PETERSBURH LANDFILL

SITE CHARACTERIZATION REPORT

WORK ASSIGNMENT D007622-36

PETERSBURGH LANDFILL
PETERSBURGH

SITE NO. 442054
RENSSELAER COUNTY, NY

Prepared for:
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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Basil Seggos, Commissioner

DIVISION OF ENVIRONMENTAL REMEDIATION
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Final
May 2017

SITE CHARACTERIZATION REPORT CERTIFICATION

I, MARK LANG, certify that I am currently a NYS registered professional engineer (No. 074013) or Qualified Environmental Professional and that this Site Characterization Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

SITE CHARACTERIZATION REPORT
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SITE ID NO. 442054
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PREPARED FOR:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION

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PREPARED BY:

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FINAL
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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
CAMP	community air monitoring program
COC	chain-of-custody
DER	Division of Environmental Remediation
DOT	Department of Transportation
DUSR	Data Usability Summary Report
EAC	Energy Answers Corporation
ELAP	Environmental Laboratory Approval Program
EPS	Environmental Products and Services of Vermont
ft	foot/feet
HSA	hollow stem auger
HDPE	high density polyethylene
ID	inside diameter/identification
IDW	investigation derived waste
Inc.	Incorporated
kg	kilograms
mg/kg	milligram per kilogram (parts per million)
MW	monitoring well
NAD 83	North American Datum 1983
ng/l	nanogram per liter (parts per trillion)
NVGD 29	National Geodetic Vertical Datum of 1929
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCB	polychlorinated biphenyl
PFC	perfluorinated compound
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PID	photoionization detector
ppb	parts per billion
ppt	parts per trillion
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RQD	rock quality designation
SC	Site Characterization
SCO	Soil Cleanup Objective
SCR	Site Characterization Report
SCG	standards, criteria and guidance
SJB	SJB Services Inc.
SVOC	semi-volatile organic compound
TCLP	Toxicity Characteristic Leaching Procedure
TIC	tentatively identified compound
TOGS	Technical and Operational Guidance Series
µg/l	micrograms per liter (parts per billion)
µg/kg	microgram per kilogram (parts per billion)
URS	URS Corporation - New York
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WA	Work Assignment

1.0 INTRODUCTION

This Site Characterization (SC) Report has been prepared to summarize the field activities and analytical results associated with the investigation of the Petersburgh landfill, New York State Department of Environmental Conservation (NYSDEC) Site Number 442054, located in the town of Petersburgh, Rensselaer County, New York (**Figure 1-1**). The work for the SC investigation was issued to URS Corporation - New York (URS) as NYSDEC Work Assignment No. D007622-36 on October 14, 2016. This report presents data and information gathered as part of the SC field investigation.

The SC investigation, conducted from November 30, 2016 through January 24, 2017, was performed to determine if the site is a potential significant threat to public health and/or the environment. The SC will also help determine the extent of environmental contamination associated with the landfill, specifically in relation to suspected contamination from perfluorinated compounds (PFCs).

PFCs are chemicals that were used to make household and commercial product that resist heat and chemical reactions and repel oil, stains, grease and water. Perfluorooctanoic acid (PFOA) is a PFC that was widely used in nonstick cookware, stain-resistant carpets and fabrics, and paper and cardboard as well as many products in the aerospace, automotive, building and electronic industries.

In May 2016, the United States Environmental Protection Agency (EPA) published a drinking water health advisory for PFOA. In January 2016, New York State had listed PFOA as a hazardous substance and in August 2016, the NYSDEC declared that the Petersburgh landfill [also referred to as the Berlin/Petersburg(h) landfill] as a potential State Superfund Site due to the suspected presence of PFCs in the landfill.

1.1 Site Location and Description

1.1.1 Site Location

The Petersburgh landfill (Site) is located on 23- acres on Cold Spring Road approximately 2 miles southeast of the center of the Town of Petersburgh, Rensselaer County, New York (**Figure 1-2**). The Site is comprised of portions of two parcels located within the Town of Petersburgh. Parcel 1 (Tax ID # 109-1-45) is 16.47 acres and parcel 2 (Tax ID # 109-1-44) is 6 acres. The approximate center of the landfill is at 42.72502 N, -73.325607 E.

