	EPA 625.1
	EPA 8270E
	EPA 8330B
2,6-Dinitrotoluene	EPA 625.1
	EPA 8270E

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Nitroaromatics and Isophorone

2,6-Dinitrotoluene	EPA 8330B
2-Amino-4,6-dinitrotoluene	EPA 8330B
2-Nitrotoluene	EPA 8330B
3,5-Dinitroaniline	EPA 8330B
3-Nitrotoluene	EPA 8330B
4-Amino-2,6-dinitrotoluene	EPA 8330B
4-Nitroquinoline-1-oxide	EPA 8270E
4-Nitrotoluene	EPA 8330B
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330B
Isophorone	EPA 625.1
	EPA 8270E
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330B
Nitrobenzene	EPA 625.1
	EPA 8270E
	EPA 8330B
Nitroglycerine	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330B
Pentaerythritol tetranitrate	EPA 8330B

Nitrosoamines

N-Nitrosodiethylamine	EPA 8270E
N-Nitrosodimethylamine	EPA 625.1
	EPA 8270E
N-Nitrosodi-n-butylamine	EPA 8270E
N-Nitrosodi-n-propylamine	EPA 625.1
	EPA 8270E
N-Nitrosodiphenylamine	EPA 625.1
	EPA 8270E

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Nitrosoamines

N-nitrosomethylethylamine	EPA 8270E
N-nitrosomorpholine	EPA 8270E
N-nitrosopiperidine	EPA 8270E
N-Nitrosopyrrolidine	EPA 8270E

Nutrient

Ammonia (as N)	SM 4500-NH3 C-2011
	EPA 350.1, Rev. 2.0 (1993)
	SM 4500-NH3 D-2011 or E-2011
Kjeldahl Nitrogen, Total	EPA 351.2, Rev. 2.0 (1993)
Nitrate (as N)	EPA 353.2, Rev. 2.0 (1993)
	EPA 300.0, Rev. 2.1 (1993)
	EPA 9056A
Nitrate plus Nitrite (as N)	EPA 353.2, Rev. 2.0 (1993)
Nitrite (as N)	EPA 353.2, Rev. 2.0 (1993)
	EPA 300.0, Rev. 2.1 (1993)
	EPA 9056A
Orthophosphate (as P)	EPA 365.3 (Issued 1978)
	SM 4500-P E-2011
Phosphorus, Total	EPA 365.1, Rev. 2.0 (1993)
	SM 4500-P (F-H)-2011

Organophosphate Pesticides

Atrazine	EPA 8270E
Dimethoate	EPA 8270E
Disulfoton	EPA 8270E
Famphur	EPA 8270E
Parathion ethyl	EPA 8270E

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Organophosphate Pesticides

Parathion methyl	EPA 8270E
Phorate	EPA 8270E
Sulfotepp	EPA 8270E
Thionazin	EPA 8270E

Perfluorinated Alkyl Acids

11Cl-PF3OUdS	EPA 1633A
	EPA 1633
3:3 FTCA	EPA 1633A
	EPA 1633
4:2FTS	EPA 1633A
	EPA 1633
5:3 FTCA	EPA 1633A
	EPA 1633
6:2FTS	EPA 1633A
	EPA 1633
7:3 FTCA	EPA 1633A
	EPA 1633
8:2FTS	EPA 1633A
	EPA 1633
9Cl-PF3ONS	EPA 1633A
	EPA 1633
ADONA	EPA 1633A
	EPA 1633
HFPO-DA (GenX)	EPA 1633A
	EPA 1633
NEtFOSA	EPA 1633A
	EPA 1633

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids

NEtFOSAA	EPA 1633A
	EPA 1633
NEtFOSE	EPA 1633A
	EPA 1633
NFDHA	EPA 1633A
	EPA 1633
NMeFOSA	EPA 1633A
	EPA 1633
NMeFOSAA	EPA 1633A
	EPA 1633
NMeFOSE	EPA 1633A
	EPA 1633
Perflourotridecanoic Acid (PFTrDA)	EPA 1633A
	EPA 1633
Perfluordecanoic Acid (PFDA)	EPA 1633A
	EPA 1633
Perfluoro-3-Methoxypropanoic Acid (F	EPA 1633A
	EPA 1633
Perfluoro-4-Methoxybutanoic Acid (PF	EPA 1633A
	EPA 1633
Perfluorobutanesulfonic Acid (PFBS)	EPA 1633A
	EPA 1633
Perfluorobutanoic Acid (PFBA)	EPA 1633A
	EPA 1633
Perfluorodecanesulfonic acid (PFDS)	EPA 1633A
	EPA 1633
Perfluorododecanesulfonic acid (PFDc	EPA 1633A

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids

Perfluorododecanesulfonic acid (PFDc	EPA 1633
Perfluorododecanoic Acid (PFDoA)	EPA 1633A
	EPA 1633
Perfluoroheptanesulfonic Acid (PFHpS	EPA 1633A
	EPA 1633
Perfluoroheptanoic Acid (PFHpA)	EPA 1633A
	EPA 1633
Perfluorohexanesulfonic Acid (PFHxS	EPA 1633A
	EPA 1633
Perfluorohexanoic Acid (PFHxA)	EPA 1633A
	EPA 1633
Perfluorononanesulfonic acid (PFNS)	EPA 1633A
	EPA 1633
Perfluorononanoic Acid (PFNA)	EPA 1633A
	EPA 1633
Perfluorooctanesulfonamide (PFOSA)	EPA 1633A
	EPA 1633
Perfluorooctanesulfonic Acid (PFOS)	EPA 1633A
	EPA 1633
Perfluorooctanoic Acid (PFOA)	EPA 1633A
	EPA 1633
Perfluoropentanesulfonic Acid (PFPeS	EPA 1633A
	EPA 1633
Perfluoropentanoic Acid (PFPeA)	EPA 1633A
	EPA 1633
Perfluorotetradecanoic Acid (PFTeDA)	EPA 1633A
	EPA 1633

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids	
Perfluoroundecanoic Acid (PFUnA)	EPA 1633A
	EPA 1633
PFEESA	EPA 1633A
	EPA 1633
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015D
	EPA 8015C
Gasoline Range Organics	EPA 8015D
	EPA 8015C
Phthalate Esters	
Benzyl butyl phthalate	EPA 625.1
	EPA 8270E
Bis(2-ethylhexyl) phthalate	EPA 625.1
	EPA 8270E
Diethyl phthalate	EPA 625.1
	EPA 8270E
Dimethyl phthalate	EPA 625.1
	EPA 8270E
Di-n-butyl phthalate	EPA 625.1
	EPA 8270E
Di-n-octyl phthalate	EPA 625.1
	EPA 8270E
Polychlorinated Biphenyls	
Aroclor 1016 (PCB-1016)	EPA 8082A
	EPA 608.3
Aroclor 1221 (PCB-1221)	EPA 8082A

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

Aroclor 1221 (PCB-1221)	EPA 608.3
Aroclor 1232 (PCB-1232)	EPA 8082A
	EPA 608.3
Aroclor 1242 (PCB-1242)	EPA 8082A
	EPA 608.3
Aroclor 1248 (PCB-1248)	EPA 8082A
	EPA 608.3
Aroclor 1254 (PCB-1254)	EPA 8082A
	EPA 608.3
Aroclor 1260 (PCB-1260)	EPA 8082A
	EPA 608.3
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
PCB 1	EPA 1668A
	EPA 1668C
PCB 10	EPA 1668A
	EPA 1668C
PCB 100	EPA 1668A
	EPA 1668C
PCB 101	EPA 1668A
	EPA 1668C
PCB 102	EPA 1668A
	EPA 1668C
PCB 103	EPA 1668A
	EPA 1668C
PCB 104	EPA 1668A
	EPA 1668C

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 105	EPA 1668A
	EPA 1668C
PCB 106	EPA 1668A
	EPA 1668C
PCB 107	EPA 1668A
	EPA 1668C
PCB 108	EPA 1668A
	EPA 1668C
PCB 109	EPA 1668A
	EPA 1668C
PCB 11	EPA 1668A
	EPA 1668C
PCB 110	EPA 1668A
	EPA 1668C
PCB 111	EPA 1668A
	EPA 1668C
PCB 112	EPA 1668A
	EPA 1668C
PCB 113	EPA 1668A
	EPA 1668C
PCB 114	EPA 1668A
	EPA 1668C
PCB 115	EPA 1668A
	EPA 1668C
PCB 116	EPA 1668A
	EPA 1668C
PCB 117	EPA 1668A

