



8976 Wellington Road  
Manassas, VA 20109

June 15, 2018

R. Scott Deyette  
Project Manager  
NYS Dept. of Environmental Conservation  
Division of Environmental Remediation  
Remedial Bureau C  
625 Broadway, 11th Floor  
Albany, New York 12233-7014

Re: IBM Corporation, Former IBM B952/982 Site  
Emerging Contaminants Sampling Work Plan,  
Poly- and Perfluoroalkyl Substances and 1,4-Dioxane  
Inactive Hazardous Waste Disposal Site 314076

Mr. Deyette:

The purpose of this letter is to transmit the work plan entitled, *Former IBM Building 952/982 Site, Emerging Contaminants, Poly- and Perfluoroalkyl Substances and 1,4-Dioxane Sampling Work Plan (Work Plan)*.

The attached Work Plan satisfies the request to submit a sampling plan for the sampling of Emerging Contaminants as set forth in your letter request, dated April 23, 2018. IBM will implement the scope of work outlined in this Work Plan upon NYSDEC approval.

If you have any questions regarding this submittal or require additional information, please contact me at 540-233-0676 or [whalen@us.ibm.com](mailto:whalen@us.ibm.com).

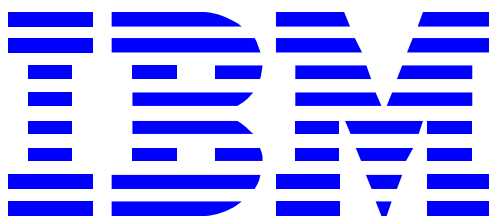
Sincerely,  
International Business Machines Corporation

A handwritten signature in black ink that reads 'K Whalen'.

Kevin Whalen  
IBM Corporate Environmental Affairs

Attachment

cc: David Kaminski, Neptune Capital Investors, LLC  
Steve Brannen, IBM Corporation



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**NEPTUNE COMMERCE CENTER  
(FORMER BUILDING 952/982 SITE)**

**EMERGING CONTAMINANTS  
POLY- AND PERFLUOROALKYL SUBSTANCES AND 1,4-DIOXANE  
SAMPLING WORK PLAN**

**SITE ID: 314076  
ORDER ON CONSENT, INDEX #A3-0655-12-10**

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**Prepared for:**

**IBM Corporate Environmental Affairs  
8976 Wellington Road  
Manassas, VA 20109**

**June 15, 2018**

**Prepared by:**

**Groundwater Sciences, P.C.  
Groundwater Sciences Corporation**

**2601 Market Place Street, Suite 310  
Harrisburg, Pennsylvania 17110**

**560 Route 52, Suite 202  
Beacon, New York 12508**

**1108 Vestal Parkway East, Suite 2  
Vestal, New York 13850**



**Professional Geologist Certification  
Former Building 952/982 Site  
Town of Poughkeepsie  
Dutchess County, New York**

**Emerging Contaminants  
Poly- and Perfluoroalkyl Substances and 1,4-Dioxane  
Sampling Work Plan**

**Site ID: 314076  
Order on Consent, Index #A3-0655-12-10**

**June 15, 2018**

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 "*Neptune Commerce Center (Former IBM Building 952/982 Site) Emerging Contaminants, Poly- and Perfluoroalkyl Substances and 1,4-Dioxane Sampling Work Plan, Site ID: 314076, Order on Consent, Index #A3-0655-12-10*". This work plan is dated June 15, 2018 and was prepared by Groundwater Sciences, P.C. (GSPC) and Groundwater Sciences Corporation (GSC) for IBM Corporation.

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.

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.



Signature: \_\_\_\_\_ Date: 6/15/2018

Name: Dorothy A. Bergmann

License No: 00477

State: New York

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## 1 INTRODUCTION

On April 23, 2018, the International Business Machines Corporation (IBM) received a request from the New York State Department of Environmental Conservation (NYSDEC) to complete sampling at the Former Building 952 and 982 Site (Site) for emerging contaminants, including specific poly- and perfluoroalkyl substances (PFAS) and 1,4-dioxane.

PFAS are a group of compounds that NYSDEC has recently identified as emerging contaminants due to their potential health effects and persistence in the environment.

This Emerging Contaminant, PFAS and 1,4-dioxane, Sampling Work Plan (Work Plan) for the Site was prepared by Groundwater Sciences, P.C. (GSPC) and Groundwater Sciences Corporation (GSC) on behalf of IBM. The Work Plan provides information regarding the following items pursuant to the April 23, 2018 request by NYSDEC:

- A description of the proposed scope of groundwater sampling and analysis for PFAS and 1,4-dioxane, including the wells proposed for sampling; the methods for sample collection, analytical methods, quality assurance / quality control (QA/QC) procedures, and the methods for managing investigative derived wastes (IDW); and
- A proposed schedule for sampling, laboratory analysis and reporting.

## 2 BACKGROUND

The Former IBM Building 952 and 982 Site (Site) is located in an urban area in the Town of Poughkeepsie, Dutchess County, New York and is bordered to the northeast by U.S. Highway 9 and to the southeast by Neptune Road (Figure 1-1).

IBM occupied the Site in the mid-1950s as a leasee and vacated the site in 1994. At that time the site was owned by South Road Associates (SRA). The site was used primarily for manufacturing and parts cleaning and in later years for computer and mainframe and ancillary parts salvage. Various halogenated solvents and Sovasol were used on the Site as part of the previous manufacturing operations.

In the early 1980s, it was discovered that on-Site soils were contaminated with various halogenated solvents and Sovasol. IBM investigated and performed remedial action voluntarily, without a consent order, but with NYSDEC oversight in 1984. Following characterization sampling, IBM executed a Remedial Action Work Plan approved by NYSDEC that selected excavation as the remedy. As part of these activities, 5,274 cubic yards of contaminated material was removed from the area between Former B952 and Former B982 between August 1984 and November 1984.

Since the 1984 remedial action, IBM conducted other activities at the Site which include: post-remedial monitoring of groundwater on-Site and off-Site; re-sampling of soils beneath Former B952 and the Former B982; installation and sampling of additional monitoring wells; design and implementation of a groundwater collection and treatment system and; implementation of a Groundwater Monitoring Plan (GMP).

As of April 25, 2005, the site was transacted to Neptune Capital Investors, LLC. Since that time, the Site has undergone redevelopment and is now known as Neptune Commerce Park. The site has been fully redeveloped with the demolition of the Former Building 952 and renovations to the Former IBM Building 982 for commercial use. The new property owner has completed a subdivision separating the site into 3 separate lots, with the actual Site consisting of only a small portion of two of the lots, and the entire third lot.

The Site is currently listed on the Inactive Hazardous Waste Disposal Site Registry as a Class 4 Site, site ID 314076 and is managed under the Order on Consent (Order), Index #A3-0655-12-10, issued by the NYSDEC on May 19, 2011.

The remedial action being performed at the Site involves the extraction of groundwater from a single extraction well (952-30R, Figure 1-2), on-site treatment by activated carbon to remove volatile and semi-volatile organic compounds and, discharge to a sanitary sewer system associated with a publicly owned treatment works (POTW), the Arlington Sewage District Treatment Plant. Long-term operation of this system began on December 1, 1993. Additionally, monitoring wells are present on the Site (Figure 1-2) to monitor the horizontal and vertical variation in groundwater elevation and chemistry.

Prior to the Order on Consent, the reporting of groundwater remedial and monitoring results to the NYSDEC was as specified in the *Operations and Maintenance Plan for the Groundwater Collection and Treatment System at the IBM Building 952 and 982 Leased Property*, dated February 24, 1994, as *Emerging Contaminants Poly- and Perfluoroalkyl Substances & 1,4-Dioxane Sampling Work Plan* June 15, 2018

revised (O&M Plan). As detailed in the Paragraph 11 of the Order, the O&M Plan was superseded by the Order. On December 2, 2011, IBM submitted an Interim Site Management Plan (SMP) as per the requirements specified in the Order, Section II.A.5. The NYSDEC in consultation with the New York State Department of Health (NYSDOH) approved the SMP in a letter dated December 29, 2011.

An indoor air assessment was required under the Order and a sub-slab depressurization system was installed in B982 and placed into operation during 2014. This work was done in conjunction with building remodeling project and prior to occupancy.

### 3 SAMPLING AND ANALYSIS PROGRAM

The following locations have been identified by IBM for this sampling effort: 952-10RA; 952-30R; 952-31R; the final effluent from the 952-30R treatment system (sanitary discharge) and; the municipal water system.

Due to the extremely low method detection limit concentrations (in nanogram per liter or parts per trillion) associated with PFAS analysis and the numerous potential background sources of detectable concentrations of PFAS, sampling programs for PFAS require the development and implementation of detailed operating procedures to reduce the potential for cross contamination and false positive sample results due to background conditions.

In consideration of these concerns, PFAS and 1,4-Dioxane sampling activities will be performed in accordance with the general methods and procedures described in Standard Operating Procedures (SOPs). These SOPs include: SOP-1: General Field Methods for PFAS Sampling (Appendix B); SOP-2: Groundwater Monitoring Well Purge Protocols (Appendix C); SOP-3: Groundwater Sampling Program Protocols (Appendix D); and SOP-4 Quality Assurance Quality Control Protocols (Appendix E). These SOPs were developed based on prior IBM and GSC experience and incorporate the most up-to-date methods for sampling PFAS compounds. Brief descriptions of the elements of the proposed PFAS sampling and analysis program are provided in the following subsections.

In addition, due to the nature of the development at the Site and the proximity of several fast food establishments to the proposed sampling locations, efforts shall be made to conduct sampling during “off hours” and field QA/QC samples shall be collected to assess the interference cross-contamination to the environmental samples. Lastly, due to the potential for PFAS cross-contamination from the 1,4-dioxane sample containers, sampling for 1,4-dioxane will occur after samples have been collected for the Full PFAS Target Analyte List.

#### 3.1 Sampling Locations

In the April 23, 2018 letter, NYSDEC requested IBM to submit a proposed sampling and analysis plan for Agency approval. This plan is intended to determine if there have been historic PFAS impacts to the Site’s groundwater. NYSDEC also recommended that at least one of the wells be located in an upgradient position given the ubiquity of PFAS in environmental samples.

Based on the Site information compiled to prepare this proposed Work Plan and recommendations from the NYSDEC, three groundwater sampling locations have been selected for sampling on site: 952-10RA; 952-30R and 952-31R.

Two of the groundwater monitoring locations selected for PFAS monitoring are part of the current NYSDEC approved Groundwater Monitoring Plan (GMP). Wells 952-10RA and 952-31R have not required sampling within the past year and may contain dedicated purging and sampling equipment that may have Teflon® coatings. The third well, 952-30R, is operating as an extraction well and contains a stainless steel pump with an HDPE discharge pipe.

As noted in SOP-2 (Appendix C), prior to initiating sampling activities, dedicated equipment that contains Teflon coatings will be removed and the monitoring wells selected for sampling will be redeveloped by purging 10 well volumes from the well using Teflon<sup>®</sup> free equipment. For wells that do not yield, the well will be evacuated three times using Teflon<sup>®</sup> free equipment.

Table 3-1 provides a summary of each well selected for PFAS and 1,4-Dioxane sampling together with the physical well specifications. The proposed sample locations are highlighted on Figure 3-1 and a groundwater elevation contour map with groundwater flow directions is provided as Figure 3-2.

Well	Apparent Position	Depth to Bottom (ft)	Well Diameter (in)	Screen Location	Dedicated Equipment	Top Screen Elevation (ft amsl)	Bottom Screen Elevation (ft amsl)
952-10RA	Near	69.0	2	dolostone	bailer	69.3	39.3
952-31R	Upgradient	86.0	2	dolostone	bailer	85.0	60.0
952-30R	Near	66.0	6	dolostone	submersible	66.0*	37.0*
* open hole completion							

Given the ubiquity of PFAS in environmental samples, sampling will be conducted at groundwater monitoring well 952-31R that shall serve to represent background conditions on Site.

The groundwater monitoring wells will be purged in accordance with SOP-2 Groundwater Monitoring Well Purge Protocols (Appendix C) and collected in accordance with SOP-3: Groundwater Sampling Program Protocols (Appendix D).

Due to the potential for PFAS cross-contamination from the 1,4-dioxane sample containers, sampling for 1,4-dioxane will occur after samples have been collected for the Full PFAS Target Analyte List.

In addition to the groundwater monitoring locations noted above, the final effluent from the 952-30R treatment system (sanitary discharge) and the municipal water supply will be sampled for PFAS and 1,4-Dioxane.

### 3.2 Quality Assurance / Quality Control Samples

IBM will collect equipment rinse blanks, field duplicates, field blanks, and trip blanks for Quality Assurance (QA)/Quality Control (QC) purposes. Equipment blanks will be collected once per day from non-dedicated equipment such as tubing, bailers, pumps, or water level indicators. One groundwater sampling location will be selected for collection of field duplicates. One field blank will be collected in and to the extent practical sampling will be conducted in one day. A trip blank sample will be included for each sample cooler.