1.1.2 Zoning and Land Use

The Site is zoned as a landfill/dump. The area surrounding the Site is primarily wooded rural vacant land and rural residential properties. Additionally, there is a cemetery located in the east portion of the Site, just east of the landfill.

1.1.3 Site Background

Approximately 8 acres in the southern portion of the Site was used as a solid waste disposal site for the residents of the Towns of Berlin and Petersburgh. The two towns began joint operation of the Site in 1982. Initially, the landfill operations in the early 1980s consisted of infilling of a ravine. Energy Answers Corporation (EAC) took over landfill operations in 1990 with the intent to work toward landfill closure. EAC accepted municipal solid waste for approximately two years to establish closure grades and promote drainage away from the landfill. The landfill stopped accepting waste in July 1991. A cover was constructed over the landfill and the construction certification report was completed in April 1997.

On August 29, 2016, the NYSDEC declared the Petersburgh landfill to be a potential state superfund site, based on suspected disposal of PFOA materials in the landfill.

1.1.4 Topography and Drainage

Elevations at the Site range from 1,250 to 1,350 feet (ft) above mean sea level. The highest elevations are in the north-central portion of the Site and topography slopes radially downhill from the high point. The slopes are more gradual on the east side and steeper on the west. Runoff from the Site flows down the slopes of the landfill into a perimeter trench at the toe of the slope to a discharge point on the western side of the landfill.

The Site lies in the Hoosic River Watershed. The nearest surface water body is a small unnamed stream on the western side of the landfill. Drainage from the landfill flows into this stream and then north to the Little Hoosic River.

There is also a small intermittent stream to the south of the landfill that was diverted via culvert piping to a man-made swale on the southwestern side of the landfill and then connecting back to the western stream. In addition to the western stream, there is a stream east of the landfill on the east side of Cold Spring Road. This stream flows north and discharges into the Little Hoosic River.

1.1.5 Geology/Hydrogeology

Regional surface deposits in the Site area are composed of glacial sands and gravels. The Site area is underlain by up to 34 ft of non-cohesive glacial till composed of fine to coarse sand with cobbles, gravel, silt, and a trace of clay. Deposits are generally thicker in the south and west and thinner in the northeastern and northern portions of the Site. The till directly overlies slate and/or phyllite bedrock. The hilly topography in the Site area generally reflects the variation in the bedrock elevations.

Depth to groundwater ranges from approximately 1 to 24 feet (ft) below ground surface (bgs) with groundwater flow in a predominantly westerly direction.

1.2 Previous Investigations/Records Search

The following presents a discussion of previous site investigations and records reviewed for the Site.

1.2.1 Clark Engineering, January 1990

In January 1990, the towns of Berlin and Petersburg authorized the installation of new monitoring wells and preparation of a topographic and property survey of the Site. A report was prepared by Clark Engineering, Inc. (Clark) for NYSDEC review and comment of the locations and specifics regarding proposed monitoring wells.

The available version of the Clark report is incomplete – the figures and attachment(s) are missing. The document doesn't provide much information without these items. It's also more a proposal than a report. Text pertaining to the hydrogeology includes a very limited discussion based on two brief field visits and review of regional geology information.

The report does indicate that two wells existed at the site prior to Clark's involvement. No information was available for these preexisting wells.

1.2.2 Berlin/Petersburg Landfill Final Closure Plan, July 1991

A site investigation was completed by Smith and Mahoney, P.C. to determine and evaluate the extent of potential impacts resulting from the landfill and assess the potential for release or migration of contaminants. The investigation was summarized in a report titled *Berlin/Petersburg Final Closure Plan*, dated July 1991.