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 117	EPA 1668C
PCB 118	EPA 1668A
	EPA 1668C
PCB 119	EPA 1668A
	EPA 1668C
PCB 12	EPA 1668A
	EPA 1668C
PCB 120	EPA 1668A
	EPA 1668C
PCB 121	EPA 1668A
	EPA 1668C
PCB 122	EPA 1668A
	EPA 1668C
PCB 123	EPA 1668A
	EPA 1668C
PCB 124	EPA 1668A
	EPA 1668C
PCB 125	EPA 1668A
	EPA 1668C
PCB 126	EPA 1668A
	EPA 1668C
PCB 127	EPA 1668A
	EPA 1668C
PCB 128	EPA 1668A
	EPA 1668C
PCB 129	EPA 1668A
	EPA 1668C

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 13	EPA 1668A
	EPA 1668C
PCB 130	EPA 1668A
	EPA 1668C
PCB 131	EPA 1668A
	EPA 1668C
PCB 132	EPA 1668A
	EPA 1668C
PCB 133	EPA 1668A
	EPA 1668C
PCB 134	EPA 1668A
	EPA 1668C
PCB 135	EPA 1668A
	EPA 1668C
PCB 136	EPA 1668A
	EPA 1668C
PCB 137	EPA 1668A
	EPA 1668C
PCB 138	EPA 1668A
	EPA 1668C
PCB 139	EPA 1668A
	EPA 1668C
PCB 14	EPA 1668A
	EPA 1668C
PCB 140	EPA 1668A
	EPA 1668C
PCB 141	EPA 1668A

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 141	EPA 1668C
PCB 142	EPA 1668A
	EPA 1668C
PCB 143	EPA 1668A
	EPA 1668C
PCB 144	EPA 1668A
	EPA 1668C
PCB 145	EPA 1668A
	EPA 1668C
PCB 146	EPA 1668A
	EPA 1668C
PCB 147	EPA 1668A
	EPA 1668C
PCB 148	EPA 1668A
	EPA 1668C
PCB 149	EPA 1668A
	EPA 1668C
PCB 15	EPA 1668A
	EPA 1668C
PCB 150	EPA 1668A
	EPA 1668C
PCB 151	EPA 1668A
	EPA 1668C
PCB 152	EPA 1668A
	EPA 1668C
PCB 153	EPA 1668A
	EPA 1668C

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 154	EPA 1668A
	EPA 1668C
PCB 155	EPA 1668A
	EPA 1668C
PCB 156	EPA 1668A
	EPA 1668C
PCB 157	EPA 1668A
	EPA 1668C
PCB 158	EPA 1668A
	EPA 1668C
PCB 159	EPA 1668A
	EPA 1668C
PCB 16	EPA 1668A
	EPA 1668C
PCB 160	EPA 1668A
	EPA 1668C
PCB 161	EPA 1668A
	EPA 1668C
PCB 162	EPA 1668A
	EPA 1668C
PCB 163	EPA 1668A
	EPA 1668C
PCB 164	EPA 1668A
	EPA 1668C
PCB 165	EPA 1668A
	EPA 1668C
PCB 166	EPA 1668A

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 166	EPA 1668C
PCB 167	EPA 1668A
	EPA 1668C
PCB 168	EPA 1668A
	EPA 1668C
PCB 169	EPA 1668A
	EPA 1668C
PCB 17	EPA 1668A
	EPA 1668C
PCB 170	EPA 1668A
	EPA 1668C
PCB 171	EPA 1668A
	EPA 1668C
PCB 172	EPA 1668A
	EPA 1668C
PCB 173	EPA 1668A
	EPA 1668C
PCB 174	EPA 1668A
	EPA 1668C
PCB 175	EPA 1668A
	EPA 1668C
PCB 176	EPA 1668A
	EPA 1668C
PCB 177	EPA 1668A
	EPA 1668C
PCB 178	EPA 1668A
	EPA 1668C

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 179	EPA 1668A
	EPA 1668C
PCB 18	EPA 1668A
	EPA 1668C
PCB 180	EPA 1668A
	EPA 1668C
PCB 181	EPA 1668A
	EPA 1668C
PCB 182	EPA 1668A
	EPA 1668C
PCB 183	EPA 1668A
	EPA 1668C
PCB 184	EPA 1668A
	EPA 1668C
PCB 185	EPA 1668A
	EPA 1668C
PCB 186	EPA 1668A
	EPA 1668C
PCB 187	EPA 1668A
	EPA 1668C
PCB 188	EPA 1668A
	EPA 1668C
PCB 189	EPA 1668A
	EPA 1668C
PCB 19	EPA 1668A
	EPA 1668C
PCB 190	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 190	EPA 1668C
PCB 191	EPA 1668A
	EPA 1668C
PCB 192	EPA 1668A
	EPA 1668C
PCB 193	EPA 1668A
	EPA 1668C
PCB 194	EPA 1668A
	EPA 1668C
PCB 195	EPA 1668A
	EPA 1668C
PCB 196	EPA 1668A
	EPA 1668C
PCB 197	EPA 1668A
	EPA 1668C
PCB 198	EPA 1668A
	EPA 1668C
PCB 199	EPA 1668A
	EPA 1668C
PCB 2	EPA 1668A
	EPA 1668C
PCB 20	EPA 1668A
	EPA 1668C
PCB 200	EPA 1668A
	EPA 1668C
PCB 201	EPA 1668A
	EPA 1668C

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 202	EPA 1668A
	EPA 1668C
PCB 203	EPA 1668A
	EPA 1668C
PCB 204	EPA 1668A
	EPA 1668C
PCB 205	EPA 1668A
	EPA 1668C
PCB 206	EPA 1668A
	EPA 1668C
PCB 207	EPA 1668A
	EPA 1668C
PCB 208	EPA 1668A
	EPA 1668C
PCB 209	EPA 1668A
	EPA 1668C
PCB 21	EPA 1668A
	EPA 1668C
PCB 22	EPA 1668A
	EPA 1668C
PCB 23	EPA 1668A
	EPA 1668C
PCB 24	EPA 1668A
	EPA 1668C
PCB 25	EPA 1668A
	EPA 1668C
PCB 26	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 26	EPA 1668C
PCB 27	EPA 1668A
	EPA 1668C
PCB 28	EPA 1668A
	EPA 1668C
PCB 29	EPA 1668A
	EPA 1668C
PCB 3	EPA 1668A
	EPA 1668C
PCB 30	EPA 1668A
	EPA 1668C
PCB 31	EPA 1668A
	EPA 1668C
PCB 32	EPA 1668A
	EPA 1668C
PCB 33	EPA 1668A
	EPA 1668C
PCB 34	EPA 1668A
	EPA 1668C
PCB 35	EPA 1668A
	EPA 1668C
PCB 36	EPA 1668A
	EPA 1668C
PCB 37	EPA 1668A
	EPA 1668C
PCB 38	EPA 1668A
	EPA 1668C

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 39	EPA 1668A
	EPA 1668C
PCB 4	EPA 1668A
	EPA 1668C
PCB 40	EPA 1668A
	EPA 1668C
PCB 41	EPA 1668A
	EPA 1668C
PCB 42	EPA 1668A
	EPA 1668C
PCB 43	EPA 1668A
	EPA 1668C
PCB 44	EPA 1668A
	EPA 1668C
PCB 45	EPA 1668A
	EPA 1668C
PCB 46	EPA 1668A
	EPA 1668C
PCB 47	EPA 1668A
	EPA 1668C
PCB 48	EPA 1668A
	EPA 1668C
PCB 49	EPA 1668A
	EPA 1668C
PCB 5	EPA 1668A
	EPA 1668C
PCB 50	EPA 1668A