The QC samples will be collected in accordance with SOP-4: Quality Assurance / Quality Control Protocols (Appendix E).

As an added QC check, as noted above, IBM proposes to sample the municipal water at the Site for PFAS and 1,4-Dioxane. If present, trace concentrations of PFAS and / or 1,4-Dioxane in the municipal water could serve as a background source of PFAS in groundwater due to historical water line breaks, hydrant flushing, and other exterior operations that include the use of municipal water.

### **3.3 Investigation Derived Waste Management**

Investigation Derived Waste (IDW) is anticipated to consist of monitoring well purge water. Monitoring well purge water will be collected in portable water storage tanks. IDW in the portable water storage tanks will be treated by the on-Site Treatment Facility and discharged to a sanitary sewer system associated with a publicly owned treatment works (POTW), the Arlington Sewage District Treatment Plant.

### **3.4 Analytical Laboratory Contracting and Analysis**

Groundwater samples will be submitted to Eurofins Lancaster Laboratories (New York Lab ID Number 10670) for analysis of the Full PFAS Target Analyte List shown as Table 3-2 below using USEPA Method 537 Rev 1.1 mod and 1,4-dioxane analysis via 8270 SIM methodology.

Eurofins Lancaster Laboratories currently holds New York State Department of Health (NYSDOH) certification for the analysis of Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) in drinking water. A copy of Eurofins Lancaster Laboratories NYSDOH Certificate of Approval for Laboratory Service is provided in Appendix A.

Of the twenty-one PFAS on the Full PFAS Target Analyte List, six (6) are identified in the United States Environmental Protection Agency (USEPA) Third Unregulated Contaminant Monitoring Rule (UCMR3) and are shown in bold text in the table below.

Table 3-2: Full PFAS Target Analyte List			
Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	<b>Perfluorobutanesulfonic acid</b>	<b>PFBS</b>	<b>375-73-5</b>
	<b>Perfluorohexanesulfonic acid</b>	<b>PFHxS</b>	<b>355-46-4</b>
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	<b>Perfluorooctanesulfonic acid</b>	<b>PFOS</b>	<b>1763-23-1</b>
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	<b>Perfluoroheptanoic acid</b>	<b>PFHpA</b>	<b>375-85-9</b>
	<b>Perfluorooctanoic acid</b>	<b>PFOA</b>	<b>335-67-1</b>
	<b>Perfluorononanoic acid</b>	<b>PFNA</b>	<b>375-95-1</b>
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7	
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluorooctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Note: **Bold** entries depict the 6 PFAS identified in the United States Environmental Protection Agency (USEPA) Third Unregulated Contaminant Monitoring Rule (UCMR3)

## 4 SCHEDULE AND REPORTING

IBM will implement the scope of work outlined in this Work Plan upon NYSDEC approval. The following summarizes the anticipated sequence of field activities:

- Removal of dedicated equipment that could contain Teflon<sup>®</sup> components.
- Re-development by purging 10 well volumes for wells that may have contained dedicated equipment Teflon<sup>®</sup> components.
- Re-development of wells that are not routinely sampled.
- Collection of groundwater samples.

IBM anticipates that it will require approximately one week to complete the above-listed sequence of field activities. The analytical laboratory analyses are expected to be completed in an additional four to six weeks.

IBM will submit an Emerging Contaminants, PFAS and 1,4-Dioxane Sampling Program Report (Report) to NYSDEC within 30 days of receipt of the validated analytical data. The Report will present the findings of the Emerging Contaminants sampling program, including a description of implemented field activities and procedures, and the analytical laboratory results.

## 5 REFERENCES

EPA, September 2009. EPA Document #: EPA/600/R-08/092, METHOD 537. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography / Tandem Mass Spectrometry (LC/MS/MS) version 1.1.

NYSDEC, May 18, 2011, Order on Consent (Order), Index #A3-0655-12-10

NYSDEC, April 23, 2018, Request for Sampling of Emerging Contaminants, Former B952/982 Site, NYSDEC Site No. 314076.

NYSDEC, April 2018, Groundwater Sampling for Emerging Contaminants, 2 pages.

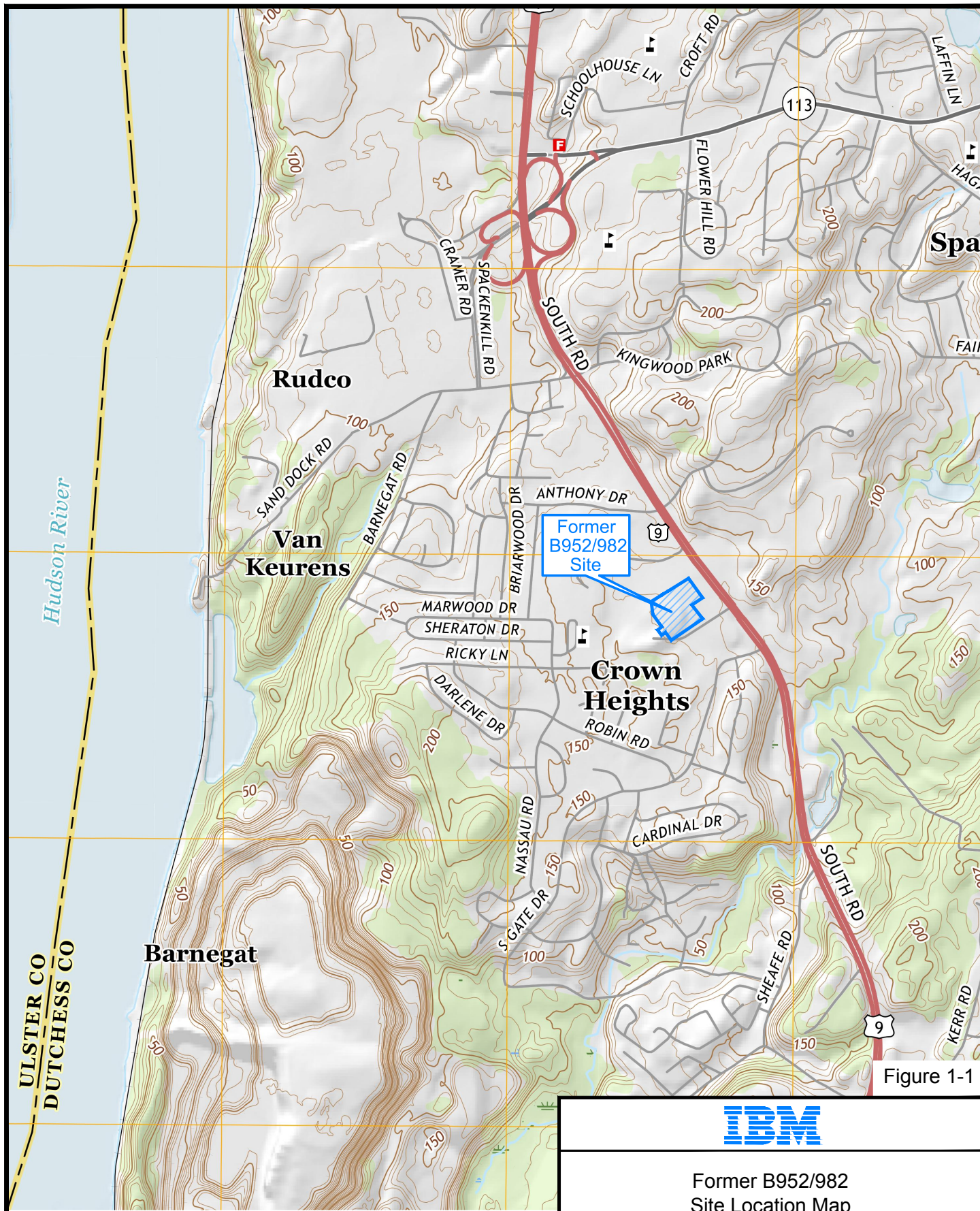


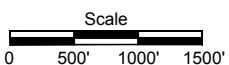
Figure 1-1



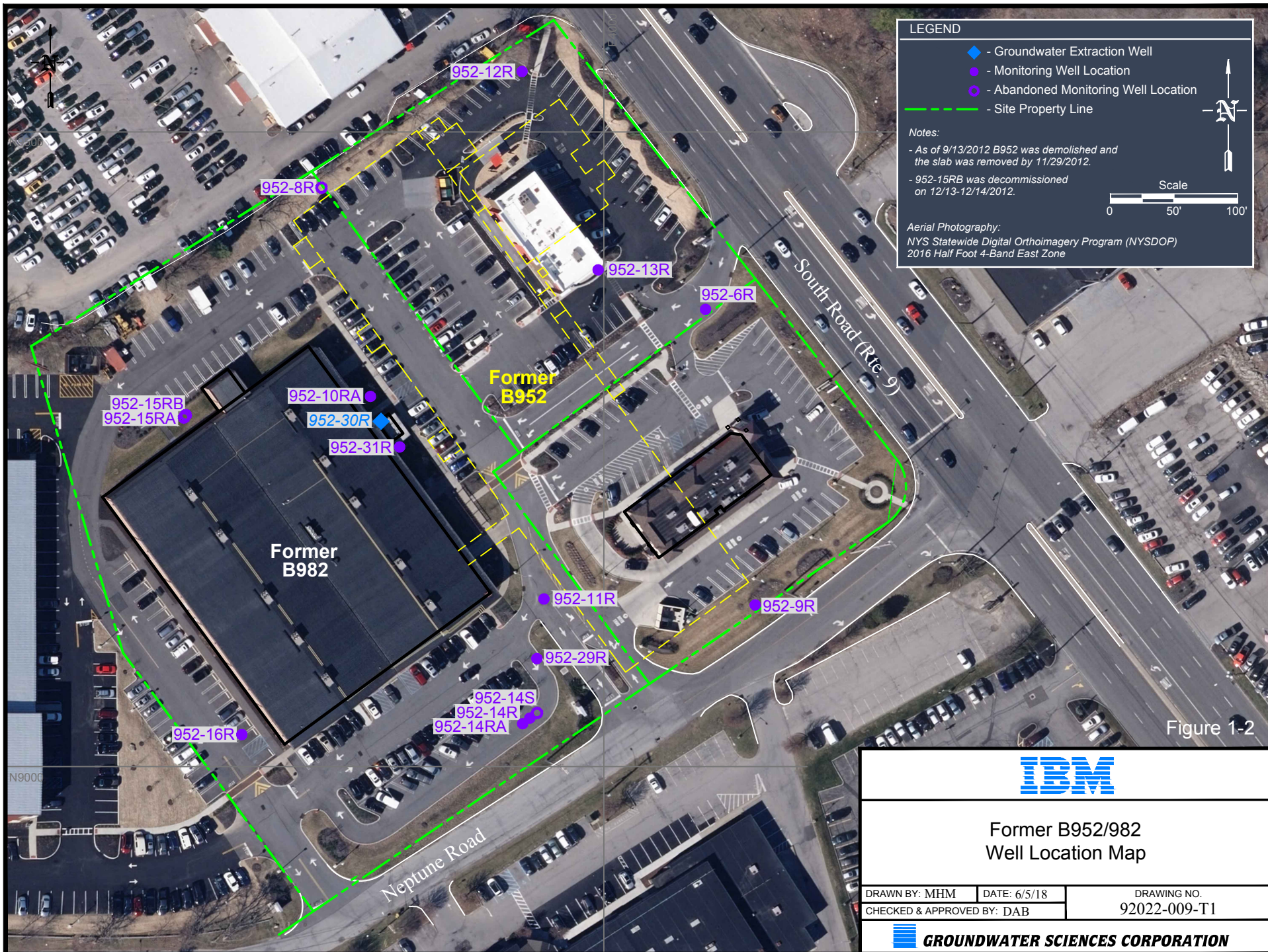
Former B952/982  
Site Location Map

DRAWN BY: MHM	DATE: 6/6/18	DRAWING NO.
CHECKED & APPROVED BY: DAB		92022-034-A2

Portion of the Poughkeepsie, New York  
7.5-minute USGS Quadrangle (2016)



Source: USGS National Map US Topo



**LEGEND**

- ◆ - Groundwater Extraction Well
- - Monitoring Well Location
- - Abandoned Monitoring Well Location
- - - Site Property Line

**Notes:**

- As of 9/13/2012 B952 was demolished and the slab was removed by 11/29/2012.
- 952-15RB was decommissioned on 12/13-12/14/2012.