During the field investigation in 1990/1991, eight borings were completed as monitoring wells (MW-1, MW-1A, MW-2, MW-2S, MW-3, MW-4, MW-5, and MW-6, see **Figure 1-3**). Groundwater samples were collected in April 1991 from all the wells except MW-2 and MW-2S, which were apparently destroyed shortly after installation. MW-5 was destroyed sometime after the sampling.

Groundwater and Surface Water Sampling and Analyses

The 1990/1991 groundwater analytical results were compared to maximum contaminant levels (MCLs). Parameters that exceeded criteria in most wells were turbidity and common metals (e.g., iron,

manganese, sodium). Other parameters detected at concentrations exceeding MCLs, but not in all wells, included pH, ammonia, and phenols. Other detections of note included benzene in MW-3 and dichlorodifluoromethane and methylene chloride in MW-5.

Two surface water samples had been collected by the NYSDEC in December 1989 and analyzed for various parameters (e.g., volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], metals, etc.) in accordance with solid waste management facility requirements presented in 6 New York Codes, Rules and Regulations (NYCRR) Part 360. In May 1991, Smith and Mahoney collected two surface water samples and one leachate sample. The analytical results for the surface water samples collected by Smith and Mahoney were also compared to the MCLs. Surface water exceedances included turbidity, phenols and common metals. The leachate sample also had these exceedances, as well as exceedances of ammonia, boron, chromium, lead, selenium, zinc, benzene, chloroethane, ethylbenzene, methylene chloride, toluene, trichlorofluoromethane, and 1,1,1-trichloroethane.

Permeability Testing

Groundwater flow in bedrock is primarily through a network of interconnecting bedding/foliation planes, joints, and fractures. The Smith and Mahoney investigation included bedrock hydraulic conductivity packer testing at several depth intervals in the deep boring for well MW-3. The tests revealed that the formation between 36 ft and 150 ft is relatively impermeable and from 13 ft to 36 ft is slightly more permeable with an average hydraulic conductivity of 2.6×10^{-3} ft/second.

Water Well Survey

The Smith and Mahoney investigation included a survey of public and private water supplies within one mile downgradient and one-quarter mile upgradient of the Site. Of the 72 requests mailed, 36 responses were received. The majority of respondents claimed both the quality and quantity of the well was good. Respondents typically cited hard water and sulfur odors.

1.2.3 Berlin/Petersburg Construction Certification Report

The final cover system for the landfill is detailed in the *Berlin/Petersburg Construction Certification Report*, prepared by Smith and Mahoney, April 1997.

The final cover system consists of a combination of soil and geosynthetic materials to minimize percolation of water into the waste mass. Construction of the final cover system included the following:

- 12-inch thick gas venting soil layer;

- geotextile filter fabric layer;
- 18-inch thick low permeability barrier soil layer;
- 24-inch thick barrier protection soil layer;
- 6-inch thick topsoil layer; and
- vegetative layer.

1.2.4 NYSDOH Groundwater and Surface Water Sampling – 2015

In 2015, the New York State Department of Health (NYSDOH) detected PFOA in five water samples from the Village of Hoosick Falls public water system. The PFOA concentrations ranged from 151 to 662 parts per trillion (ppt). Previous NYSDOH sampling of eight private wells in the Hoosick Falls area found PFOA in four wells and non-detectable PFOA in the other four. In the four wells where it was detected, PFOA concentrations ranged from 14.4 to 194 ppt. The USEPA provisional health guidance value for PFOA at the time was 400 ppt.

1.2.5 NYSDEC Environmental Media Sampling - July 2016

On June 2, 2016, the NYSDEC collected groundwater and leachate samples from the landfill area. The samples were found to contain elevated levels of PFOA as high as 4,200 nanograms per liter (ng/l, or ppt). The leachate discharges to the stream on the western side of the landfill and eventually discharges into Little Hoosic River. Based on the levels of PFOA in the leachate, the NYSDEC conducted supplemental sampling on July 21, 2016 to assess PFOA in the stream and near the discharge to Little Hoosic River. The assessment involved collecting four surface water samples and five sediment samples from the stream and two surface water samples from the Little Hoosic River **(see Figure 1-4)**.