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 50	EPA 1668C
PCB 51	EPA 1668A
	EPA 1668C
PCB 52	EPA 1668A
	EPA 1668C
PCB 53	EPA 1668A
	EPA 1668C
PCB 54	EPA 1668A
	EPA 1668C
PCB 55	EPA 1668A
	EPA 1668C
PCB 56	EPA 1668A
	EPA 1668C
PCB 57	EPA 1668A
	EPA 1668C
PCB 58	EPA 1668A
	EPA 1668C
PCB 59	EPA 1668A
	EPA 1668C
PCB 6	EPA 1668A
	EPA 1668C
PCB 60	EPA 1668A
	EPA 1668C
PCB 61	EPA 1668A
	EPA 1668C
PCB 62	EPA 1668A
	EPA 1668C

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 63	EPA 1668A
	EPA 1668C
PCB 64	EPA 1668A
	EPA 1668C
PCB 65	EPA 1668A
	EPA 1668C
PCB 66	EPA 1668A
	EPA 1668C
PCB 67	EPA 1668A
	EPA 1668C
PCB 68	EPA 1668A
	EPA 1668C
PCB 69	EPA 1668A
	EPA 1668C
PCB 7	EPA 1668A
	EPA 1668C
PCB 70	EPA 1668A
	EPA 1668C
PCB 71	EPA 1668A
	EPA 1668C
PCB 72	EPA 1668A
	EPA 1668C
PCB 73	EPA 1668A
	EPA 1668C
PCB 74	EPA 1668A
	EPA 1668C
PCB 75	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 75	EPA 1668C
PCB 76	EPA 1668A
	EPA 1668C
PCB 77	EPA 1668A
	EPA 1668C
PCB 78	EPA 1668A
	EPA 1668C
PCB 79	EPA 1668A
	EPA 1668C
PCB 8	EPA 1668A
	EPA 1668C
PCB 80	EPA 1668A
	EPA 1668C
PCB 81	EPA 1668A
	EPA 1668C
PCB 82	EPA 1668A
	EPA 1668C
PCB 83	EPA 1668A
	EPA 1668C
PCB 84	EPA 1668A
	EPA 1668C
PCB 85	EPA 1668A
	EPA 1668C
PCB 86	EPA 1668A
	EPA 1668C
PCB 87	EPA 1668A
	EPA 1668C

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 88	EPA 1668A
	EPA 1668C
PCB 89	EPA 1668A
	EPA 1668C
PCB 9	EPA 1668A
	EPA 1668C
PCB 90	EPA 1668A
	EPA 1668C
PCB 91	EPA 1668A
	EPA 1668C
PCB 92	EPA 1668A
	EPA 1668C
PCB 93	EPA 1668A
	EPA 1668C
PCB 94	EPA 1668A
	EPA 1668C
PCB 95	EPA 1668A
	EPA 1668C
PCB 96	EPA 1668A
	EPA 1668C
PCB 97	EPA 1668A
	EPA 1668C
PCB 98	EPA 1668A
	EPA 1668C
PCB 99	EPA 1668A
	EPA 1668C
PCB Congeners, Total	EPA 1668C

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polynuclear Aromatics

2-Acetylaminofluorene	EPA 8270E
3-Methylcholanthrene	EPA 8270E
7,12-Dimethylbenzyl (a) anthracene	EPA 8270E
Acenaphthene	EPA 625.1
	EPA 8270E
Acenaphthylene	EPA 625.1
	EPA 8270E
Anthracene	EPA 625.1
	EPA 8270E
Benzo(a)anthracene	EPA 625.1
	EPA 8270E
Benzo(a)pyrene	EPA 625.1
	EPA 8270E
Benzo(b)fluoranthene	EPA 625.1
	EPA 8270E
Benzo(g,h,i)perylene	EPA 625.1
	EPA 8270E
Benzo(k)fluoranthene	EPA 625.1
	EPA 8270E
Chrysene	EPA 625.1
	EPA 8270E
Dibenzo(a,h)anthracene	EPA 625.1
	EPA 8270E
Fluoranthene	EPA 625.1
	EPA 8270E
Fluorene	EPA 625.1
	EPA 8270E

Serial No.: 71899

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polynuclear Aromatics

Indeno(1,2,3-cd)pyrene	EPA 625.1
	EPA 8270E
Naphthalene	EPA 625.1
	EPA 8270E
Phenanthrene	EPA 625.1
	EPA 8270E
Pyrene	EPA 625.1
	EPA 8270E

Priority Pollutant Phenols

2,3,4,6 Tetrachlorophenol	EPA 8270E
2,4,5-Trichlorophenol	EPA 625.1
	EPA 8270E
2,4,6-Trichlorophenol	EPA 625.1
	EPA 8270E
2,4-Dichlorophenol	EPA 625.1
	EPA 8270E
2,4-Dimethylphenol	EPA 625.1
	EPA 8270E
2,4-Dinitrophenol	EPA 625.1
	EPA 8270E
2,6-Dichlorophenol	EPA 8270E
2-Chlorophenol	EPA 625.1
	EPA 8270E
2-Methyl-4,6-dinitrophenol	EPA 625.1
	EPA 8270E
2-Methylphenol	EPA 625.1
	EPA 8270E

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Priority Pollutant Phenols

2-Nitrophenol	EPA 625.1
	EPA 8270E
3-Methylphenol	EPA 625.1
	EPA 8270E
4-Chloro-3-methylphenol	EPA 625.1
	EPA 8270E
4-Methylphenol	EPA 625.1
	EPA 8270E
4-Nitrophenol	EPA 625.1
	EPA 8270E
Pentachlorophenol	EPA 625.1
	EPA 8270E
Phenol	EPA 625.1
	EPA 8270E

Residue

Settleable Solids	SM 2540 F-2015
Solids, Total	SM 2540 B-2015
Solids, Total Dissolved	SM 2540 C-2015
Solids, Total Suspended	SM 2540 D-2015

Semi-Volatile Organics

1,1'-Biphenyl	EPA 8270E
1,2-Dichlorobenzene, Semi-volatile	EPA 8270E
1,3-Dichlorobenzene, Semi-volatile	EPA 8270E
1,4-Dichlorobenzene, Semi-volatile	EPA 8270E
2-Methylnaphthalene	EPA 625.1
	EPA 8270E

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Semi-Volatile Organics

2-Picoline	EPA 8270E
4-Amino biphenyl	EPA 8270E
Acetophenone	EPA 625.1
	EPA 8270E
alpha-Terpineol	EPA 625.1
	EPA 8270E
Aramite	EPA 8270E
Benzaldehyde	EPA 8270E
Benzoic Acid	EPA 8270E
Benzyl alcohol	EPA 8270E
Caprolactam	EPA 8270E
Dibenzofuran	EPA 8270E
Ethyl methanesulfonate	EPA 8270E
Isosafrole	EPA 8270E
Methyl methanesulfonate	EPA 8270E
n-Decane	EPA 625.1
n-Octadecane	EPA 625.1
O,O,O-Triethyl phosphorothioate	EPA 8270E
p-Dimethylaminoazobenzene	EPA 8270E
Phenacetin	EPA 8270E
Safrole	EPA 8270E

Volatile Aromatics

1,2,4-Trichlorobenzene, Volatile	EPA 8260D
1,2,4-Trimethylbenzene	EPA 8260D
1,2-Dichlorobenzene	EPA 8260D
	EPA 624.1
	EPA 524.2

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics

1,3,5-Trimethylbenzene	EPA 8260D
1,3-Dichlorobenzene	EPA 8260D
	EPA 624.1
1,4-Dichlorobenzene	EPA 8260D
	EPA 624.1
2-Chlorotoluene	EPA 8260D
4-Chlorotoluene	EPA 8260D
Benzene	EPA 8260D
	EPA 624.1
	EPA 524.2
Bromobenzene	EPA 8260D
Chlorobenzene	EPA 8260D
	EPA 624.1
	EPA 524.2
Ethyl benzene	EPA 8260D
	EPA 624.1
Isopropylbenzene	EPA 8260D
m/p-Xylenes	EPA 8260D
	EPA 624.1
Naphthalene, Volatile	EPA 8260D
	EPA 624.1
n-Butylbenzene	EPA 8260D
n-Propylbenzene	EPA 8260D
o-Xylene	EPA 8260D
	EPA 624.1
p-Isopropyltoluene (P-Cymene)	EPA 8260D
sec-Butylbenzene	EPA 8260D