**Aerial Photography:**  
 NYS Statewide Digital Orthoimagery Program (NYSODP)  
 2016 Half Foot 4-Band East Zone

Scale  
 0 50' 100'

Figure 1-2

**IBM**

**Former B952/982  
Well Location Map**

DRAWN BY: MHM	DATE: 6/5/18	DRAWING NO.
CHECKED & APPROVED BY: DAB		92022-009-T1

**GROUNDWATER SCIENCES CORPORATION**

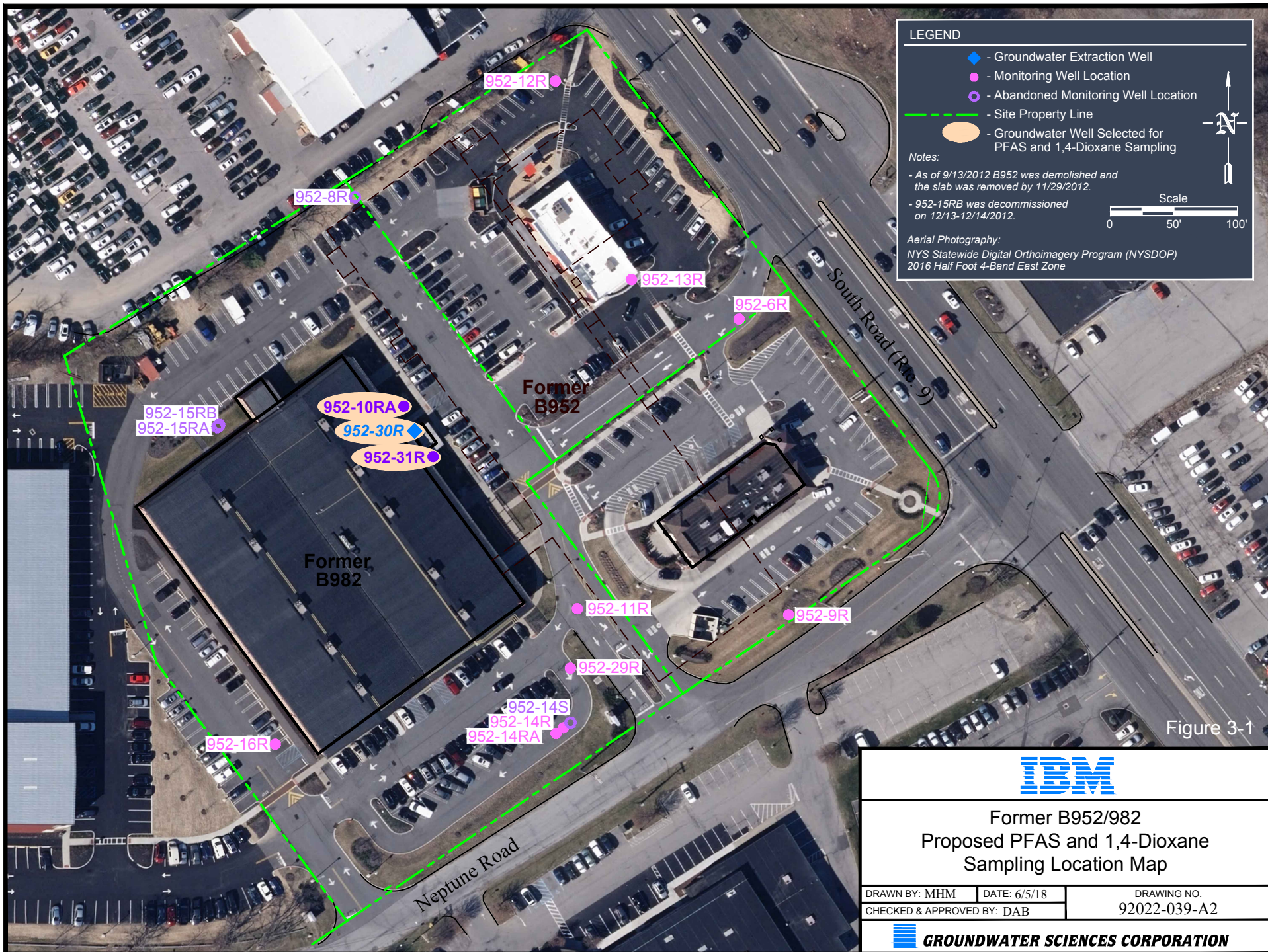
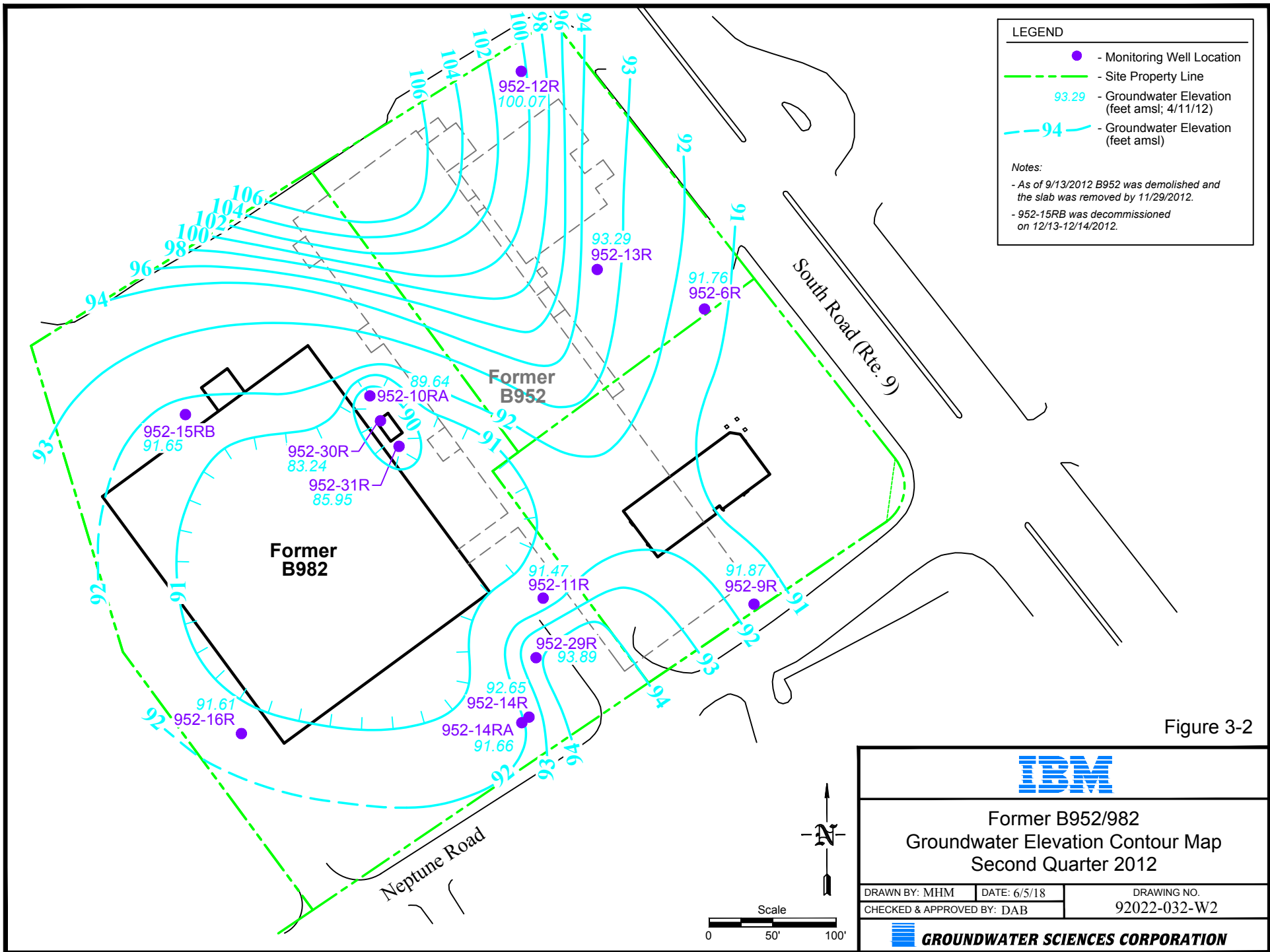


Figure 3-1

<b>Former B952/982 Proposed PFAS and 1,4-Dioxane Sampling Location Map</b>		
DRAWN BY: MHM	DATE: 6/5/18	DRAWING NO.
CHECKED & APPROVED BY: DAB		92022-039-A2
<b>GROUNDWATER SCIENCES CORPORATION</b>		



APPENDIX A  
RELATED DOCUMENTS

*June 15, 2018*

Chronological Listing:

NYSDOH, April 1, 2018, Eurofins Lancaster Laboratories NYSDOH Certificate of Approval for Laboratory Service

NYSDEC, April 23, 2018, Request for Sampling of Emerging Contaminants, Former B952/982 Site, NYSDEC Site No. 314076

NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019

Issued April 01, 2018

Revised April 13, 2018

**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  
ENVIRONMENTAL 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 (2003) for the category  
ENVIRONMENTAL ANALYSES POTABLE WATER  
All approved analytes are listed below:*

**Bacteriology**

Coliform, Total / E. coli (Qualitative) Collert  
Heterotrophic Plate Count SM 18-22 9215B (-04)

**Disinfection By-products**

Bromide EPA 300.0 Rev. 2.1

**Dissolved Gases**

Acetylene RSK-175  
Ethane RSK-175  
Ethene (Ethylene) RSK-175  
Methane 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

**Metals I**

Manganese, Total 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

**Metals II**

Aluminum, Total EPA 200.7 Rev. 4.4  
Antimony, Total EPA 200.8 Rev. 5.4  
Beryllium, 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

Serial No.: 58290

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.



NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019  
Issued April 01, 2018  
Revised April 13, 2018

**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  
ENVIRONMENTAL 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 (2003) for the category  
**ENVIRONMENTAL ANALYSES POTABLE WATER**  
All approved analytes are listed below:

**Methylcarbamate Pesticides**

Aldicarb Sulfoxide	EPA 531.1
Carbaryl	EPA 531.1
Carbofuran	EPA 531.1
Methomyl	EPA 531.1
Oxamyl	EPA 531.1

**Microextractibles**

1,2-Dibromo-3-chloropropane	EPA 504.1
1,2-Dibromoethane	EPA 504.1

**Miscellaneous**

2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 1613B
Benzo(a)pyrene	EPA 525.2
Bis(2-ethylhexyl) phthalate	EPA 525.2
Di (2-ethylhexyl) adipate	EPA 525.2
Hexachlorobenzene	EPA 525.2
Hexachlorocyclopentadiene	EPA 525.2
Methyl iodide	EPA 524.2
Organic Carbon, Total	SM 21-22 5310C (-00)
Surfactant (MBAS)	SM 18-22 5540C (-00)
Turbidity	SM 18-22 2130 B (-01) EPA 180.1 Rev. 2.0

**Non-Metals**

Alkalinity	SM 18-22 2320B (-97)
Calcium Hardness	SM 18-22 2340C (-97) SM 18-22 2340B (-97)

**Non-Metals**

Chloride	EPA 300.0 Rev. 2.1
Color	SM 18-22 2120B (-01)
Cyanide	EPA 335.4 Rev. 1.0
Fluoride, Total	EPA 300.0 Rev. 2.1 SM 18-22 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 18-22 4500-P E (-99)
Silica, Dissolved	SM 20-22 4500-SiO2 C (-97)
Solids, Total Dissolved	SM 18-22 2540C (-97)
Specific Conductance	SM 18-22 2510B (-97)
Sulfate (as SO4)	EPA 300.0 Rev. 2.1

**Organohalide Pesticides**

Alachlor	EPA 525.2
Atrazine	EPA 525.2
Butachlor	EPA 525.2
Dieldrin	EPA 525.2
Endrin	EPA 525.2
Heptachlor	EPA 525.2
Heptachlor epoxide	EPA 525.2
Lindane	EPA 525.2
Methoxychlor	EPA 525.2
Metolachlor	EPA 525.2

Serial No.: 58290

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NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019  
Issued April 01, 2018  
Revised April 13, 2018

**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  
ENVIRONMENTAL 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 (2003) for the category  
**ENVIRONMENTAL ANALYSES POTABLE WATER**  
All approved analytes are listed below:

**Organohalide Pesticides**

Metribuzin	EPA 525.2
Propachlor	EPA 525.2
Simazine	EPA 525.2

**Perfluorinated Alkyl Acids**

Perfluorooctanesulfonic acid (PFOS)	EPA 537
Perfluorooctanoic acid (PFOA)	EPA 537

**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
1,4-Dichlorobenzene	EPA 524.2
2-Chlorotoluene	EPA 524.2
4-Chlorotoluene	EPA 524.2
Benzene	EPA 524.2
Bromobenzene	EPA 524.2

**Volatile Aromatics**

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
1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 524.2
2,2-Dichloropropane	EPA 524.2

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**Volatile Halocarbons**

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

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**Acrylates**

Acrolein (Propenal)	EPA 8260C
	EPA 624.1
Acrylonitrile	EPA 8260C
	EPA 624.1
Ethyl methacrylate	EPA 8260C
Methyl acrylonitrile	EPA 8260C
Methyl methacrylate	EPA 8260C

**Amines**

1,2-Diphenylhydrazine	EPA 8270D
1,4-Phenylenediamine	EPA 8270D
1-Naphthylamine	EPA 8270D
2,3-Dichloroaniline	EPA 625.1
2-Naphthylamine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4,4'-Methylenebis(2-chloroaniline)	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
5-Nitro-o-toluidine	EPA 8270D
a,a-Dimethylphenethylamine	EPA 8270D
Aniline	EPA 625.1
	EPA 8270D
Carbazole	EPA 625.1
	EPA 8270D
Diphenylamine	EPA 8270D