The July 2016 sampling results are provided in **Table 1-1**. The sediment concentrations were well below NYSDEC's preliminary residential soil cleanup objective of 140 micrograms per kilogram (µg/kg). The surface water results were compared to the updated USEPA drinking water health advisory level of 70 ng/l for each PFOA and perfluorooctane sulfonate (PFOS). Only one location (PSL4) contained PFOA slightly above the health advisory level. Since the stream is not used as a drinking water source and future activities are anticipated at the landfill to improve stream quality, NYSDEC and the NYSDOH determined that no immediate action was warranted at that time.

1.2.6 NYSDEC Letter to Landfill Property Owners - August 29, 2016

On August 29, 2016, NYSDEC submitted a certified letter to representatives of the towns of Berlin and Petersburgh stating that the State is responsible for investigating active and inactive hazardous waste disposal sites. The Department has information which leads them to suspect that hazardous waste

was disposed of at the Petersburgh landfill. As the owners of the landfill, NYSDEC requested information from the towns that may be relevant to NYSDEC's investigation.

1.3 Site Characterization Objectives and Scope of Work

It is suspected that PFC-containing materials may have been placed in the Petersburgh landfill and may be impacting Site groundwater and surface water.

The objective of the SC was to determine if the Site is a potential significant threat to public health and/or the environment. The SC was also performed to determine the presence/absence of contamination in groundwater, surface water, and leachate at the Site and to evaluate the need for further actions.

Tasks performed during the SC field investigation included:

- Advancing five soil borings (two shallow/deep pairs and one additional deep boring);
- Collecting the following samples for chemical analysis:
  - Three soil samples;
  - Six sediment samples;
  - Six surface water samples; and
  - One leachate seep sample.
- Rock coring;
- Installing five monitoring wells;
- Developing the five new and five existing groundwater monitoring wells;
- Collecting one round of water levels;
- Collecting one round of groundwater samples from the ten wells for laboratory analysis;
- Installing a carbon sock at the leachate seep location;
- Completing a topographic survey, including locations and elevations of monitoring wells, surface water, sediment, and leachate sampling locations, as well as existing site roads, fencing and other pertinent site features; and
- Managing investigation-derived waste (IDW).

1.4 Report Organization

This SC Report has six sections. Section 1 includes background information and a synopsis of previous site investigations. Section 2 includes a description of field activities that occurred during the SC fieldwork. Section 3 includes a description of the subsurface conditions at the Site. Section 4

includes a description and summary of the analytical results for samples collected during the SC fieldwork. Section 5 consists of conclusions drawn from the investigation. Section 6 contains a list of references cited. Tables, Figures, and Appendices immediately follow the text.

2.0 FIELD ACTIVITIES

The SC field investigation was performed during the period of November 30, 2016 through January 24, 2017. Drilling services were provided by SJB services, Inc., (SJB) and chemical laboratory analytical services were provided by Test America Laboratories. Photographs of field activities are included in **Appendix A**.

2.1 Mobilization

During the field work, extensive precautions were used to eliminate or minimize the occurrence of PFC-containing materials used during the investigation. This included making sure that field staff used PFC-free clothing, equipment, and supplies, and using certified PFC-free water during drilling and sampling.

2.2 Subsurface Investigation Activities

2.2.1 Utility Clearance

Prior to commencing intrusive activities, SJB, arranged for utility mark-outs through New York State One-Call.

2.3 Drilling

Drilling was performed during the period of November 30 through December 27, 2016, Drilling was accomplished using a track-mounted drill rig with hollow stem auger (HSA) and coring to advance each boring to the target depth.

Five borings were advanced and completed as wells MW-6D, MW-7S, MW-7D, MW-8S and MW-8D. All wells were set into bedrock. The deep wells included the installation of a 4-inch diameter steel separation casing to isolate the deep water-bearing zone from the shallow water-bearing zone. It is noted that there is no definitive hydrogeologic divide between the deep water-bearing zone and the shallow water-bearing zone. Both water-bearing zones appear to be within the same unconfined aquifer. The depth of the deep wells was determined based on an evaluation of the depths of other deep wells at the site and encountering a relatively competent zone (e.g., minimal fractures or partings) at depth.