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics

Styrene	EPA 8260D
	EPA 624.1
tert-Butylbenzene	EPA 8260D
Toluene	EPA 8260D
	EPA 624.1
	EPA 524.2
Total Xylenes	EPA 1666A
	EPA 8260D
	EPA 624.1

Volatile Chlorinated Organics

Benzyl chloride	EPA 8260D

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 8260D
1,1,1-Trichloroethane	EPA 8260D
	EPA 624.1
1,1,2,2-Tetrachloroethane	EPA 8260D
	EPA 624.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260D
	EPA 624.1
1,1,2-Trichloroethane	EPA 8260D
	EPA 624.1
1,1-Dichloroethane	EPA 8260D
	EPA 624.1
1,1-Dichloroethene	EPA 8260D
	EPA 624.1
1,1-Dichloropropene	EPA 8260D

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Halocarbons

1,2,3-Trichloropropane	EPA 8260D
1,2-Dibromo-3-chloropropane	EPA 8260D
1,2-Dibromoethane	EPA 8260D
1,2-Dichloro-1,1,2-Trifluoroethane	EPA 8260D
1,2-Dichloroethane	EPA 8260D
	EPA 624.1
	EPA 524.2
1,2-Dichloropropane	EPA 8260D
	EPA 624.1
1,3-Dichloropropane	EPA 8260D
2,2-Dichloropropane	EPA 8260D
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260D
2-Chloroethylvinyl ether	EPA 8260D
	EPA 624.1
3-Chloropropene (Allyl chloride)	EPA 8260D
Bromochloromethane	EPA 8260D
Bromodichloromethane	EPA 8260D
	EPA 624.1
Bromoform	EPA 8260D
	EPA 624.1
Bromomethane	EPA 8260D
	EPA 624.1
Carbon tetrachloride	EPA 8260D
	EPA 624.1
Chloroethane	EPA 8260D
	EPA 624.1
Chloroform	EPA 8260D

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Halocarbons

Chloroform	EPA 624.1
	EPA 524.2
Chloromethane	EPA 8260D
	EPA 624.1
cis-1,2-Dichloroethene	EPA 8260D
	EPA 624.1
cis-1,3-Dichloropropene	EPA 8260D
	EPA 624.1
Dibromochloromethane	EPA 8260D
	EPA 624.1
Dibromomethane	EPA 8260D
Dichlorodifluoromethane	EPA 8260D
	EPA 624.1
Hexachlorobutadiene, Volatile	EPA 8260D
Methyl iodide	EPA 8260D
Methylene chloride	EPA 8260D
	EPA 624.1
	EPA 524.2
Tetrachloroethene	EPA 8260D
	EPA 624.1
trans-1,2-Dichloroethene	EPA 8260D
	EPA 624.1
trans-1,3-Dichloropropene	EPA 8260D
	EPA 624.1
trans-1,4-Dichloro-2-butene	EPA 8260D
Trichloroethene	EPA 8260D
	EPA 624.1

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Halocarbons

Trichlorofluoromethane	EPA 8260D
	EPA 624.1
Vinyl chloride	EPA 8260D
	EPA 624.1

Volatiles Organics

1,4-Dioxane	EPA 8260D
	EPA 8260D SIM
	EPA 8270E
	EPA 8270E SIM
2-Butanone (Methylethyl ketone)	EPA 8260D
2-Hexanone	EPA 8260D
2-Nitropropane	EPA 8260D
4-Methyl-2-Pentanone	EPA 1666A
	EPA 8260D
	EPA 624.1
	EPA 524.2
Acetone	EPA 8260D
	EPA 624.1
	EPA 524.2
Acetonitrile	EPA 1671
	EPA 8260D
	EPA 624.1
Carbon Disulfide	EPA 8260D
Cyclohexane	EPA 8260D
Di-ethyl ether	EPA 8260D
Diethylamine	EPA 1671
Dimethyl sulfoxide	EPA 1671

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatiles Organics

Ethyl Acetate	EPA 1666A
	EPA 8260D
	EPA 624.1
Ethylene Glycol	EPA 8015D
	EPA 8015C
Hexane	EPA 1666A
	EPA 8260D
Isobutyl alcohol	EPA 8260D
	EPA 8015D
	EPA 8015C
Isobutyraldehyde	EPA 1666A
Isopropanol	EPA 1666A
	EPA 8260D
Isopropyl Acetate	EPA 1666A
Methanol	EPA 1671
	EPA 8015D
	EPA 8015C
Methyl acetate	EPA 8260D
Methyl cellosolve (2-Methoxyethanol)	EPA 1671
Methyl cyclohexane	EPA 8260D
Methyl formate	EPA 1666A
n-Amyl Acetate	EPA 1666A
n-Amyl alcohol	EPA 1666A
n-Butanol	EPA 8260D
n-Butyl Acetate	EPA 1666A
n-Heptane	EPA 1666A
n-Propanol	EPA 1671

Serial No.: 71899

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatiles Organics

o-Toluidine	EPA 8270E
Propylene Glycol	EPA 8015D
Tetrahydrofuran	EPA 1666A
	EPA 8260D
	EPA 624.1
	EPA 524.2
Triethylamine	EPA 1671
Vinyl acetate	EPA 8260D
	EPA 624.1

Sample Preparation Methods

	SM 4500-P B(5)-2011
	EPA 5030C
	EPA 3511
	EPA 3010A
	EPA 3005A
	EPA 3510C
	EPA 3520C
	SM 4500-NH3 B-2011
	SM 4500-F B-2011

Serial No.: 71899

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Acrylates

Acrolein (Propenal)	EPA 8260D
Acrylonitrile	EPA 8260D
Ethyl methacrylate	EPA 8260D
Methyl acrylonitrile	EPA 8260D
Methyl methacrylate	EPA 8260D

Amines

1,2-Diphenylhydrazine	EPA 8270E
1-Naphthylamine	EPA 8270E
2-Naphthylamine	EPA 8270E
2-Nitroaniline	EPA 8270E
3-Nitroaniline	EPA 8270E
4,4'-Methylenebis(2-chloroaniline)	EPA 8270E
4-Chloroaniline	EPA 8270E
4-Nitroaniline	EPA 8270E
5-Nitro-o-toluidine	EPA 8270E
Aniline	EPA 8270E
Carbazole	EPA 8270E
Diphenylamine	EPA 8270E
Methapyrilene	EPA 8270E
Pronamide	EPA 8270E

Benzidines

3,3'-Dichlorobenzidine	EPA 8270E
3,3'-Dimethylbenzidine	EPA 8270E
Benzidine	EPA 8270E

Carbamate Pesticides

Aldicarb	EPA 8318A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Carbamate Pesticides

Aldicarb Sulfone	EPA 8318A
Carbofuran	EPA 8318A

Characteristic Testing

Corrosivity (pH)	EPA 9045D
Free Liquids	EPA 9095B
Ignitability	EPA 1010B
	EPA 1010A
Synthetic Precipitation Leaching Proc.	EPA 1312
TCLP	EPA 1311

Chlorinated Hydrocarbon Pesticides

2,4'-DDD (Mitotane)	EPA 8081B
4,4'-DDD	EPA 8081B
4,4'-DDE	EPA 8081B
4,4'-DDT	EPA 8081B
Aldrin	EPA 8081B
alpha-BHC	EPA 8081B
alpha-Chlordane	EPA 8081B
Atrazine	EPA 8270E
beta-BHC	EPA 8081B
Chlordane Total	EPA 8081B
Chlorobenzilate	EPA 8270E
delta-BHC	EPA 8081B
Diallate	EPA 8270E
Dieldrin	EPA 8081B
Endosulfan I	EPA 8081B
Endosulfan II	EPA 8081B

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Chlorinated Hydrocarbon Pesticides

Endosulfan sulfate	EPA 8081B
Endrin	EPA 8081B
Endrin aldehyde	EPA 8081B
Endrin Ketone	EPA 8081B
Heptachlor	EPA 8081B
Heptachlor epoxide	EPA 8081B
Isodrin	EPA 8270E
Kepone	EPA 8081B
Lindane	EPA 8081B
Methoxychlor	EPA 8081B
Mirex	EPA 8081B
Pentachloronitrobenzene	EPA 8270E
Toxaphene	EPA 8081B
trans-Chlordane	EPA 8081B