**Amines**

Methacrylonitrile	EPA 8270D
Pronamide	EPA 8270D
Propionitrile	EPA 8260C
Pyridine	EPA 625.1
	EPA 8270D

**Bacteriology**

Coliform, Fecal	SM 9222D-2006
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**Benzidines**

3,3'-Dichlorobenzidine	EPA 625.1
	EPA 8270D
3,3'-Dimethylbenzidine	EPA 8270D
Benzidine	EPA 625.1
	EPA 8270D

**Chlorinated Hydrocarbon Pesticides**

4,4'-DDD	EPA 8081B
	EPA 608.3
4,4'-DDE	EPA 8081B
	EPA 608.3
4,4'-DDT	EPA 8081B
	EPA 608.3
Aldrin	EPA 8081B
	EPA 608.3
alpha-BHC	EPA 8081B
	EPA 608.3

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**Chlorinated Hydrocarbon Pesticides**

alpha-Chlordane	EPA 8081B
beta-BHC	EPA 8081B
	EPA 608.3
Chlordane Total	EPA 8081B
	EPA 608.3
delta-BHC	EPA 8081B
	EPA 608.3
Diallate	EPA 8270D
Dieldrin	EPA 8081B
	EPA 608.3
Endosulfan I	EPA 8081B
	EPA 608.3
Endosulfan II	EPA 8081B
	EPA 608.3
Endosulfan sulfate	EPA 8081B
	EPA 608.3
Endrin	EPA 8081B
	EPA 608.3
Endrin aldehyde	EPA 8081B
	EPA 608.3
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608.3
Heptachlor epoxide	EPA 8081B
	EPA 608.3

**Chlorinated Hydrocarbon Pesticides**

Isodrin	EPA 8270D
Kepona	EPA 8081B
	EPA 8270D
Lindane	EPA 8081B
	EPA 608.3
Methoxychlor	EPA 8081B
	EPA 608.3
Mirex	EPA 8081B
PCNB	EPA 8270D
Toxaphene	EPA 8081B
	EPA 608.3

**Chlorinated Hydrocarbons**

1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 625.1
	EPA 8270D
1-Chloronaphthalene	EPA 8270D
2-Chloronaphthalene	EPA 625.1
	EPA 8270D
Hexachlorobenzene	EPA 625.1
	EPA 8270D
Hexachlorobutadiene	EPA 625.1
	EPA 8270D
Hexachlorocyclopentadiene	EPA 625.1
	EPA 8270D

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**Chlorinated Hydrocarbons**

Hexachloroethane	EPA 625.1
	EPA 8270D
Hexachloropropene	EPA 8270D
Pentachlorobenzene	EPA 8270D

**Chlorophenoxy Acid Pesticides**

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A
	EPA 8270D
Pentachlorophenol	EPA 8151A

**Demand**

Biochemical Oxygen Demand	SM 5210B-2011
Chemical Oxygen Demand	EPA 410.4, Rev. 2.0 (1993)

**Dioxins and Furans**

1,2,3,4,6,7,8,9-Octachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-diox	EPA 8290A
	EPA 1613B
1,2,3,4,6,7,8-Heptachlorodibenzofuran	EPA 8290A

**Dioxins and Furans**

1,2,3,4,6,7,8-Heptachlorodibenzofuran	EPA 1613B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxi	EPA 8290A
	EPA 1613B
1,2,3,4,7,8,9-Heptachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,4,7,8-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	EPA 8290A
	EPA 1613B
1,2,3,6,7,8-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	EPA 8290A
	EPA 1613B
1,2,3,7,8,9-Hexachlorodibenzofuran	EPA 8290A
	EPA 1613B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	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

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**Dioxins and Furans**

2,3,7,8-Tetrachlorodibenzofuran	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

**Fuel Oxygenates**

Di-isopropyl ether	EPA 8260C
Ethanol	EPA 1671
	EPA 8260C
	EPA 8015D
	EPA 8015C
Methyl tert-butyl ether	EPA 8260C
	EPA 8021B
tert-amyl alcohol	EPA 8260C
tert-amyl methyl ether (TAME)	EPA 8260C
tert-butyl alcohol	EPA 8260C
tert-butyl ethyl ether (ETBE)	EPA 8260C

**Haloethers**

2,2'-Oxybis(1-chloropropane)	EPA 625.1
	EPA 8270D

**Haloethers**

4-Bromophenylphenyl ether	EPA 625.1
	EPA 8270D
4-Chlorophenylphenyl ether	EPA 625.1
	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 625.1
	EPA 8270D
Bis(2-chloroethyl)ether	EPA 625.1
	EPA 8270D

**Low Level Halocarbons**

1,2-Dibromo-3-chloropropane, Low Level	EPA 8011
1,2-Dibromoethane, Low Level	EPA 8011

**Low Level Polynuclear Aromatics**

Acenaphthene Low Level	EPA 8270D SIM
Acenaphthylene Low Level	EPA 8270D SIM
Anthracene Low Level	EPA 8270D SIM
Benzo(a)anthracene Low Level	EPA 8270D SIM
Benzo(a)pyrene Low Level	EPA 8270D SIM
Benzo(b)fluoranthene Low Level	EPA 8270D SIM
Benzo(g,h,i)perylene Low Level	EPA 8270D SIM
Benzo(k)fluoranthene Low Level	EPA 8270D SIM
Chrysene Low Level	EPA 8270D SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM
Fluoranthene Low Level	EPA 8270D SIM
Fluorene Low Level	EPA 8270D SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM

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**Low Level Polynuclear Aromatics**

**Metals I**

Naphthalene Low Level	EPA 8270D SIM	Iron, Total	EPA 200.7, Rev. 4.4 (1994)
Phenanthrene Low Level	EPA 8270D SIM		EPA 6010C
Pyrene Low Level	EPA 8270D SIM		EPA 6020A
			EPA 200.8, Rev. 5.4 (1994)
<b>Metals I</b>		<b>Lead, Total</b>	EPA 200.7, Rev. 4.4 (1994)
Barium, Total	EPA 200.7, Rev. 4.4 (1994)		EPA 6010C
	EPA 6010C		EPA 6020A
	EPA 6020A		EPA 200.8, Rev. 5.4 (1994)
Cadmium, Total	EPA 200.8, Rev. 5.4 (1994)	<b>Magnesium, Total</b>	EPA 200.7, Rev. 4.4 (1994)
	EPA 200.7, Rev. 4.4 (1994)		EPA 6010C
	EPA 6010C		EPA 6020A
	EPA 6020A		EPA 200.8, Rev. 5.4 (1994)
Calcium, Total	EPA 200.8, Rev. 5.4 (1994)	<b>Manganese, Total</b>	EPA 200.7, Rev. 4.4 (1994)
	EPA 200.7, Rev. 4.4 (1994)		EPA 6010C
	EPA 6010C		EPA 6020A
	EPA 6020A		EPA 200.8, Rev. 5.4 (1994)
Chromium, Total	EPA 200.8, Rev. 5.4 (1994)	<b>Nickel, Total</b>	EPA 200.7, Rev. 4.4 (1994)
	EPA 200.7, Rev. 4.4 (1994)		EPA 6010C
	EPA 6010C		EPA 6020A
	EPA 6020A		EPA 200.8, Rev. 5.4 (1994)
Copper, Total	EPA 200.8, Rev. 5.4 (1994)	<b>Potassium, Total</b>	EPA 200.7, Rev. 4.4 (1994)
	EPA 200.7, Rev. 4.4 (1994)		EPA 6010C
	EPA 6010C		EPA 6020A
	EPA 6020A		EPA 200.8, Rev. 5.4 (1994)
Iron, Total	EPA 200.8, Rev. 5.4 (1994)	<b>Silver, Total</b>	EPA 200.7, Rev. 4.4 (1994)
	SM 3500-Fe B-2011		EPA 6010C

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Metals I		Metals II	
Silver, Total	EPA 6020A EPA 200.8, Rev. 5.4 (1994)	Beryllium, Total	EPA 6020A EPA 200.8, Rev. 5.4 (1994)
Sodium, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A 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
Strontium, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A EPA 200.8, Rev. 5.4 (1994)	Mercury, Low Level	EPA 1631E
		Mercury, Total	EPA 245.1, Rev. 3.0 (1994) EPA 7470A
		Selenium, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A
Metals II		Vanadium, Total	EPA 200.8, Rev. 5.4 (1994) EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A
Aluminum, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A EPA 200.8, Rev. 5.4 (1994)	Zinc, Total	EPA 200.8, Rev. 5.4 (1994) EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A EPA 200.8, Rev. 5.4 (1994)
Antimony, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A EPA 200.8, Rev. 5.4 (1994)	Metals III	
Arsenic, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A EPA 200.8, Rev. 5.4 (1994)	Cobalt, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C EPA 6020A
Beryllium, Total	EPA 200.7, Rev. 4.4 (1994) EPA 6010C		

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<b>Metals III</b>		<b>Mineral</b>	
Cobalt, Total	EPA 200.8, Rev. 5.4 (1994)	Fluoride, Total	EPA 300.0, Rev. 2.1 (1993)
Molybdenum, Total	EPA 200.7, Rev. 4.4 (1994)		SM 4500-F C-2011
	EPA 6010C		EPA 9056A
	EPA 6020A	Hardness, Total	SM 2340C-2011
	EPA 200.8, Rev. 5.4 (1994)		SM 2340B-2011
Thallium, Total	EPA 200.7, Rev. 4.4 (1994)	Sulfate (as SO4)	EPA 300.0, Rev. 2.1 (1993)
	EPA 6010C		EPA 9056A
	EPA 6020A		
	EPA 200.8, Rev. 5.4 (1994)	<b>Miscellaneous</b>	
Tin, Total	EPA 200.7, Rev. 4.4 (1994)	Boron, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C		EPA 6010C
	EPA 6020A		EPA 6020A
	EPA 200.8, Rev. 5.4 (1994)		EPA 200.8, Rev. 5.4 (1994)
Titanium, Total	EPA 200.7, Rev. 4.4 (1994)	Bromide	EPA 300.0, Rev. 2.1 (1993)
	EPA 6010C		EPA 9056A
	EPA 6020A	Color	SM 2120B-2011
	EPA 200.8, Rev. 5.4 (1994)	Cyanide, Available	OIA-1677-09
	EPA 6020A		SM 4500-CN G-2011
Uranium (Mass)	EPA 6020A	Cyanide, Free	OIA-1677-09
	EPA 200.8, Rev. 5.4 (1994)	Cyanide, Total	EPA 335.4, Rev. 1.0 (1993)
			EPA 9012B
<b>Mineral</b>			ASTM D7511-12
Acidity	SM 2310B-2011	Formaldehyde	EPA 8315A
Alkalinity	SM 2320B-2011	Oil and Grease Total Recoverable (HEM)	EPA 1664A
Chloride	EPA 300.0, Rev. 2.1 (1993)		EPA 1664B
	SM 4500-Cl- C-2011	Organic Carbon, Total	SM 5310C-2011
	EPA 9056A		

**Serial No.: 58291**

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NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019  
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Revised April 13, 2018

**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  
ENVIRONMENTAL 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 (2003) for the category  
**ENVIRONMENTAL ANALYSES NON POTABLE WATER**  
All approved analytes are listed below:

**Miscellaneous**

Organic Carbon, Total	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
Turbidity	EPA 180.1, Rev. 2.0 (1993)

**Nitroaromatics and Isophorone**

1,3,5-Trinitrobenzene	EPA 8270D EPA 8330A
1,3-Dinitrobenzene	EPA 8270D EPA 8330A
1,4-Naphthoquinone	EPA 8270D
2,4,6-Trinitrotoluene	EPA 8330A
2,4-Dinitrotoluene	EPA 625.1 EPA 8270D EPA 8330A
2,6-Dinitrotoluene	EPA 625.1 EPA 8270D EPA 8330A
2-Amino-4,6-dinitrotoluene	EPA 8330A

**Nitroaromatics and Isophorone**

2-Amino-4,6-dinitrotoluene	EPA 8330B
2-Nitrotoluene	EPA 8330A
3,5-Dinitroaniline	EPA 8330B
3-Nitrotoluene	EPA 8330A
4-Amino-2,6-dinitrotoluene	EPA 8330A
4-Nitroquinoline-1-oxide	EPA 8270D
4-Nitrotoluene	EPA 8330A
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330A
Isophorone	EPA 625.1 EPA 8270D
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330A
Nitrobenzene	EPA 625.1 EPA 8270D EPA 8330A
Nitroglycerine	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330A
Pentaerythritol tetranitrate	EPA 8330B

**Nitrosoamines**

N-Nitrosodiethylamine	EPA 8270D
N-Nitrosodimethylamine	EPA 625.1 EPA 8270D
N-Nitrosodi-n-butylamine	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 625.1 EPA 8270D
N-Nitrosodiphenylamine	EPA 625.1