At each deep location, the deep well boring was advanced to bedrock using 4 ¼-inch inside diameter HSAs while continuously collecting soil samples with a 2-ft long by 2-inch diameter split-spoon sampler. Upon recovery, the soil samples were screened with a photoionization detector (PID). No

elevated PID readings were observed. One soil sample was retained for chemical analysis from each of the three deep borings. (locations MW-7D and MW-8D required advancing multiple boreholes in order to obtain the required soil volume for quality assurance/quality control (QA/QC) analyses).

Upon reaching bedrock, the HSAs were removed and a 6-inch diameter temporary steel casing was advanced into the upper bedrock surface. A roller bit was then advanced approximately 5 feet into bedrock. The 4-inch diameter steel casing was then set into the rock socket and grouted in place. After the grout was allowed to cure for a minimum of 24 hours, the boring was advanced to the target depth using an HQ core bit. Rock cores were inspected to record information including core length recovery, lithology, and rock competency by calculating the rock quality designation (RQD).

At the shallow well locations, the shallow well borings were advanced into the bedrock using the 6-inch temporary casing and roller bit drilling technique. No soil or rock sampling was performed for the shallow wells.

Soil boring and rock coring logs are provided in **Appendix B**, monitoring well construction logs are provided in **Appendix C**, and copies of the daily field notes are provided in **Appendix D**.

All soil samples were transported under chain-of-custody (COC) control to Test America Laboratories (Buffalo, NY), a NYSDOH Environmental Laboratory Approval Program (ELAP) accredited laboratory. Samples for PFOA analyses were sent by Test America, Buffalo to their Sacramento, CA laboratory for analysis. The soil samples were analyzed for the analytical parameters listed in **Table 2-1**.

2.3.1 Monitoring Well Construction

Each monitoring well was constructed with a 10-foot length of 2-inch inside diameter (ID), 0.010-inch slot, Schedule 40 polyvinyl chloride (PVC) well screen and riser. The well screens were set based on the depths to water and bedrock, as well as a review of the rock cores to identify zones of greater permeability (i.e., low RQD). A well construction summary is provided on **Table 2-2**.

A #0 sand pack was installed from the bottom of the well to approximately 1.5 ft above the top of the well screen. An additional 0.5 ft of #00 sand was placed on top of the #0 sand. Bentonite chips were then added to approximately 2 ft above the sand pack and then another 0.5 ft of #00 sand was placed on the bentonite to minimize grout intrusion. The remaining annular space was then filled with cement/bentonite grout to approximately 1 ft bgs. The remaining 1-ft was backfilled with concrete. A 5-

ft length of stick-up protective casing was installed at wells MW-7S and MW-8S. For wells MW-6D, MW-7D, and MW-8D, the 4-inch permanent steel casing was used as the protective casing.

Keyed-alike locks were installed on all monitoring wells, including the five pre-existing monitoring wells.

2.3.2 Monitoring Well Development

During the period of December 22 through January 3, 2017, all new and existing wells were developed with the surge and pump development method using a Waterra Hydrolift II pump and dedicated high density polyethylene (HDPE) tubing with check valves. During well development, water quality parameters of pH, specific conductivity, temperature and turbidity, oxidation reduction potential and dissolved oxygen were periodically measured using a YSI 556 multi-meter and HACH 210 turbidity meter. A monitoring well was considered developed when water quality parameters had stabilized or the well had purged dry after being sufficiently surged. Well development logs are provided in **Appendix E.**

Well development water was collected into DOT approved 55-gallon drums and staged on-site pending analysis for off-site disposal.

2.4 Groundwater Level Measurements

Groundwater levels were collected on January 4, 2017 and January 5, 2017. Water levels were determined using an electronic water level meter. Measurements were referenced to a mark on the north side of the top of each PVC well riser.