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260D
1,2,4,5-Tetrachlorobenzene	EPA 8270E
1,2,4-Trichlorobenzene	EPA 8270E
1-Chloronaphthalene	EPA 8270E
2-Chloronaphthalene	EPA 8270E
Hexachlorobenzene	EPA 8270E
Hexachlorobutadiene	EPA 8270E
Hexachlorocyclopentadiene	EPA 8270E
Hexachloroethane	EPA 8270E
Hexachloropropene	EPA 8270E
Pentachlorobenzene	EPA 8270E

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
	EPA 8321B
2,4,5-TP (Silvex)	EPA 8151A
	EPA 8321B
2,4-D	EPA 8151A
	EPA 8321B
2,4-DB	EPA 8151A
	EPA 8321B
Dalapon	EPA 8151A
	EPA 8321B
Dicamba	EPA 8151A
	EPA 8321B
Dichloroprop	EPA 8151A
	EPA 8321B
Dinoseb	EPA 8151A
	EPA 8270E
	EPA 8321B
MCPA	EPA 8151A
	EPA 8321B
MCPP	EPA 8151A
	EPA 8321B
Pentachlorophenol	EPA 8151A

Dioxins and Furans

1,2,3,4,6,7,8,9-Octachlorodibenzofura	EPA 8290A
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-d	EPA 8290A
1,2,3,4,6,7,8-Heptachlorodibenzofurar	EPA 8290A
1,2,3,4,6,7,8-Heptachlorodibenzo-p-di	EPA 8290A

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Dioxins and Furans

1,2,3,4,7,8,9-Heptachlorodibenzofurar	EPA 8290A
1,2,3,4,7,8-Hexachlorodibenzofuran	EPA 8290A
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxi	EPA 8290A
1,2,3,6,7,8-Hexachlorodibenzofuran	EPA 8290A
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxi	EPA 8290A
1,2,3,7,8,9-Hexachlorodibenzofuran	EPA 8290A
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxi	EPA 8290A
1,2,3,7,8-Pentachlorodibenzofuran	EPA 8290A
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	EPA 8290A
2,3,4,6,7,8-Hexachlorodibenzofuran	EPA 8290A
2,3,4,7,8-Pentachlorodibenzofuran	EPA 8290A
2,3,7,8-Tetrachlorodibenzofuran	EPA 8290A
2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 8290A

Haloethers

2,2'-Oxybis(1-chloropropane)	EPA 8270E
4-Bromophenylphenyl ether	EPA 8270E
4-Chlorophenylphenyl ether	EPA 8270E
Bis(2-chloroethoxy)methane	EPA 8270E
Bis(2-chloroethyl)ether	EPA 8270E

Low Level Polynuclear Aromatic Hydrocarbons

Acenaphthene Low Level	EPA 8270E SIM
Acenaphthylene Low Level	EPA 8270E SIM
Anthracene Low Level	EPA 8270E SIM
Benzo(a)anthracene Low Level	EPA 8270E SIM
Benzo(a)pyrene Low Level	EPA 8270E SIM
Benzo(b)fluoranthene Low Level	EPA 8270E SIM

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Low Level Polynuclear Aromatic Hydrocarbons

Benzo(g,h,i)perylene Low Level	EPA 8270E SIM
Benzo(k)fluoranthene Low Level	EPA 8270E SIM
Chrysene Low Level	EPA 8270E SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270E SIM
Fluoranthene Low Level	EPA 8270E SIM
Fluorene Low Level	EPA 8270E SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270E SIM
Naphthalene Low Level	EPA 8270E SIM
Phenanthrene Low Level	EPA 8270E SIM
Pyrene Low Level	EPA 8270E SIM

Metals I

Barium, Total	EPA 6010D
	EPA 6020B
Cadmium, Total	EPA 6010D
	EPA 6020B
Calcium, Total	EPA 6010D
	EPA 6020B
Chromium, Total	EPA 6010D
	EPA 6020B
Copper, Total	EPA 6010D
	EPA 6020B
Iron, Total	EPA 6010D
	EPA 6020B
Lead, Total	EPA 6010D
	EPA 6020B
Magnesium, Total	EPA 6010D
	EPA 6020B

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Metals I

Manganese, Total	EPA 6010D
	EPA 6020B
Nickel, Total	EPA 6010D
	EPA 6020B
Potassium, Total	EPA 6010D
	EPA 6020B
Silver, Total	EPA 6010D
	EPA 6020B
Sodium, Total	EPA 6010D
	EPA 6020B
Strontium, Total	EPA 6010D
	EPA 6020B

Metals II

Aluminum, Total	EPA 6010D
	EPA 6020B
Antimony, Total	EPA 6010D
	EPA 6020B
Arsenic, Total	EPA 6010D
	EPA 6020B
Beryllium, Total	EPA 6010D
	EPA 6020B
Chromium VI	EPA 7196A
	EPA 7199
Lithium, Total	EPA 6010D
Mercury, Total	EPA 7471B
Selenium, Total	EPA 6010D
	EPA 6020B

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Metals II	
Vanadium, Total	EPA 6010D
	EPA 6020B
Zinc, Total	EPA 6010D
	EPA 6020B
Metals III	
Cobalt, Total	EPA 6010D
	EPA 6020B
Molybdenum, Total	EPA 6010D
	EPA 6020B
Silica, Dissolved	EPA 6010D
Thallium, Total	EPA 6010D
	EPA 6020B
Tin, Total	EPA 6010D
	EPA 6020B
Titanium, Total	EPA 6010D
	EPA 6020B
Minerals	
Chloride	EPA 9056A
Fluoride, Total	EPA 9056A
Sulfate (as SO4)	EPA 9056A
Miscellaneous	
Boron, Total	EPA 6010D
Cyanide, Total	EPA 9012B
Extractable Organic Halides	EPA 9023
Formaldehyde	EPA 8315A
Organic Carbon, Total	Lloyd Kahn Method

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Miscellaneous

Perchlorate	EPA 6850
Specific Conductance	EPA 9050A

Nitroaromatics and Isophorone

1,3,5-Trinitrobenzene	EPA 8270E
	EPA 8330B
1,3-Dinitrobenzene	EPA 8270E
	EPA 8330B
1,4-Dinitrobenzene	EPA 8270E
1,4-Naphthoquinone	EPA 8270E
2,4,6-Trinitrotoluene	EPA 8330B
2,4-Dinitrotoluene	EPA 8270E
	EPA 8330B
2,6-Dinitrotoluene	EPA 8270E
	EPA 8330B
2-Amino-4,6-dinitrotoluene	EPA 8330B
2-Nitrotoluene	EPA 8330B
3,5-Dinitroaniline	EPA 8330B
3-Nitrotoluene	EPA 8330B
4-Amino-2,6-dinitrotoluene	EPA 8330B
4-Dimethylaminoazobenzene	EPA 8270E
4-Nitroquinoline-1-oxide	EPA 8270E
4-Nitrotoluene	EPA 8330B
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330B
Isophorone	EPA 8270E
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330B
Nitrobenzene	EPA 8270E
	EPA 8330B

Serial No.: 71900

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Nitroaromatics and Isophorone

Nitroglycerine	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330B
Pentaerythritol tetranitrate	EPA 8330B
Pyridine	EPA 8270E

Nitrosoamines

N-Nitrosodiethylamine	EPA 8270E
N-Nitrosodimethylamine	EPA 8270E
N-Nitrosodi-n-butylamine	EPA 8270E
N-Nitrosodi-n-propylamine	EPA 8270E
N-Nitrosodiphenylamine	EPA 8270E
N-nitrosomethylethylamine	EPA 8270E
N-nitrosomorpholine	EPA 8270E
N-nitrosopiperidine	EPA 8270E
N-Nitrosopyrrolidine	EPA 8270E

Nutrients

Nitrate (as N)	EPA 9056A
Nitrite (as N)	EPA 9056A

Organophosphate Pesticides

Dimethoate	EPA 8270E
Parathion ethyl	EPA 8270E
Parathion methyl	EPA 8270E
Phorate	EPA 8270E
Sulfotepp	EPA 8270E
Thionazin	EPA 8270E