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**Nitrosoamines**

N-Nitrosodiphenylamine	EPA 8270D
N-nitrosomethylethylamine	EPA 8270D
N-nitrosomorpholine	EPA 8270D
N-nitrosopiperidine	EPA 8270D
N-Nitrosopyrrolidine	EPA 8270D

**Nutrient**

Ammonia (as N)	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-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 8141B EPA 8270D
Azinphos methyl	EPA 8141B
Chlorpyrifos	EPA 8141B

**Organophosphate Pesticides**

Demeton-O	EPA 8141B
Demeton-S	EPA 8141B
Diazinon	EPA 8141B
Dimethoate	EPA 8270D
Disulfoton	EPA 8141B EPA 8270D
Famphur	EPA 8141B EPA 8270D
Malathion	EPA 8141B
Parathion ethyl	EPA 8141B EPA 8270D
Parathion methyl	EPA 8141B EPA 8270D
Phorate	EPA 8141B EPA 8270D
Simazine	EPA 8141B
Sulfotepp	EPA 8270D
Thionazin	EPA 8270D

**Petroleum Hydrocarbons**

Diesel Range Organics	EPA 8015D EPA 8015C
Gasoline Range Organics	EPA 8015D EPA 8015C

**Phthalate Esters**

Benzyl butyl phthalate	EPA 625.1
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**Phthalate Esters**

**Polychlorinated Biphenyls**

Benzyl butyl phthalate	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 625.1
	EPA 8270D
Diethyl phthalate	EPA 625.1
	EPA 8270D
Dimethyl phthalate	EPA 625.1
	EPA 8270D
Di-n-butyl phthalate	EPA 625.1
	EPA 8270D
Di-n-octyl phthalate	EPA 625.1
	EPA 8270D

PCB 110	EPA 1668A
PCB 111	EPA 1668A
PCB 112	EPA 1668A
PCB 113	EPA 1668A
PCB 114	EPA 1668A
PCB 115	EPA 1668A
PCB 116	EPA 1668A
PCB 117	EPA 1668A
PCB 118	EPA 1668A
PCB 119	EPA 1668A
PCB 12	EPA 1668A
PCB 120	EPA 1668A
PCB 121	EPA 1668A
PCB 122	EPA 1668A
PCB 123	EPA 1668A
PCB 124	EPA 1668A
PCB 125	EPA 1668A
PCB 126	EPA 1668A
PCB 127	EPA 1668A
PCB 128	EPA 1668A
PCB 129	EPA 1668A
PCB 13	EPA 1668A
PCB 130	EPA 1668A
PCB 131	EPA 1668A
PCB 132	EPA 1668A
PCB 133	EPA 1668A

**Polychlorinated Biphenyls**

PCB 1	EPA 1668A
PCB 10	EPA 1668A
PCB 100	EPA 1668A
PCB 101	EPA 1668A
PCB 102	EPA 1668A
PCB 103	EPA 1668A
PCB 104	EPA 1668A
PCB 105	EPA 1668A
PCB 106	EPA 1668A
PCB 107	EPA 1668A
PCB 108	EPA 1668A
PCB 109	EPA 1668A
PCB 11	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 134	EPA 1668A
PCB 135	EPA 1668A
PCB 136	EPA 1668A
PCB 137	EPA 1668A
PCB 138	EPA 1668A
PCB 139	EPA 1668A
PCB 14	EPA 1668A
PCB 140	EPA 1668A
PCB 141	EPA 1668A
PCB 142	EPA 1668A
PCB 143	EPA 1668A
PCB 144	EPA 1668A
PCB 145	EPA 1668A
PCB 146	EPA 1668A
PCB 147	EPA 1668A
PCB 148	EPA 1668A
PCB 149	EPA 1668A
PCB 15	EPA 1668A
PCB 150	EPA 1668A
PCB 151	EPA 1668A
PCB 152	EPA 1668A
PCB 153	EPA 1668A
PCB 154	EPA 1668A
PCB 155	EPA 1668A
PCB 156	EPA 1668A
PCB 157	EPA 1668A

**Polychlorinated Biphenyls**

PCB 158	EPA 1668A
PCB 159	EPA 1668A
PCB 16	EPA 1668A
PCB 160	EPA 1668A
PCB 161	EPA 1668A
PCB 162	EPA 1668A
PCB 163	EPA 1668A
PCB 164	EPA 1668A
PCB 165	EPA 1668A
PCB 166	EPA 1668A
PCB 167	EPA 1668A
PCB 168	EPA 1668A
PCB 169	EPA 1668A
PCB 17	EPA 1668A
PCB 170	EPA 1668A
PCB 171	EPA 1668A
PCB 172	EPA 1668A
PCB 173	EPA 1668A
PCB 174	EPA 1668A
PCB 175	EPA 1668A
PCB 176	EPA 1668A
PCB 177	EPA 1668A
PCB 178	EPA 1668A
PCB 179	EPA 1668A
PCB 18	EPA 1668A
PCB 180	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 181	EPA 1668A
PCB 182	EPA 1668A
PCB 183	EPA 1668A
PCB 184	EPA 1668A
PCB 185	EPA 1668A
PCB 186	EPA 1668A
PCB 187	EPA 1668A
PCB 188	EPA 1668A
PCB 189	EPA 1668A
PCB 19	EPA 1668A
PCB 190	EPA 1668A
PCB 191	EPA 1668A
PCB 192	EPA 1668A
PCB 193	EPA 1668A
PCB 194	EPA 1668A
PCB 195	EPA 1668A
PCB 196	EPA 1668A
PCB 197	EPA 1668A
PCB 198	EPA 1668A
PCB 199	EPA 1668A
PCB 2	EPA 1668A
PCB 20	EPA 1668A
PCB 200	EPA 1668A
PCB 201	EPA 1668A
PCB 202	EPA 1668A
PCB 203	EPA 1668A

**Polychlorinated Biphenyls**

PCB 204	EPA 1668A
PCB 205	EPA 1668A
PCB 206	EPA 1668A
PCB 207	EPA 1668A
PCB 208	EPA 1668A
PCB 209	EPA 1668A
PCB 21	EPA 1668A
PCB 22	EPA 1668A
PCB 23	EPA 1668A
PCB 24	EPA 1668A
PCB 25	EPA 1668A
PCB 26	EPA 1668A
PCB 27	EPA 1668A
PCB 28	EPA 1668A
PCB 29	EPA 1668A
PCB 3	EPA 1668A
PCB 30	EPA 1668A
PCB 31	EPA 1668A
PCB 32	EPA 1668A
PCB 33	EPA 1668A
PCB 34	EPA 1668A
PCB 35	EPA 1668A
PCB 36	EPA 1668A
PCB 37	EPA 1668A
PCB 38	EPA 1668A
PCB 39	EPA 1668A

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**Polychlorinated Biphenyls**

**Polychlorinated Biphenyls**

PCB 4	EPA 1668A
PCB 40	EPA 1668A
PCB 41	EPA 1668A
PCB 42	EPA 1668A
PCB 43	EPA 1668A
PCB 44	EPA 1668A
PCB 45	EPA 1668A
PCB 46	EPA 1668A
PCB 47	EPA 1668A
PCB 48	EPA 1668A
PCB 49	EPA 1668A
PCB 5	EPA 1668A
PCB 50	EPA 1668A
PCB 51	EPA 1668A
PCB 52	EPA 1668A
PCB 53	EPA 1668A
PCB 54	EPA 1668A
PCB 55	EPA 1668A
PCB 56	EPA 1668A
PCB 57	EPA 1668A
PCB 58	EPA 1668A
PCB 59	EPA 1668A
PCB 6	EPA 1668A
PCB 60	EPA 1668A
PCB 61	EPA 1668A
PCB 62	EPA 1668A

PCB 63	EPA 1668A
PCB 64	EPA 1668A
PCB 65	EPA 1668A
PCB 66	EPA 1668A
PCB 67	EPA 1668A
PCB 68	EPA 1668A
PCB 69	EPA 1668A
PCB 7	EPA 1668A
PCB 70	EPA 1668A
PCB 71	EPA 1668A
PCB 72	EPA 1668A
PCB 73	EPA 1668A
PCB 74	EPA 1668A
PCB 75	EPA 1668A
PCB 76	EPA 1668A
PCB 77	EPA 1668A
PCB 78	EPA 1668A
PCB 79	EPA 1668A
PCB 8	EPA 1668A
PCB 80	EPA 1668A
PCB 81	EPA 1668A
PCB 82	EPA 1668A
PCB 83	EPA 1668A
PCB 84	EPA 1668A
PCB 85	EPA 1668A
PCB 86	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 87	EPA 1668A
PCB 88	EPA 1668A
PCB 89	EPA 1668A
PCB 9	EPA 1668A
PCB 90	EPA 1668A
PCB 91	EPA 1668A
PCB 92	EPA 1668A
PCB 93	EPA 1668A
PCB 94	EPA 1668A
PCB 95	EPA 1668A
PCB 96	EPA 1668A
PCB 97	EPA 1668A
PCB 98	EPA 1668A
PCB 99	EPA 1668A
PCB-1016	EPA 8082A
	EPA 608.3
PCB-1221	EPA 8082A
	EPA 608.3
PCB-1232	EPA 8082A
	EPA 608.3
PCB-1242	EPA 8082A
	EPA 608.3
PCB-1248	EPA 8082A
	EPA 608.3
PCB-1254	EPA 8082A
	EPA 608.3

**Polychlorinated Biphenyls**

PCB-1260	EPA 8082A
	EPA 608.3
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A

**Polynuclear Aromatics**

2-Acetylaminofluorene	EPA 8270D
3-Methylcholanthrene	EPA 8270D
7,12-Dimethylbenzyl (a) anthracene	EPA 8270D
Acenaphthene	EPA 625.1
	EPA 8270D
Acenaphthylene	EPA 625.1
	EPA 8270D
Anthracene	EPA 625.1
	EPA 8270D
Benzo(a)anthracene	EPA 625.1
	EPA 8270D
Benzo(a)pyrene	EPA 625.1
	EPA 8270D
Benzo(b)fluoranthene	EPA 625.1
	EPA 8270D
Benzo(ghi)perylene	EPA 625.1
	EPA 8270D
Benzo(k)fluoranthene	EPA 625.1
	EPA 8270D
Chrysene	EPA 625.1

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**Polynuclear Aromatics**

**Priority Pollutant Phenols**

Chrysene	EPA 8270D
Dibenzo(a,h)anthracene	EPA 625.1
	EPA 8270D
Fluoranthene	EPA 625.1
	EPA 8270D
Fluorene	EPA 625.1
	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 625.1
	EPA 8270D
Naphthalene	EPA 625.1
	EPA 8270D
Phenanthrene	EPA 625.1
	EPA 8270D
Pyrene	EPA 625.1
	EPA 8270D

2,4-Dinitrophenol	EPA 625.1
	EPA 8270D
2,6-Dichlorophenol	EPA 8270D
2-Chlorophenol	EPA 625.1
	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 625.1
	EPA 8270D
2-Methylphenol	EPA 625.1
	EPA 8270D
2-Nitrophenol	EPA 625.1
	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 625.1
	EPA 8270D
4-Methylphenol	EPA 8270D
4-Nitrophenol	EPA 625.1
	EPA 8270D
Pentachlorophenol	EPA 625.1
	EPA 8270D
Phenol	EPA 625.1
	EPA 8270D

**Priority Pollutant Phenols**

2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 625.1
	EPA 8270D
2,4,6-Trichlorophenol	EPA 625.1
	EPA 8270D
2,4-Dichlorophenol	EPA 625.1
	EPA 8270D
2,4-Dimethylphenol	EPA 625.1
	EPA 8270D

**Residue**

Settleable Solids	SM 2540 F-2011
Solids, Total	SM 2540 B-2011
Solids, Total Dissolved	SM 2540 C-2011

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All approved analytes are listed below:*

<b>Residue</b>		<b>Semi-Volatile Organics</b>	
Solids, Total Suspended	SM 2540 D-2011	p-Dimethylaminoazobenzene	EPA 8270D
<b>Semi-Volatile Organics</b>		Phenacetin	EPA 8270D
1,1'-Biphenyl	EPA 8270D	Safrole	EPA 8270D
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D	<b>Volatile Aromatics</b>	
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D	1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D	1,2,4-Trimethylbenzene	EPA 8260C
2-Methylnaphthalene	EPA 8270D	1,2-Dichlorobenzene	EPA 8260C
2-Picoline	EPA 8270D		EPA 624.1
4-Amino biphenyl	EPA 8270D	1,3,5-Trimethylbenzene	EPA 8260C
Acetophenone	EPA 625.1	1,3-Dichlorobenzene	EPA 8260C
	EPA 8270D		EPA 624.1
alpha-Terpineol	EPA 625.1	1,4-Dichlorobenzene	EPA 8260C
Aramite	EPA 8270D		EPA 624.1
Benzaldehyde	EPA 8270D	2-Chlorotoluene	EPA 8260C
	EPA 8315A	4-Chlorotoluene	EPA 8260C
Benzoic Acid	EPA 8270D	Benzene	EPA 8260C
Benzyl alcohol	EPA 8270D		EPA 8021B
Caprolactam	EPA 8270D	Bromobenzene	EPA 8260C
Dibenzofuran	EPA 8270D	Chlorobenzene	EPA 8260C
Ethyl methanesulfonate	EPA 8270D		EPA 624.1
Isosafrole	EPA 8270D	Ethyl benzene	EPA 8260C
Methyl methanesulfonate	EPA 8270D		EPA 8021B
n-Decane	EPA 625.1		EPA 624.1
n-Octadecane	EPA 625.1		
O,O,O-Triethyl phosphorothioate	EPA 8270D		