2.5 Groundwater Sampling

Groundwater sampling of the ten Site monitoring wells was performed on January 4 and 5, 2017 using the low-flow groundwater sampling procedure. The wells were sampled using a peristaltic pump, dedicated HDPE sampling tubing, a YSI 556 multi-meter, and HACH 210 turbidity meter.

All groundwater samples were transported under COC to Test America. The samples were analyzed for the analytical parameters as listed in **Table 2-1**. Groundwater sampling logs from January 2017 are presented in **Appendix F.**

2.6 Surface Water, Sediment, and Leachate Seep Sampling

Surface water samples were collected during two sampling events; the first event was performed during the period of December 7, 8, 13 and 14, 2016 and the second on January 24, 2017. The samples collected during the January 24, 2017 event were only analyzed for an extended list of PFCs at the request of NYSDEC.

Sediment samples were collected from the surface water locations only during the December 2016 sampling events. Each sediment sample was collected after the surface water sample was collected.

Six locations were sampled (SW-01/SED-01 through SW-06/SED-06) and the leachate samples were collected from a leachate seep (LC-01) on western side of the landfill (**Figure 1-3**).

The samples were analyzed for the analytical parameters as listed in **Table 2-1** and transported under COC to Test America. The surface water, sediment, and leachate sampling field forms are presented in **Appendix G.**

2.7 Community Air Monitoring

A community air monitoring program (CAMP) was performed to provide real-time measurements of total VOCs and particulate (airborne dust) concentrations in air at the downwind perimeter of each designated work area when intrusive investigation activities were in progress at the Site. The procedures followed methods described in the NYSDOH Generic CAMP per DER-10, Appendix 1A (NYSDEC, May 2010). Additionally, Site personnel monitored the perimeter stations to determine if any odors were being produced as a result of the intrusive sampling activities. The monitoring was designed to provide protection for the downwind community from potential releases of airborne constituents resulting from the investigation activities.

Total VOCs and particulates were monitored with a PID and dust meter, respectively, located upwind and downwind of each work zone. Action levels were not reached during intrusive investigation activities during the SC, so no response actions were necessary.

2.8 Investigation-Derived Waste Disposal

Investigation-derived waste (IDW) generated from the investigation (e.g., soil cuttings, rock cores, decontamination fluids, development and purge water, plastic sheeting and personal protective equipment) was containerized in 55-gallon drums.

Environmental Products and Services of Vermont (EPS) was contracted by URS to provide IDW transportation and disposal services. Due to freezing temperatures, several drums bulged and needed to be placed into either 85 gallon or 95 gallon overpack drums in order to meet transportation requirements. Drum pick-up (eight containing solids and 18 containing liquids) occurred on February 2, 2017. The IDW was transported to Waste Recovery Solutions, located in Myerstown, PA. A copy of the bill of lading is provided in **Appendix H.**

2.9 Carbon Sock Installation

On December 28, 2016, AECOM placed a carbon sock at the leachate seep. The intent of the sock is to have organic compounds (including PFCs) adsorbed by the carbon in the sock, thereby mitigating organic contaminant migration into the stream.

2.10 Site Survey

At the conclusion of the investigation, C.T. Male Associates, a URS subcontractor completed a survey of all monitoring wells, surface water/sediment and leachate sampling points for location and elevation. The survey also included a topographic survey of the landfill that was sufficient to develop 2-ft contours to the National Map Accuracy standard.

Horizontal datum was referenced to the 1983 (NAD 83) New York East State Plane Coordinates. Vertical datum was referenced to the National Geodetic Vertical Datum of 1929 (NVGD 29). The locations of the five existing and five new monitoring wells were surveyed for ground, top of outer well casing, and top of riser elevations. The elevations were established within ± 0.01feet relative to the datum used. The survey map and copies of the survey point files are provided in **Appendix I.**

3.0 SUBSURFACE CONDITIONS

3.1 Regional Geology

The Site area is underlain by undifferentiated glacial deposits of sands and gravels. Those deposits typically exhibit a fining upward sequence and overlay a complex mix of folded and faulted bedrock. The Hudson-Mohawk sheet of the Geologic Map of New York shows faults which generally trend north-south, both to the east and west of the Site.