Perfluorinated Alkyl Acids

11Cl-PF3OUdS	EPA 1633A

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Perfluorinated Alkyl Acids

11Cl-PF3OUdS	EPA 1633
3:3 FTCA	EPA 1633A
	EPA 1633
4:2FTS	EPA 1633A
	EPA 1633
5:3 FTCA	EPA 1633A
	EPA 1633
6:2FTS	EPA 1633A
	EPA 1633
7:3 FTCA	EPA 1633A
	EPA 1633
8:2FTS	EPA 1633A
	EPA 1633
9Cl-PF3ONS	EPA 1633A
	EPA 1633
ADONA	EPA 1633A
	EPA 1633
HFPO-DA (GenX)	EPA 1633A
	EPA 1633
NEtFOSA	EPA 1633A
	EPA 1633
NEtFOSAA	EPA 1633A
	EPA 1633
NEtFOSE	EPA 1633A
	EPA 1633
NFDHA	EPA 1633A
	EPA 1633

Serial No.: 71900

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Perfluorinated Alkyl Acids

NMeFOSA	EPA 1633A
	EPA 1633
NMeFOSAA	EPA 1633A
	EPA 1633
NMeFOSE	EPA 1633A
	EPA 1633
Perflourotridecanoic Acid (PFTrDA)	EPA 1633A
	EPA 1633
Perfluordecanoic Acid (PFDA)	EPA 1633A
	EPA 1633
Perfluoro-3-Methoxypropanoic Acid (F	EPA 1633A
	EPA 1633
Perfluoro-4-Methoxybutanoic Acid (PF	EPA 1633A
	EPA 1633
Perfluorobutanesulfonic Acid (PFBS)	EPA 1633A
	EPA 1633
Perfluorobutanoic Acid (PFBA)	EPA 1633A
	EPA 1633
Perfluorodecanesulfonic acid (PFDS)	EPA 1633A
	EPA 1633
Perfluorododecanesulfonic acid (PFDc	EPA 1633A
	EPA 1633
Perfluorododecanoic Acid (PFDoA)	EPA 1633A
	EPA 1633
Perfluoroheptanesulfonic Acid (PFHpS	EPA 1633A
	EPA 1633
Perfluoroheptanoic Acid (PFHpA)	EPA 1633A

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Perfluorinated Alkyl Acids

Perfluoroheptanoic Acid (PFHpA)	EPA 1633
Perfluorohexanesulfonic Acid (PFHxS	EPA 1633A
	EPA 1633
Perfluorohexanoic Acid (PFHxA)	EPA 1633A
	EPA 1633
Perfluorononanesulfonic acid (PFNS)	EPA 1633A
	EPA 1633
Perfluorononanoic Acid (PFNA)	EPA 1633A
	EPA 1633
Perfluorooctanesulfonamide (PFOSA)	EPA 1633A
	EPA 1633
Perfluorooctanesulfonic Acid (PFOS)	EPA 1633A
	EPA 1633
Perfluorooctanoic Acid (PFOA)	EPA 1633A
	EPA 1633
Perfluoropentanesulfonic Acid (PFPeS	EPA 1633A
	EPA 1633
Perfluoropentanoic Acid (PFPeA)	EPA 1633A
	EPA 1633
Perfluorotetradecanoic Acid (PFTeDA)	EPA 1633A
	EPA 1633
Perfluoroundecanoic Acid (PFUnA)	EPA 1633A
	EPA 1633
PFEESA	EPA 1633A
	EPA 1633

Petroleum Hydrocarbons

Diesel Range Organics	EPA 8015D

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Petroleum Hydrocarbons

Diesel Range Organics	EPA 8015C
Gasoline Range Organics	EPA 8015D
	EPA 8015C
Oil and Grease Total Recoverable	EPA 9071B (Solvent:Hexane)

Phthalate Esters

Benzyl butyl phthalate	EPA 8270E
Bis(2-ethylhexyl) phthalate	EPA 8270E
Diethyl phthalate	EPA 8270E
Dimethyl phthalate	EPA 8270E
Di-n-butyl phthalate	EPA 8270E
Di-n-octyl phthalate	EPA 8270E

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A
Aroclor 1016 (PCB-1016) in Oil	EPA 8082A
Aroclor 1221 (PCB-1221)	EPA 8082A
Aroclor 1221 (PCB-1221) in Oil	EPA 8082A
Aroclor 1232 (PCB-1232)	EPA 8082A
Aroclor 1232 (PCB-1232) in Oil	EPA 8082A
Aroclor 1242 (PCB-1242)	EPA 8082A
Aroclor 1242 (PCB-1242) in Oil	EPA 8082A
Aroclor 1248 (PCB-1248)	EPA 8082A
Aroclor 1248 (PCB-1248) in Oil	EPA 8082A
Aroclor 1254 (PCB-1254)	EPA 8082A
Aroclor 1254 (PCB-1254) in Oil	EPA 8082A
Aroclor 1260 (PCB-1260)	EPA 8082A
Aroclor 1260 (PCB-1260) in Oil	EPA 8082A

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
PCB 1	EPA 1668A
	EPA 1668C
PCB 10	EPA 1668A
	EPA 1668C
PCB 100	EPA 1668A
	EPA 1668C
PCB 101	EPA 1668A
	EPA 1668C
PCB 102	EPA 1668A
	EPA 1668C
PCB 103	EPA 1668A
	EPA 1668C
PCB 104	EPA 1668A
	EPA 1668C
PCB 105	EPA 1668A
	EPA 1668C
PCB 106	EPA 1668A
	EPA 1668C
PCB 107	EPA 1668A
	EPA 1668C
PCB 108	EPA 1668A
	EPA 1668C
PCB 109	EPA 1668A
	EPA 1668C
PCB 11	EPA 1668A

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 11	EPA 1668C
PCB 110	EPA 1668A
	EPA 1668C
PCB 111	EPA 1668A
	EPA 1668C
PCB 112	EPA 1668A
	EPA 1668C
PCB 113	EPA 1668A
	EPA 1668C
PCB 114	EPA 1668A
	EPA 1668C
PCB 115	EPA 1668A
	EPA 1668C
PCB 116	EPA 1668A
	EPA 1668C
PCB 117	EPA 1668A
	EPA 1668C
PCB 118	EPA 1668A
	EPA 1668C
PCB 119	EPA 1668A
	EPA 1668C
PCB 12	EPA 1668A
	EPA 1668C
PCB 120	EPA 1668A
	EPA 1668C
PCB 121	EPA 1668A
	EPA 1668C

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 122	EPA 1668A
	EPA 1668C
PCB 123	EPA 1668A
	EPA 1668C
PCB 124	EPA 1668A
	EPA 1668C
PCB 125	EPA 1668A
	EPA 1668C
PCB 126	EPA 1668A
	EPA 1668C
PCB 127	EPA 1668A
	EPA 1668C
PCB 128	EPA 1668A
	EPA 1668C
PCB 129	EPA 1668A
	EPA 1668C
PCB 13	EPA 1668A
	EPA 1668C
PCB 130	EPA 1668A
	EPA 1668C
PCB 131	EPA 1668A
	EPA 1668C
PCB 132	EPA 1668A
	EPA 1668C
PCB 133	EPA 1668A
	EPA 1668C
PCB 134	EPA 1668A

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 134	EPA 1668C
PCB 135	EPA 1668A
	EPA 1668C
PCB 136	EPA 1668A
	EPA 1668C
PCB 137	EPA 1668A
	EPA 1668C
PCB 138	EPA 1668A
	EPA 1668C
PCB 139	EPA 1668A
	EPA 1668C
PCB 14	EPA 1668A
	EPA 1668C
PCB 140	EPA 1668A
	EPA 1668C
PCB 141	EPA 1668A
	EPA 1668C
PCB 142	EPA 1668A
	EPA 1668C
PCB 143	EPA 1668A
	EPA 1668C
PCB 144	EPA 1668A
	EPA 1668C
PCB 145	EPA 1668A
	EPA 1668C
PCB 146	EPA 1668A
	EPA 1668C