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NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019  
Issued April 01, 2018  
Revised April 13, 2018

**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  
ENVIRONMENTAL LLC  
2425 NEW HOLLAND PIKE  
LANCASTER, PA 17601-5994

NY Lab Id No: 10670

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National Environmental Laboratory Accreditation Conference Standards (2003) for the category  
ENVIRONMENTAL ANALYSES NON POTABLE WATER  
All approved analytes are listed below:*

**Volatile Aromatics**

Ethyl benzene	EPA 602
Isopropylbenzene	EPA 8260C
	EPA 8021B
m/p-Xylenes	EPA 8260C
	EPA 624.1
	EPA 602
Naphthalene, Volatile	EPA 8260C
n-Butylbenzene	EPA 8260C
n-Propylbenzene	EPA 8260C
o-Xylene	EPA 8260C
	EPA 624.1
	EPA 602
p-Isopropyltoluene (P-Cymene)	EPA 8260C
sec-Butylbenzene	EPA 8260C
Styrene	EPA 8260C
	EPA 624.1
tert-Butylbenzene	EPA 8260C
Toluene	EPA 8260C
	EPA 8021B
	EPA 624.1
	EPA 602
Total Xylenes	EPA 8260C
	EPA 8021B
	EPA 624.1
	EPA 602

**Volatile Chlorinated Organics**

Benzyl chloride	EPA 8260C
Epichlorohydrin	EPA 8260C

**Volatile Halocarbons**

1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,1-Trichloroethane	EPA 8260C
	EPA 624.1
1,1,2,2-Tetrachloroethane	EPA 8260C
	EPA 624.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
	EPA 624.1
1,1-Dichloroethane	EPA 8260C
	EPA 624.1
1,1-Dichloroethene	EPA 8260C
	EPA 624.1
1,1-Dichloropropene	EPA 8260C
1,2,3-Trichloropropane	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloro-1,1,2-Trifluoroethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
	EPA 624.1
1,2-Dichloropropane	EPA 8260C
	EPA 624.1
1,3-Dichloropropane	EPA 8260C

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**Volatile Halocarbons**

2,2-Dichloropropane	EPA 8260C
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C
2-Chloroethylvinyl ether	EPA 8260C EPA 624.1
3-Chloropropene (Allyl chloride)	EPA 8260C
Bromochloromethane	EPA 8260C
Bromodichloromethane	EPA 8260C EPA 624.1
Bromoform	EPA 8260C EPA 624.1
Bromomethane	EPA 8260C EPA 624.1
Carbon tetrachloride	EPA 8260C EPA 624.1
Chloroethane	EPA 8260C EPA 624.1
Chloroform	EPA 8260C EPA 624.1
Chloromethane	EPA 8260C EPA 624.1
cis-1,2-Dichloroethene	EPA 8260C EPA 624.1
cis-1,3-Dichloropropene	EPA 8260C EPA 624.1
Dibromochloromethane	EPA 8260C EPA 624.1

**Volatile Halocarbons**

Dibromomethane	EPA 8260C
Dichlorodifluoromethane	EPA 8260C EPA 624.1
Hexachlorobutadiene, Volatile	EPA 8260C
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C EPA 624.1
Tetrachloroethene	EPA 8260C EPA 624.1
trans-1,2-Dichloroethene	EPA 8260C EPA 624.1
trans-1,3-Dichloropropene	EPA 8260C EPA 624.1
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C EPA 624.1
Trichlorofluoromethane	EPA 8260C EPA 624.1
Vinyl chloride	EPA 8260C EPA 624.1

**Volatiles Organics**

1,4-Dioxane	EPA 8260C EPA 8260C SIM EPA 8270D
2-Butanone (Methylethyl ketone)	EPA 8260C

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**Volatiles Organics**

2-Hexanone	EPA 8260C
2-Nitropropane	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
Acetone	EPA 8260C
Acetonitrile	EPA 1671
	EPA 8260C
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Di-ethyl ether	EPA 8260C
Diethylamine	EPA 1671
Dimethyl sulfoxide	EPA 1671
Ethyl Acetate	EPA 1666
	EPA 8260C
Ethylene Glycol	EPA 8015C
Isobutyl alcohol	EPA 8260C
	EPA 8015D
	EPA 8015C
Isobutyraldehyde	EPA 1666
Isopropanol	EPA 8260C
Isopropyl Acetate	EPA 1666
Methanol	EPA 1671
	EPA 8015D
	EPA 8015C
Methyl acetate	EPA 8260C
Methyl cellosolve (2-Methoxyethanol)	EPA 1671
Methyl cyclohexane	EPA 8260C

**Volatiles Organics**

Methyl formate	EPA 1666
n-Amyl Acetate	EPA 1666
n-Amyl alcohol	EPA 1666
n-Butanol	EPA 8260C
n-Butyl Acetate	EPA 1666
n-Propanol	EPA 1671
o-Toluidine	EPA 8270D
Tetrahydrofuran	EPA 1666
Triethylamine	EPA 1671
Vinyl acetate	EPA 8260C
	EPA 624.1

**Sample Preparation Methods**

SM 4500-P B(5)-2011
EPA 5030C
EPA 200.2
EPA 3010A
EPA 3005A
EPA 3510C
EPA 3520C
EPA 3020A
SM 4500-NH3 B-2011
SM 4500-F B-2011

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ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE

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**Acrylates**

Acrolein (Propenal)	EPA 8260C
Acrylonitrile	EPA 8260C
Ethyl methacrylate	EPA 8260C
Methyl acrylonitrile	EPA 8260C
Methyl methacrylate	EPA 8260C

**Amines**

1,2-Diphenylhydrazine	EPA 8270D
1,4-Phenylenediamine	EPA 8270D
1-Naphthylamine	EPA 8270D
2-Naphthylamine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4,4'-Methylenebis(2-chloroaniline)	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
5-Nitro-o-toluidine	EPA 8270D
a,a-Dimethylphenethylamine	EPA 8270D
Aniline	EPA 8270D
Carbazole	EPA 8270D
Diphenylamine	EPA 8270D
Methapyrilene	EPA 8270D
Pronamide	EPA 8270D

**Benzidines**

3,3'-Dichlorobenzidine	EPA 8270D
3,3'-Dimethylbenzidine	EPA 8270D

**Benzidines**

Benzidine	EPA 8270D
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**Carbamate Pesticides**

Aldicarb	EPA 8318A
Aldicarb Sulfone	EPA 8318A
Carbofuran	EPA 8318A

**Characteristic Testing**

Corrosivity	EPA 9045D
Free Liquids	EPA 9095B
Ignitability	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 8270D
beta-BHC	EPA 8081B
Chlordane Total	EPA 8081B
Chlorobenzilate	EPA 8270D
delta-BHC	EPA 8081B

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**Chlorinated Hydrocarbon Pesticides**

Diallate	EPA 8270D
Dieldrin	EPA 8081B
Endosulfan I	EPA 8081B
Endosulfan II	EPA 8081B
Endosulfan sulfate	EPA 8081B
Endrin	EPA 8081B
Endrin aldehyde	EPA 8081B
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
Heptachlor epoxide	EPA 8081B
Isodrin	EPA 8270D
Kepone	EPA 8081B
	EPA 8270D
Lindane	EPA 8081B
Methoxychlor	EPA 8081B
Mirex	EPA 8081B
Pentachloronitrobenzene	EPA 8270D
Simazine	EPA 8141B
Toxaphene	EPA 8081B

**Chlorinated Hydrocarbons**

1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 8270D
1-Chloronaphthalene	EPA 8270D

**Chlorinated Hydrocarbons**

2-Chloronaphthalene	EPA 8270D
Hexachlorobenzene	EPA 8270D
Hexachlorobutadiene	EPA 8270D
Hexachlorocyclopentadiene	EPA 8270D
Hexachloroethane	EPA 8270D
Hexachloropropene	EPA 8270D
Pentachlorobenzene	EPA 8270D

**Chlorophenoxy Acid Pesticides**

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A
MCPA	EPA 8151A
MCPP	EPA 8151A
Pentachlorophenol	EPA 8151A

**Dioxins and Furans**

1,2,3,4,6,7,8,9-Octachlorodibenzofuran	EPA 8290A
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-diox	EPA 8290A
1,2,3,4,6,7,8-Heptachlorodibenzofuran	EPA 8290A
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxi	EPA 8290A
1,2,3,4,7,8,9-Heptachlorodibenzofuran	EPA 8290A

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**Dioxins and Furans**

1,2,3,4,7,8-Hexachlorodibenzofuran	EPA 8290A
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	EPA 8290A
1,2,3,6,7,8-Hexachlorodibenzofuran	EPA 8290A
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	EPA 8290A
1,2,3,7,8,9-Hexachlorodibenzofuran	EPA 8290A
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	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 8270D
4-Bromophenylphenyl ether	EPA 8270D
4-Chlorophenylphenyl ether	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 8270D
Bis(2-chloroethyl)ether	EPA 8270D

**Low Level Polynuclear Aromatic Hydrocarbons**

Acenaphthene Low Level	EPA 8270D SIM
Acenaphthylene Low Level	EPA 8270D SIM
Anthracene Low Level	EPA 8270D SIM
Benzo(a)anthracene Low Level	EPA 8270D SIM
Benzo(a)pyrene Low Level	EPA 8270D SIM
Benzo(b)fluoranthene Low Level	EPA 8270D SIM

**Low Level Polynuclear Aromatic Hydrocarbons**

Benzo(g,h,i)perylene Low Level	EPA 8270D SIM
Benzo(k)fluoranthene Low Level	EPA 8270D SIM
Chrysene Low Level	EPA 8270D SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM
Fluoranthene Low Level	EPA 8270D SIM
Fluorene Low Level	EPA 8270D SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM
Naphthalene Low Level	EPA 8270D SIM
Phenanthrene Low Level	EPA 8270D SIM
Pyrene Low Level	EPA 8270D SIM

**Metals I**

Barium, Total	EPA 6010C EPA 6020A
Cadmium, Total	EPA 6010C EPA 6020A
Calcium, Total	EPA 6010C EPA 6020A
Chromium, Total	EPA 6010C EPA 6020A
Copper, Total	EPA 6010C EPA 6020A
Iron, Total	EPA 6010C EPA 6020A
Lead, Total	EPA 6010C EPA 6020A

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**Metals I**

Magnesium, Total	EPA 6010C
	EPA 6020A
Manganese, Total	EPA 6010C
	EPA 6020A
Nickel, Total	EPA 6010C
	EPA 6020A
Potassium, Total	EPA 6010C
	EPA 6020A
Silver, Total	EPA 6010C
	EPA 6020A
Sodium, Total	EPA 6010C
	EPA 6020A
Strontium, Total	EPA 6010C
	EPA 6020A

**Metals II**

Aluminum, Total	EPA 6010C
	EPA 6020A
Antimony, Total	EPA 6010C
	EPA 6020A
Arsenic, Total	EPA 6010C
	EPA 6020A
Beryllium, Total	EPA 6010C
	EPA 6020A
Chromium VI	EPA 7196A
	EPA 7199

**Metals II**

Lithium, Total	EPA 6010C
Mercury, Total	EPA 7471B
Selenium, Total	EPA 6010C
	EPA 6020A
Vanadium, Total	EPA 6010C
	EPA 6020A
Zinc, Total	EPA 6010C
	EPA 6020A

**Metals III**

Cobalt, Total	EPA 6010C
	EPA 6020A
Molybdenum, Total	EPA 6010C
	EPA 6020A
Silica, Dissolved	EPA 6010C
Thallium, Total	EPA 6010C
	EPA 6020A
Tin, Total	EPA 6010C
	EPA 6020A
Titanium, Total	EPA 6010C
	EPA 6020A

**Miscellaneous**

Boron, Total	EPA 6010C
	EPA 6020A
Cyanide, Total	EPA 9012B
Formaldehyde	EPA 8315A

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**Miscellaneous**

Organic Carbon, Total	Lloyd Kahn Method EPA 9060A
Perchlorate	EPA 6850
Phenols	EPA 9066
Specific Conductance	EPA 9050A

**Nitroaromatics and Isophorone**

1,2-Dinitrobenzene	EPA 8270D
1,3,5-Trinitrobenzene	EPA 8270D EPA 8330A
1,3-Dinitrobenzene	EPA 8270D EPA 8330A
1,4-Dinitrobenzene	EPA 8270D
1,4-Naphthoquinone	EPA 8270D
2,4,6-Trinitrotoluene	EPA 8330A EPA 8330B
2,4-Dinitrotoluene	EPA 8270D EPA 8330A EPA 8330B EPA 8330B
2,6-Dinitrotoluene	EPA 8270D EPA 8330A EPA 8330B
2-Amino-4,6-dinitrotoluene	EPA 8330A
2-Nitrotoluene	EPA 8330A
3,5-Dinitroaniline	EPA 8330B
3-Nitrotoluene	EPA 8330A