The Hudson-Mohawk sheet of the Geologic Map of New York identifies bedrock in the landfill area as slate and phyllite (both metamorphic forms of shale).

3.2 Site Geology

Natural unconsolidated deposits at the Site are composed of fine to coarse gray/brown sand with varying amounts of silt, clay and gravel to varying depths. The thickness of the overburden ranges from approximately 6 to 34 ft. The deposits are typically thicker on the western side of the Site.

Bedrock beneath the Site consists of gray phyllite with quartz veining and moderate to high angle bedding. The maximum penetration into bedrock during the SC was at MW-7D which was advanced 56 feet into bedrock. RQDs across the Site generally range from approximately 50% to 100% and generally increased with depth.

3.3 Investigation Area Hydrology

Surface water drains radially off the landfill and to the west, generally following the topography. Site surface water eventually discharges to Little Hoosic River.

Groundwater occurs under unconfined conditions. The depth to groundwater ranges from approximately 1 to 24 feet bgs (**Table 3-1**). **Figures 3-1** and **3-2** show the groundwater elevation contours using January 2017 data for the shallow and deep water-bearing zones, respectively. Both figures show an apparent north-south groundwater divide on the landfill with flow to the west and the east. As previously noted, a defined hydraulic barrier or aquiclude between the upper and lower water-bearing zones was not identified during the investigation and both water-bearing zones appear to be within the same unconfined aquifer.

Comparison of groundwater elevations between paired shallow and deep wells indicates a downward hydraulic head. The newly installed wells exhibited slow recharge and may not have been fully recovered when water levels were collected.

4.0 ANALYTICAL RESULTS

The following sections discuss the results of the soil, groundwater, surface water, sediment, and leachate sample analyses.

The laboratory provided deliverable data packages that were equivalent to NYSDEC Analytical Services Protocol Category B requirements. A Data Usability Summary Report (DUSR) was prepared following the guidelines provided in NYSDEC Division of Environmental Remediation (DER) DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B - Guidance for Data Deliverables and the Development of Data Usability Summary Reports (NYSDEC, May 2010) and is located in **Appendix J** on CD. Data summary tables, Form I and Form Ie (TICs) are provided in the DUSR and include the reporting limit for each non-detected compound.

Data validation was performed following the guidelines in the following USEPA Region II documents, along with the method and laboratory standard operating procedures (SOPs) for perfluoroalkyl acids (PFAAs):

- *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry*, SW-846 Method 8260B & 8260C, SOP HW-24, Rev. 4, October 2014;
- *Validating Semivolatile Organic Compounds (SVOCs) by Gas Chromatography/Mass Spectrometry*, SW-846 Method 8270D, SOP HW-22, Rev. 4, August 2008;
- *Validating Pesticides By Gas Chromatograph*, SW-846 Method 8081B, SOP HW-44, Rev. 1, October 2006
- *Polychlorinated Biphenyl (PCB) Aroclor Data Validation*, SOP HW-37, Rev. 3, May 2013;
- *ICP-AES Data Validation*, SOP HW-2a, Rev. 15, December 2012; and
- *Mercury and Cyanide Data Validation*, SOP HW-2c, Rev. 15, December 2012.

During the course of laboratory analysis, the NYSDEC requested that the list of PFCs being analyzed be increased from six to 12 so the laboratory reanalyzed the samples. As a result, two sets of analytical results are presented in the analytical tables discussed below. The figures, which also present the analytical results, only show the higher concentration of the two analyses.

4.1 Standards, Criteria and Guidance Values

For each medium, detected concentrations of individual contaminants were compared to applicable standards, criteria and guidance values (SCGs). The analytical results presented in the tables

accompanying this section are for only those parameters that were detected at least once in a sample. The results presented in the accompanying figures present only those parameters that exceeded the SCGs.