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 147	EPA 1668A
	EPA 1668C
PCB 148	EPA 1668A
	EPA 1668C
PCB 149	EPA 1668A
	EPA 1668C
PCB 15	EPA 1668A
	EPA 1668C
PCB 150	EPA 1668A
	EPA 1668C
PCB 151	EPA 1668A
	EPA 1668C
PCB 152	EPA 1668A
	EPA 1668C
PCB 153	EPA 1668A
	EPA 1668C
PCB 154	EPA 1668A
	EPA 1668C
PCB 155	EPA 1668A
	EPA 1668C
PCB 156	EPA 1668A
	EPA 1668C
PCB 157	EPA 1668A
	EPA 1668C
PCB 158	EPA 1668A
	EPA 1668C
PCB 159	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 159	EPA 1668C
PCB 16	EPA 1668A
	EPA 1668C
PCB 160	EPA 1668A
	EPA 1668C
PCB 161	EPA 1668A
	EPA 1668C
PCB 162	EPA 1668A
	EPA 1668C
PCB 163	EPA 1668A
	EPA 1668C
PCB 164	EPA 1668A
	EPA 1668C
PCB 165	EPA 1668A
	EPA 1668C
PCB 166	EPA 1668A
	EPA 1668C
PCB 167	EPA 1668A
	EPA 1668C
PCB 168	EPA 1668A
	EPA 1668C
PCB 169	EPA 1668A
	EPA 1668C
PCB 17	EPA 1668A
	EPA 1668C
PCB 170	EPA 1668A
	EPA 1668C

Serial No.: 71900

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 171	EPA 1668A
	EPA 1668C
PCB 172	EPA 1668A
	EPA 1668C
PCB 173	EPA 1668A
	EPA 1668C
PCB 174	EPA 1668A
	EPA 1668C
PCB 175	EPA 1668A
	EPA 1668C
PCB 176	EPA 1668A
	EPA 1668C
PCB 177	EPA 1668A
	EPA 1668C
PCB 178	EPA 1668A
	EPA 1668C
PCB 179	EPA 1668A
	EPA 1668C
PCB 18	EPA 1668A
	EPA 1668C
PCB 180	EPA 1668A
	EPA 1668C
PCB 181	EPA 1668A
	EPA 1668C
PCB 182	EPA 1668A
	EPA 1668C
PCB 183	EPA 1668A

Serial No.: 71900

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 183	EPA 1668C
PCB 184	EPA 1668A
	EPA 1668C
PCB 185	EPA 1668A
	EPA 1668C
PCB 186	EPA 1668A
	EPA 1668C
PCB 187	EPA 1668A
	EPA 1668C
PCB 188	EPA 1668A
	EPA 1668C
PCB 189	EPA 1668A
	EPA 1668C
PCB 19	EPA 1668A
	EPA 1668C
PCB 190	EPA 1668A
	EPA 1668C
PCB 191	EPA 1668A
	EPA 1668C
PCB 192	EPA 1668A
	EPA 1668C
PCB 193	EPA 1668A
	EPA 1668C
PCB 194	EPA 1668A
	EPA 1668C
PCB 195	EPA 1668A
	EPA 1668C

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 196	EPA 1668A
	EPA 1668C
PCB 197	EPA 1668A
	EPA 1668C
PCB 198	EPA 1668A
	EPA 1668C
PCB 199	EPA 1668A
	EPA 1668C
PCB 2	EPA 1668A
	EPA 1668C
PCB 20	EPA 1668A
	EPA 1668C
PCB 200	EPA 1668A
	EPA 1668C
PCB 201	EPA 1668A
	EPA 1668C
PCB 202	EPA 1668A
	EPA 1668C
PCB 203	EPA 1668A
	EPA 1668C
PCB 204	EPA 1668A
	EPA 1668C
PCB 205	EPA 1668A
	EPA 1668C
PCB 206	EPA 1668A
	EPA 1668C
PCB 207	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 207	EPA 1668C
PCB 208	EPA 1668A
	EPA 1668C
PCB 209	EPA 1668A
	EPA 1668C
PCB 21	EPA 1668A
	EPA 1668C
PCB 22	EPA 1668A
	EPA 1668C
PCB 23	EPA 1668A
	EPA 1668C
PCB 24	EPA 1668A
	EPA 1668C
PCB 25	EPA 1668A
	EPA 1668C
PCB 26	EPA 1668A
	EPA 1668C
PCB 27	EPA 1668A
	EPA 1668C
PCB 28	EPA 1668A
	EPA 1668C
PCB 29	EPA 1668A
	EPA 1668C
PCB 3	EPA 1668A
	EPA 1668C
PCB 30	EPA 1668A
	EPA 1668C

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 31	EPA 1668A
	EPA 1668C
PCB 32	EPA 1668A
	EPA 1668C
PCB 33	EPA 1668A
	EPA 1668C
PCB 34	EPA 1668A
	EPA 1668C
PCB 35	EPA 1668A
	EPA 1668C
PCB 36	EPA 1668A
	EPA 1668C
PCB 37	EPA 1668A
	EPA 1668C
PCB 38	EPA 1668A
	EPA 1668C
PCB 39	EPA 1668A
	EPA 1668C
PCB 4	EPA 1668A
	EPA 1668C
PCB 40	EPA 1668A
	EPA 1668C
PCB 41	EPA 1668A
	EPA 1668C
PCB 42	EPA 1668A
	EPA 1668C
PCB 43	EPA 1668A

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 43	EPA 1668C
PCB 44	EPA 1668A
	EPA 1668C
PCB 45	EPA 1668A
	EPA 1668C
PCB 46	EPA 1668A
	EPA 1668C
PCB 47	EPA 1668A
	EPA 1668C
PCB 48	EPA 1668A
	EPA 1668C
PCB 49	EPA 1668A
	EPA 1668C
PCB 5	EPA 1668A
	EPA 1668C
PCB 50	EPA 1668A
	EPA 1668C
PCB 51	EPA 1668A
	EPA 1668C
PCB 52	EPA 1668A
	EPA 1668C
PCB 53	EPA 1668A
	EPA 1668C
PCB 54	EPA 1668A
	EPA 1668C
PCB 55	EPA 1668A
	EPA 1668C

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 56	EPA 1668A
	EPA 1668C
PCB 57	EPA 1668A
	EPA 1668C
PCB 58	EPA 1668A
	EPA 1668C
PCB 59	EPA 1668A
	EPA 1668C
PCB 6	EPA 1668A
	EPA 1668C
PCB 60	EPA 1668A
	EPA 1668C
PCB 61	EPA 1668A
	EPA 1668C
PCB 62	EPA 1668A
	EPA 1668C
PCB 63	EPA 1668A
	EPA 1668C
PCB 64	EPA 1668A
	EPA 1668C
PCB 65	EPA 1668A
	EPA 1668C
PCB 66	EPA 1668A
	EPA 1668C
PCB 67	EPA 1668A
	EPA 1668C
PCB 68	EPA 1668A

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 68	EPA 1668C
PCB 69	EPA 1668A
	EPA 1668C
PCB 7	EPA 1668A
	EPA 1668C
PCB 70	EPA 1668A
	EPA 1668C
PCB 71	EPA 1668A
	EPA 1668C
PCB 72	EPA 1668A
	EPA 1668C
PCB 73	EPA 1668A
	EPA 1668C
PCB 74	EPA 1668A
	EPA 1668C
PCB 75	EPA 1668A
	EPA 1668C
PCB 76	EPA 1668A
	EPA 1668C
PCB 77	EPA 1668A
	EPA 1668C
PCB 78	EPA 1668A
	EPA 1668C
PCB 79	EPA 1668A
	EPA 1668C
PCB 8	EPA 1668A
	EPA 1668C

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 80	EPA 1668A EPA 1668C
PCB 81	EPA 1668A EPA 1668C
PCB 82	EPA 1668A EPA 1668C
PCB 83	EPA 1668A EPA 1668C
PCB 84	EPA 1668A EPA 1668C
PCB 85	EPA 1668A EPA 1668C
PCB 86	EPA 1668A EPA 1668C
PCB 87	EPA 1668A EPA 1668C
PCB 88	EPA 1668A EPA 1668C
PCB 89	EPA 1668A EPA 1668C
PCB 9	EPA 1668A EPA 1668C
PCB 90	EPA 1668A EPA 1668C
PCB 91	EPA 1668A EPA 1668C
PCB 92	EPA 1668A

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved analytes are listed below:

Polychlorinated Biphenyls

PCB 92	EPA 1668C
PCB 93	EPA 1668A
	EPA 1668C
PCB 94	EPA 1668A
	EPA 1668C
PCB 95	EPA 1668A
	EPA 1668C
PCB 96	EPA 1668A
	EPA 1668C
PCB 97	EPA 1668A
	EPA 1668C
PCB 98	EPA 1668A
	EPA 1668C
PCB 99	EPA 1668A
	EPA 1668C
PCB Congeners, Total	EPA 1668C

Polynuclear Aromatic Hydrocarbons

2-Acetylaminofluorene	EPA 8270E
3-Methylcholanthrene	EPA 8270E
7,12-Dimethylbenzyl (a) anthracene	EPA 8270E
Acenaphthene	EPA 8270E
Acenaphthylene	EPA 8270E
Anthracene	EPA 8270E
Benzo(a)anthracene	EPA 8270E
Benzo(a)pyrene	EPA 8270E
Benzo(b)fluoranthene	EPA 8270E
Benzo(g,h,i)perylene	EPA 8270E

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Polynuclear Aromatic Hydrocarbons

Benzo(k)fluoranthene	EPA 8270E
Chrysene	EPA 8270E
Dibenzo(a,h)anthracene	EPA 8270E
Dibenzo(a,j)acridine	EPA 8270E
Fluoranthene	EPA 8270E
Fluorene	EPA 8270E
Indeno(1,2,3-cd)pyrene	EPA 8270E
Naphthalene	EPA 8270E
Phenanthrene	EPA 8270E
Pyrene	EPA 8270E

Priority Pollutant Phenols

2,3,4,6 Tetrachlorophenol	EPA 8270E
2,4,5-Trichlorophenol	EPA 8270E
2,4,6-Trichlorophenol	EPA 8270E
2,4-Dichlorophenol	EPA 8270E
2,4-Dimethylphenol	EPA 8270E
2,4-Dinitrophenol	EPA 8270E
2,6-Dichlorophenol	EPA 8270E
2-Chlorophenol	EPA 8270E
2-Methyl-4,6-dinitrophenol	EPA 8270E
2-Methylphenol	EPA 8270E
2-Nitrophenol	EPA 8270E
3-Methylphenol	EPA 8270E
4-Chloro-3-methylphenol	EPA 8270E
4-Methylphenol	EPA 8270E
4-Nitrophenol	EPA 8270E
Pentachlorophenol	EPA 8270E

Serial No.: 71900

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Priority Pollutant Phenols

Phenol	EPA 8270E

Semi-Volatile Organics

1,1'-Biphenyl	EPA 8270E
1,2-Dichlorobenzene, Semi-volatile	EPA 8270E
1,3-Dichlorobenzene, Semi-volatile	EPA 8270E
1,4-Dichlorobenzene, Semi-volatile	EPA 8270E
2-Methylnaphthalene	EPA 8270E
2-Picoline	EPA 8270E
4-Amino biphenyl	EPA 8270E
Acetophenone	EPA 8270E
Benzaldehyde	EPA 8270E
Benzoic Acid	EPA 8270E
Benzyl alcohol	EPA 8270E
Caprolactam	EPA 8270E
Dibenzofuran	EPA 8270E
Ethyl methanesulfonate	EPA 8270E
Isosafrole	EPA 8270E
Methyl methanesulfonate	EPA 8270E
O,O,O-Triethyl phosphorothioate	EPA 8270E
Phenacetin	EPA 8270E
Safrole	EPA 8270E

Volatile Aromatics

1,2,4-Trichlorobenzene, Volatile	EPA 8260D
1,2,4-Trimethylbenzene	EPA 8260D
1,2-Dichlorobenzene	EPA 8260D
1,3,5-Trimethylbenzene	EPA 8260D

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved analytes are listed below:

Volatile Aromatics

1,3-Dichlorobenzene	EPA 8260D
1,4-Dichlorobenzene	EPA 8260D
2-Chlorotoluene	EPA 8260D
4-Chlorotoluene	EPA 8260D
Benzene	EPA 8260D
Bromobenzene	EPA 8260D
Chlorobenzene	EPA 8260D
Ethyl benzene	EPA 8260D
Isopropylbenzene	EPA 8260D
m/p-Xylenes	EPA 8260D
Naphthalene, Volatile	EPA 8260D
n-Butylbenzene	EPA 8260D
n-Propylbenzene	EPA 8260D
o-Xylene	EPA 8260D
p-Isopropyltoluene (P-Cymene)	EPA 8260D
sec-Butylbenzene	EPA 8260D
Styrene	EPA 8260D
tert-Butylbenzene	EPA 8260D
Toluene	EPA 8260D
Total Xylenes	EPA 8260D

Volatile Chlorinated Organics

Benzyl chloride	EPA 8260D

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 8260D
1,1,1-Trichloroethane	EPA 8260D
1,1,2,2-Tetrachloroethane	EPA 8260D

Serial No.: 71900

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Volatile Halocarbons

1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260D
1,1,2-Trichloroethane	EPA 8260D
1,1-Dichloroethane	EPA 8260D
1,1-Dichloroethene	EPA 8260D
1,1-Dichloropropene	EPA 8260D
1,2,3-Trichloropropane	EPA 8260D
1,2-Dibromo-3-chloropropane	EPA 8260D
1,2-Dibromoethane	EPA 8260D
1,2-Dichloroethane	EPA 8260D
1,2-Dichloropropane	EPA 8260D
1,3-Dichloropropane	EPA 8260D
2,2-Dichloropropane	EPA 8260D
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260D
2-Chloroethylvinyl ether	EPA 8260D
3-Chloropropene (Allyl chloride)	EPA 8260D
Bromochloromethane	EPA 8260D
Bromodichloromethane	EPA 8260D
Bromoform	EPA 8260D
Bromomethane	EPA 8260D
Carbon tetrachloride	EPA 8260D
Chloroethane	EPA 8260D
Chloroform	EPA 8260D
Chloromethane	EPA 8260D
cis-1,2-Dichloroethene	EPA 8260D
cis-1,3-Dichloropropene	EPA 8260D
Dibromochloromethane	EPA 8260D
Dibromomethane	EPA 8260D

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

NY Lab Id No: 10670

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Volatile Halocarbons

Dichlorodifluoromethane	EPA 8260D
Hexachlorobutadiene, Volatile	EPA 8260D
Methyl iodide	EPA 8260D
Methylene chloride	EPA 8260D
Tetrachloroethene	EPA 8260D
trans-1,2-Dichloroethene	EPA 8260D
trans-1,3-Dichloropropene	EPA 8260D
trans-1,4-Dichloro-2-butene	EPA 8260D
Trichloroethene	EPA 8260D
Trichlorofluoromethane	EPA 8260D
Vinyl chloride	EPA 8260D

Volatile Organics

1,4-Dioxane	EPA 8260D
	EPA 8260C SIM
	EPA 8260D SIM
	EPA 8270E
	EPA 8270E SIM
2-Butanone (Methylethyl ketone)	EPA 8260D
2-Hexanone	EPA 8260D
2-Nitropropane	EPA 8260D
4-Methyl-2-Pentanone	EPA 8260D
Acetone	EPA 8260D
Acetonitrile	EPA 8260D
Carbon Disulfide	EPA 8260D
Cyclohexane	EPA 8260D
Ethyl Acetate	EPA 8260D
Ethylene Glycol	EPA 8015D

Serial No.: 71900

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DUANE LUCKENBILL
EUROFINS LANCASTER LABORATORIES ENVIRONMENT
TESTING, LLC
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Volatile Organics

Ethylene Glycol	EPA 8015C
Hexane	EPA 8260D
Isobutyl alcohol	EPA 8260D
Isopropanol	EPA 8260D
Methyl acetate	EPA 8260D
Methyl cyclohexane	EPA 8260D
Methyl tert-butyl ether	EPA 8260D
n-Butanol	EPA 8260D
o-Toluidine	EPA 8270E
Propionitrile	EPA 8260D
tert-butyl alcohol	EPA 8260D
Tetrahydrofuran	EPA 8260D
Vinyl acetate	EPA 8260D

Sample Preparation Methods

	EPA 5035A-L
	EPA 5035A-H
	EPA 3580A
	EPA 3010A
	EPA 3005A
	EPA 3050B
	EPA 3550C
	EPA 3540C
	EPA 3546
	EPA 5035
	EPA 3060A

Serial No.: 71900