**Nitroaromatics and Isophorone**

4-Amino-2,6-dinitrotoluene	EPA 8330A
4-Dimethylaminoazobenzene	EPA 8270D
4-Nitroquinoline-1-oxide	EPA 8270D
4-Nitrotoluene	EPA 8330A
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330A
Isophorone	EPA 8270D
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330A
Nitrobenzene	EPA 8270D EPA 8330A
Nitroglycerine	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330A
Pentaerythritol tetranitrate	EPA 8330B
Pyridine	EPA 8270D

**Nitrosoamines**

N-Nitrosodiethylamine	EPA 8270D
N-Nitrosodimethylamine	EPA 8270D
N-Nitrosodi-n-butylamine	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 8270D
N-Nitrosodiphenylamine	EPA 8270D
N-nitrosomethylethylamine	EPA 8270D
N-nitrosomorpholine	EPA 8270D
N-nitrosopiperidine	EPA 8270D
N-Nitrosopyrrolidine	EPA 8270D

**Organophosphate Pesticides**

Azinphos methyl	EPA 8141B
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NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2019  
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Revised April 13, 2018

**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  
ENVIRONMENTAL 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  
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ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE  
All approved analytes are listed below:*

**Organophosphate Pesticides**

Bolstar	EPA 8141B
Carbophenothion	EPA 8141B
Chlorpyrifos	EPA 8141B
Coumaphos	EPA 8141B
Demeton-O	EPA 8141B
Demeton-S	EPA 8141B
Diazinon	EPA 8141B
Dichlorvos	EPA 8141B
Dimethoate	EPA 8270D
Disulfoton	EPA 8141B
	EPA 8270D
EPN	EPA 8141B
Ethion	EPA 8141B
Ethoprop	EPA 8141B
Famphur	EPA 8141B
	EPA 8270D
Fensulfothion	EPA 8141B
Fenthion	EPA 8141B
Malathion	EPA 8141B
Mevinphos	EPA 8141B
NALED	EPA 8141B
Parathion ethyl	EPA 8141B
	EPA 8270D
Parathion methyl	EPA 8141B
	EPA 8270D
Phorate	EPA 8141B

**Organophosphate Pesticides**

Phorate	EPA 8270D
Ronnel	EPA 8141B
Sulfotepp	EPA 8270D
Thionazin	EPA 8270D
Tokuthion	EPA 8141B
Trichloronate	EPA 8141B

**Petroleum Hydrocarbons**

Diesel Range Organics	EPA 8015D
	EPA 8015C
Gasoline Range Organics	EPA 8015D
	EPA 8015C
Oil and Grease Total Recoverable (HEM)	EPA 9071B (Solvent:Hexane)

**Phthalate Esters**

Benzyl butyl phthalate	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 8270D
Diethyl phthalate	EPA 8270D
Dimethyl phthalate	EPA 8270D
Di-n-butyl phthalate	EPA 8270D
Di-n-octyl phthalate	EPA 8270D

**Polychlorinated Biphenyls**

PCB 1	EPA 1668A
PCB 10	EPA 1668A
PCB 100	EPA 1668A
PCB 101	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 102	EPA 1668A
PCB 103	EPA 1668A
PCB 104	EPA 1668A
PCB 105	EPA 1668A
PCB 106	EPA 1668A
PCB 107	EPA 1668A
PCB 108	EPA 1668A
PCB 109	EPA 1668A
PCB 11	EPA 1668A
PCB 110	EPA 1668A
PCB 111	EPA 1668A
PCB 112	EPA 1668A
PCB 113	EPA 1668A
PCB 114	EPA 1668A
PCB 115	EPA 1668A
PCB 116	EPA 1668A
PCB 117	EPA 1668A
PCB 118	EPA 1668A
PCB 119	EPA 1668A
PCB 12	EPA 1668A
PCB 120	EPA 1668A
PCB 121	EPA 1668A
PCB 122	EPA 1668A
PCB 123	EPA 1668A
PCB 124	EPA 1668A
PCB 125	EPA 1668A

**Polychlorinated Biphenyls**

PCB 126	EPA 1668A
PCB 127	EPA 1668A
PCB 128	EPA 1668A
PCB 129	EPA 1668A
PCB 13	EPA 1668A
PCB 130	EPA 1668A
PCB 131	EPA 1668A
PCB 132	EPA 1668A
PCB 133	EPA 1668A
PCB 134	EPA 1668A
PCB 135	EPA 1668A
PCB 136	EPA 1668A
PCB 137	EPA 1668A
PCB 138	EPA 1668A
PCB 139	EPA 1668A
PCB 14	EPA 1668A
PCB 140	EPA 1668A
PCB 141	EPA 1668A
PCB 142	EPA 1668A
PCB 143	EPA 1668A
PCB 144	EPA 1668A
PCB 145	EPA 1668A
PCB 146	EPA 1668A
PCB 147	EPA 1668A
PCB 148	EPA 1668A
PCB 149	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 15	EPA 1668A
PCB 150	EPA 1668A
PCB 151	EPA 1668A
PCB 152	EPA 1668A
PCB 153	EPA 1668A
PCB 154	EPA 1668A
PCB 155	EPA 1668A
PCB 156	EPA 1668A
PCB 157	EPA 1668A
PCB 158	EPA 1668A
PCB 159	EPA 1668A
PCB 16	EPA 1668A
PCB 160	EPA 1668A
PCB 161	EPA 1668A
PCB 162	EPA 1668A
PCB 163	EPA 1668A
PCB 164	EPA 1668A
PCB 165	EPA 1668A
PCB 166	EPA 1668A
PCB 167	EPA 1668A
PCB 168	EPA 1668A
PCB 169	EPA 1668A
PCB 17	EPA 1668A
PCB 170	EPA 1668A
PCB 171	EPA 1668A
PCB 172	EPA 1668A

**Polychlorinated Biphenyls**

PCB 173	EPA 1668A
PCB 174	EPA 1668A
PCB 175	EPA 1668A
PCB 176	EPA 1668A
PCB 177	EPA 1668A
PCB 178	EPA 1668A
PCB 179	EPA 1668A
PCB 18	EPA 1668A
PCB 180	EPA 1668A
PCB 181	EPA 1668A
PCB 182	EPA 1668A
PCB 183	EPA 1668A
PCB 184	EPA 1668A
PCB 185	EPA 1668A
PCB 186	EPA 1668A
PCB 187	EPA 1668A
PCB 188	EPA 1668A
PCB 189	EPA 1668A
PCB 19	EPA 1668A
PCB 190	EPA 1668A
PCB 191	EPA 1668A
PCB 192	EPA 1668A
PCB 193	EPA 1668A
PCB 194	EPA 1668A
PCB 195	EPA 1668A
PCB 196	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 197	EPA 1668A
PCB 198	EPA 1668A
PCB 199	EPA 1668A
PCB 2	EPA 1668A
PCB 20	EPA 1668A
PCB 200	EPA 1668A
PCB 201	EPA 1668A
PCB 202	EPA 1668A
PCB 203	EPA 1668A
PCB 204	EPA 1668A
PCB 205	EPA 1668A
PCB 206	EPA 1668A
PCB 207	EPA 1668A
PCB 208	EPA 1668A
PCB 209	EPA 1668A
PCB 21	EPA 1668A
PCB 22	EPA 1668A
PCB 23	EPA 1668A
PCB 24	EPA 1668A
PCB 25	EPA 1668A
PCB 26	EPA 1668A
PCB 27	EPA 1668A
PCB 28	EPA 1668A
PCB 29	EPA 1668A
PCB 3	EPA 1668A
PCB 30	EPA 1668A

**Polychlorinated Biphenyls**

PCB 31	EPA 1668A
PCB 32	EPA 1668A
PCB 33	EPA 1668A
PCB 34	EPA 1668A
PCB 35	EPA 1668A
PCB 36	EPA 1668A
PCB 37	EPA 1668A
PCB 38	EPA 1668A
PCB 39	EPA 1668A
PCB 4	EPA 1668A
PCB 40	EPA 1668A
PCB 41	EPA 1668A
PCB 42	EPA 1668A
PCB 43	EPA 1668A
PCB 44	EPA 1668A
PCB 45	EPA 1668A
PCB 46	EPA 1668A
PCB 47	EPA 1668A
PCB 48	EPA 1668A
PCB 49	EPA 1668A
PCB 5	EPA 1668A
PCB 50	EPA 1668A
PCB 51	EPA 1668A
PCB 52	EPA 1668A
PCB 53	EPA 1668A
PCB 54	EPA 1668A

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**Polychlorinated Biphenyls**

PCB 55	EPA 1668A
PCB 56	EPA 1668A
PCB 57	EPA 1668A
PCB 58	EPA 1668A
PCB 59	EPA 1668A
PCB 6	EPA 1668A
PCB 60	EPA 1668A
PCB 61	EPA 1668A
PCB 62	EPA 1668A
PCB 63	EPA 1668A
PCB 64	EPA 1668A
PCB 65	EPA 1668A
PCB 66	EPA 1668A
PCB 67	EPA 1668A
PCB 68	EPA 1668A
PCB 69	EPA 1668A
PCB 7	EPA 1668A
PCB 70	EPA 1668A
PCB 71	EPA 1668A
PCB 72	EPA 1668A
PCB 73	EPA 1668A
PCB 74	EPA 1668A
PCB 75	EPA 1668A
PCB 76	EPA 1668A
PCB 77	EPA 1668A
PCB 78	EPA 1668A

**Polychlorinated Biphenyls**

PCB 79	EPA 1668A
PCB 8	EPA 1668A
PCB 80	EPA 1668A
PCB 81	EPA 1668A
PCB 82	EPA 1668A
PCB 83	EPA 1668A
PCB 84	EPA 1668A
PCB 85	EPA 1668A
PCB 86	EPA 1668A
PCB 87	EPA 1668A
PCB 88	EPA 1668A
PCB 89	EPA 1668A
PCB 9	EPA 1668A
PCB 90	EPA 1668A
PCB 91	EPA 1668A
PCB 92	EPA 1668A
PCB 93	EPA 1668A
PCB 94	EPA 1668A
PCB 95	EPA 1668A
PCB 96	EPA 1668A
PCB 97	EPA 1668A
PCB 98	EPA 1668A
PCB 99	EPA 1668A
PCB-1016	EPA 8082A
PCB-1221	EPA 8082A
PCB-1232	EPA 8082A

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**Polychlorinated Biphenyls**

PCB-1242	EPA 8082A
PCB-1248	EPA 8082A
PCB-1254	EPA 8082A
PCB-1260	EPA 8082A
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A

**Polynuclear Aromatic Hydrocarbons**

2-Acetylaminofluorene	EPA 8270D
3-Methylcholanthrene	EPA 8270D
7,12-Dimethylbenzyl (a) anthracene	EPA 8270D
Acenaphthene	EPA 8270D
Acenaphthylene	EPA 8270D
Anthracene	EPA 8270D
Benzo(a)anthracene	EPA 8270D
Benzo(a)pyrene	EPA 8270D
Benzo(b)fluoranthene	EPA 8270D
Benzo(ghi)perylene	EPA 8270D
Benzo(k)fluoranthene	EPA 8270D
Chrysene	EPA 8270D
Dibenzo(a,h)anthracene	EPA 8270D
Dibenzo(a,j)acridine	EPA 8270D
Fluoranthene	EPA 8270D
Fluorene	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 8270D
Naphthalene	EPA 8270D

**Polynuclear Aromatic Hydrocarbons**

Phenanthrene	EPA 8270D
Pyrene	EPA 8270D

**Priority Pollutant Phenols**

2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 8270D
2,4,6-Trichlorophenol	EPA 8270D
2,4-Dichlorophenol	EPA 8270D
2,4-Dimethylphenol	EPA 8270D
2,4-Dinitrophenol	EPA 8270D
2,6-Dichlorophenol	EPA 8270D
2-Chlorophenol	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 8270D
2-Methylphenol	EPA 8270D
2-Nitrophenol	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 8270D
4-Methylphenol	EPA 8270D
4-Nitrophenol	EPA 8270D
Pentachlorophenol	EPA 8270D
Phenol	EPA 8270D

**Semi-Volatile Organics**

1,1'-Biphenyl	EPA 8270D
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D

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**Semi-Volatile Organics**

2-Methylnaphthalene	EPA 8270D
2-Picoline	EPA 8270D
4-Amino biphenyl	EPA 8270D
Acetophenone	EPA 8270D
Aramite	EPA 8270D
Benzaldehyde	EPA 8270D
	EPA 8315A
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
Ethyl methanesulfonate	EPA 8270D
Isosafrole	EPA 8270D
Methyl methanesulfonate	EPA 8270D
O,O,O-Triethyl phosphorothioate	EPA 8270D
Phenacetin	EPA 8270D
Safrole	EPA 8270D

**Volatile Aromatics**

1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
1,2-Dichlorobenzene	EPA 8260C
1,3,5-Trimethylbenzene	EPA 8260C
1,3-Dichlorobenzene	EPA 8260C
1,4-Dichlorobenzene	EPA 8260C
2-Chlorotoluene	EPA 8260C

**Volatile Aromatics**

4-Chlorotoluene	EPA 8260C
Benzene	EPA 8260C
	EPA 8021B
Bromobenzene	EPA 8260C
Chlorobenzene	EPA 8260C
Ethyl benzene	EPA 8260C
	EPA 8021B
Isopropylbenzene	EPA 8260C
	EPA 8021B
m/p-Xylenes	EPA 8260C
Naphthalene, Volatile	EPA 8260C
	EPA 8021B
n-Butylbenzene	EPA 8260C
n-Propylbenzene	EPA 8260C
o-Xylene	EPA 8260C
	EPA 8021B
p-Isopropyltoluene (P-Cymene)	EPA 8260C
sec-Butylbenzene	EPA 8260C
Styrene	EPA 8260C
tert-Butylbenzene	EPA 8260C
Toluene	EPA 8260C
	EPA 8021B
Total Xylenes	EPA 8260C
	EPA 8021B

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**Volatile Chlorinated Organics**

Benzyl chloride	EPA 8260C
Epichlorohydrin	EPA 8260C

**Volatile Halocarbons**

1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,1-Trichloroethane	EPA 8260C
1,1,2,2-Tetrachloroethane	EPA 8260C
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
1,1-Dichloroethane	EPA 8260C
1,1-Dichloroethene	EPA 8260C
1,1-Dichloropropene	EPA 8260C
1,2,3-Trichloropropane	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
1,2-Dichloropropane	EPA 8260C
1,3-Dichloropropane	EPA 8260C
2,2-Dichloropropane	EPA 8260C
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C
2-Chloroethylvinyl ether	EPA 8260C
3-Chloropropene (Allyl chloride)	EPA 8260C
Bromochloromethane	EPA 8260C
Bromodichloromethane	EPA 8260C
Bromoform	EPA 8260C
Bromomethane	EPA 8260C

**Volatile Halocarbons**

Carbon tetrachloride	EPA 8260C
Chloroethane	EPA 8260C
Chloroform	EPA 8260C
Chloromethane	EPA 8260C
cis-1,2-Dichloroethene	EPA 8260C
cis-1,3-Dichloropropene	EPA 8260C
Dibromochloromethane	EPA 8260C
Dibromomethane	EPA 8260C
Dichlorodifluoromethane	EPA 8260C
Hexachlorobutadiene, Volatile	EPA 8260C
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C
Tetrachloroethene	EPA 8260C
trans-1,2-Dichloroethene	EPA 8260C
trans-1,3-Dichloropropene	EPA 8260C
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C
Trichlorofluoromethane	EPA 8260C
Vinyl chloride	EPA 8260C

**Volatile Organics**

1,4-Dioxane	EPA 8260C
	EPA 8260C SIM
	EPA 8270D
2-Butanone (Methylethyl ketone)	EPA 8260C
2-Hexanone	EPA 8260C

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NY Lab Id No: 10670

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National Environmental Laboratory Accreditation Conference Standards (2003) for the category  
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE  
All approved analytes are listed below:

**Volatile Organics**

2-Nitropropane	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
Acetone	EPA 8260C
Acetonitrile	EPA 8260C
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Ethyl Acetate	EPA 8260C
Ethylene Glycol	EPA 8015C
Isobutyl alcohol	EPA 8260C
Isopropanol	EPA 8260C
Methyl acetate	EPA 8260C
Methyl cyclohexane	EPA 8260C
Methyl tert-butyl ether	EPA 8260C
	EPA 8021B
n-Butanol	EPA 8260C
o-Toluidine	EPA 8270D
Propionitrile	EPA 8260C
tert-butyl alcohol	EPA 8260C
Vinyl acetate	EPA 8260C

**Sample Preparation Methods**

EPA 3550C  
EPA 3540C  
EPA 3020A  
EPA 3546  
EPA 5035  
EPA 3060A

**Sample Preparation Methods**

EPA 5035A-L  
EPA 5035A-H  
EPA 3010A  
EPA 3005A  
EPA 3050B

Serial No.: 58292

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**NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER**



Expires 12:01 AM April 01, 2019  
Issued April 01, 2018

**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**  
**ENVIRONMENTAL 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 (2003) 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-14A
	EPA TO-15
Hexachlorobutadiene	EPA TO-14A
	EPA TO-15
Hexachloroethane	EPA TO-15

**Polynuclear Aromatics**

Naphthalene	EPA TO-15
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**Purgeable Aromatics**

1,2,4-Trimethylbenzene	EPA TO-14A
	EPA TO-15
1,2-Dichlorobenzene	EPA TO-14A
	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-14A
	EPA TO-15
1,3-Dichlorobenzene	EPA TO-14A
	EPA TO-15
1,4-Dichlorobenzene	EPA TO-14A
	EPA TO-15
2-Chlorotoluene	EPA TO-15

**Purgeable Aromatics**

Benzene	EPA TO-14A
	EPA TO-15
Chlorobenzene	EPA TO-14A
	EPA TO-15
Ethyl benzene	EPA TO-14A
	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15
o-Xylene	EPA TO-15
Styrene	EPA TO-14A
	EPA TO-15
Toluene	EPA TO-14A
	EPA TO-15
Total Xylenes	EPA TO-14A
	EPA TO-15

**Purgeable Halocarbons**

1,1,1-Trichloroethane	EPA TO-14A
	EPA TO-15
1,1,2,2-Tetrachloroethane	EPA TO-14A
	EPA TO-15
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-14A
	EPA TO-15
1,1,2-Trichloroethane	EPA TO-14A
	EPA TO-15
1,1-Dichloroethane	EPA TO-14A

**Serial No.: 57509**

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All approved analytes are listed below:*

**Purgeable Halocarbons**

**Purgeable Halocarbons**

1,1-Dichloroethane	EPA TO-15
1,1-Dichloroethene	EPA TO-14A
	EPA TO-15
1,2-Dibromo-3-chloropropane	EPA TO-15
1,2-Dibromoethane	EPA TO-14A
	EPA TO-15
1,2-Dichloroethane	EPA TO-14A
	EPA TO-15
1,2-Dichloropropane	EPA TO-14A
	EPA TO-15
3-Chloropropene (Allyl chloride)	EPA TO-15
Bromodichloromethane	EPA TO-14A
	EPA TO-15
Bromoform	EPA TO-15
Bromomethane	EPA TO-14A
	EPA TO-15
Carbon tetrachloride	EPA TO-14A
	EPA TO-15
Chloroethane	EPA TO-14A
	EPA TO-15
Chloroform	EPA TO-14A
	EPA TO-15
Chloromethane	EPA TO-14A
	EPA TO-15
cis-1,2-Dichloroethene	EPA TO-14A
	EPA TO-15

cis-1,3-Dichloropropene	EPA TO-14A
	EPA TO-15
Dibromochloromethane	EPA TO-15
Dichlorodifluoromethane	EPA TO-14A
	EPA TO-15
Methylene chloride	EPA TO-14A
	EPA TO-15
Tetrachloroethene	EPA TO-14A
	EPA TO-15
trans-1,2-Dichloroethene	EPA TO-14A
	EPA TO-15
trans-1,3-Dichloropropene	EPA TO-14A
	EPA TO-15
Trichloroethene	EPA TO-14A
	EPA TO-15
Trichlorofluoromethane	EPA TO-14A
	EPA TO-15
Vinyl bromide	EPA TO-15
Vinyl chloride	EPA TO-14A
	EPA TO-15
<b>Volatile Chlorinated Organics</b>	
Benzyl chloride	EPA TO-14A
	EPA TO-15
<b>Volatile Organics</b>	
1,2-Dichlorotetrafluoroethane	EPA TO-14A

Serial No.: 57509

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ENVIRONMENTAL ANALYSES AIR AND EMISSIONS  
All approved analytes are listed below:*

**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

NEW YORK  
state department of  
HEALTH

Serial No.: 57509

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# NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C

625 Broadway, 11th Floor, Albany, NY 12233-7014

P: (518) 402-9662 | F: (518) 402-9679

www.dec.ny.gov

April 23, 2018

Nicolette Visalli  
Environmental, Chemical & Safety Services Manager  
IBM Corporation  
2455 South Road  
Poughkeepsie, NY 12601

RE: Request for sampling of Emerging Contaminants  
Former IBM 952/982  
314076

Dear Ms. Visalli:

The New York State Department of Environmental Conservation (DEC) is undertaking a Statewide evaluation of remediation sites to better understand the risk posed to New Yorkers by 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). PFAS have historically not been evaluated at remediation sites, and 1,4-dioxane has not been evaluated at the levels that are now thought to represent a health concern. This initiative is being undertaken as a result of these "emerging contaminants" having been found in a number of drinking water supplies in New York. Accordingly, the DEC is requiring that you test site groundwater for these chemicals. To accommodate this requirement, a select number of existing monitoring wells, representative of the potential of the above-referenced site to be a source of these emerging contaminants, must be sampled. DEC recommends that at least one of these wells should be upgradient of the site.

The attached guidance provides information on the analytical methods and reporting requirements. A second guidance document describes special precautions that need to be considered when sampling for PFAS.

Please prepare a draft letter work plan that identifies the wells proposed for sampling, brief description of the sampling methods, and anticipated sampling date within the next 60 days. If you wish to discuss the scope of the requested water testing, please contact me at 518-402-9794 or [scott.deyette@dec.ny.gov](mailto:scott.deyette@dec.ny.gov).

Sincerely,



R. Scott Deyette  
Project Manager  
Remedial Bureau C  
Division of Environmental Remediation



Department of  
Environmental  
Conservation

cc: S. Brannen, IBM

APPENDIX B

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 poly- and perfluoroalkyl 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<sup>®</sup> 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<sup>®</sup> 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.

*Due to the nature of the Site and the proximity of several fast food establishments to the proposed sampling locations, efforts shall be made to conduct sampling during “off hours” and additional field QA/QC samples shall be collected to assess the interference cross-contamination to the environmental samples.*

### 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<sup>®</sup> storage bag and placed in the sample cooler.

*Due to the nature of the Site and the proximity of several fast food and other commercial establishments to the proposed sampling locations, efforts shall be made to conduct sampling during “off hours” and additional field QA/QC samples shall be collected to assess the interference cross-contamination to the environmental samples.*

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

Decontamination fluids used to clean equipment including the Alconox<sup>®</sup>, Citranox<sup>®</sup> or Liquinox<sup>®</sup> solution and PFAS-free water shall not be reused during field decontamination and will be discharged to the IBM Poughkeepsie Main Plant, B450 Industrial Waste Treatment Facility.

APPENDIX C

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 Poly- and Perfluoroalkyl substance (PFAS) and 1,4-dioxane at the Former B952/982 Site.

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. Once the monitoring well purge has started, no water levels shall be collected until groundwater sample collection is complete.

## 3 MONITORING WELL PURGE PROCEDURES

Field personnel shall not use Teflon<sup>®</sup> 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<sup>®</sup> coatings. Prior to initiating sampling activities, wells selected for sampling will be redeveloped by purging 10 well volumes from the well using Teflon<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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 D

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 Poly- and Perfluoroalkyl substance (PFAS) and 1,4-dioxane at the Former B952/982 Site.

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.

### 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<sup>®</sup> 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<sup>®</sup> lined cap.

To mitigate the potential for cross-contamination of the PFAS samples from the 1,4-dioxane sample container Telfon<sup>®</sup> 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

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.

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<sup>®</sup> storage bags. Following groundwater sample collection, groundwater sample containers enclosed within their Ziploc<sup>®</sup> 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<sup>®</sup> 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.

## 2.4 Sample Shipping

Groundwater sample containers shall be stored on ice and maintained at approximately 4 degrees Celsius (°C) 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<sup>®</sup> lined cap.

Samples shall be shipped via courier service with priority overnight delivery. Tracking numbers for all shipments shall be provided once they have been sent out so to ensure their timely delivery.

APPENDIX E

SOP-4: 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 Poly- and Perfluoroalkyl substance (PFAS) and 1,4-Dioxane sampling activities at the Former B952/982 Site.

Due to the nature of the Site and the proximity of several fast food establishments to the proposed sampling locations, efforts shall be made to conduct sampling during “off hours” and field QA/QC samples shall be collected to assess the interference cross-contamination to the environmental samples.

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

- Equipment Blanks;
- Field Duplicates;
- 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 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 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 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 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<sup>®</sup> 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<sup>®</sup> 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 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<sup>®</sup> 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**

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 collection of 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<sup>®</sup> 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<sup>®</sup> 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 °C 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 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<sup>®</sup> lined cap.

Samples shall be shipped via courier service with priority overnight delivery. Tracking numbers for all shipments shall be provided once they have been sent out so to ensure their timely delivery.