The SCGs were determined for the individual media are identified below.

4.1.1 Soil

Two sources of soil SCGs are considered appropriate for this site: Part 375 soil clean-up objectives (SCOs) and CP-51 SCOs. Hereafter, mention of Part 375 includes incorporation of CP-51 criteria values.

Under New York State Environmental Conservation Law, the State has established a preliminary residential SCO of 140 µg/kg for PFOA and PFOS.

Part 375 Unrestricted Use Criteria are considered to assist in the development of a remedial alternative capable of achieving unrestricted future use as required by DER-10 Section 4.4 (b) 3 ii.

Finally, soil criteria for the Protection of Groundwater are considered as SCGs for contaminants which exceed groundwater SCGs.

4.1.2 Groundwater

The SCGs for groundwater are the Class GA standards and guidance values presented in TOGS) 1.1.1.

PFOA and PFOS were compared to the USEPA drinking water Health Advisory for of 70 nanograms per liter (ng/l) (individually or combined) (USEPA, May 2016).

4.1.3 Surface Water and Leachate

Surface water and leachate results were compared to the NYSDEC TOGS (1.1.1) ambient water quality standards and guidance values for a Class A stream.

The results for PFCs were compared to the USEPA drinking water Health Advisory for PFOA and PFOS of 70 ng/l (individually or combined) (USEPA, May 2016).

Class A stream criteria was selected because the historical well survey indicated that some nearby residences use spring water and/or shallow groundwater as a drinking water source.

4.1.4 Sediment

Sediment results were compared to the NYSDEC 2014 Screening and Assessment of Contaminated Sediments, Sediment Guidance Values (SGVs) for Classes B and C sediments (based on 2% TOC).

For PFOA/PFOS comparison of results in this report, the same concentration of 140 µg/kg for PFOA and PFOS that was used for soil was used for sediment.

4.2 Soil Analytical Results

During the SC investigation, one soil sample was collected from each deep well boring (MW-06D, MW-07D, and MW-08 D). A duplicate sample was collected from MW-07D. The soil analytical results are presented in **Table 4-1** and **Figure 4-1**. In **Table 4-1**, the PFC criteria are included under Criteria 1 – Part 375 Unrestricted Use.

Review of the soil VOC analytical results indicates that acetone was detected just above the 0.05 milligrams per kilogram (mg/kg) criteria for unrestricted use and protection of groundwater in MW-08D at a concentration of 0.06 mg/kg. No other VOCs were detected in the soil samples.

Review of the soil SVOC analytical results indicates that no SVOCs were detected above unrestricted use or protection of groundwater criteria.

Review of the soil pesticide and PCB analytical results indicates that no pesticides or PCBs were detected above unrestricted use or protection of groundwater criteria.

Review of the soil metals analytical results indicates that aluminum, boron, and iron were detected above the unrestricted use criteria in all three soil samples. In addition, nickel was detected above the unrestricted use SCO in MW-07D and MW-08D and manganese was detected above the unrestricted and restricted use SCOs in MW-06D. .

PFOA and PFOS were not detected either individually or combined above the PFOS/PFOA SCO of 140 µg/kg in any of the soil samples.

4.3 Groundwater Analytical Results

Groundwater samples were collected from ten monitoring wells. The groundwater analytical results are presented in **Table 4-2** and **Figure 4-2**. In **Table 4-2**, the PFOA, PFOS, and total PFOA and PFOS criteria are included under the NYSDEC TOGS criteria.

Review of the VOC analytical results indicates that only two VOCs were detected at a concentration above the groundwater criteria. Benzene was detected at concentrations just above the 1 µg/l criteria in the sample from MW-03 (1.5 µg/l) and acetone was detected at concentrations above the 50 µg/l criterion in the sample from MW-07S (360 µg/l).

Review of the groundwater SVOC analytical results indicates that no SVOCs were detected above criteria.

Review of the groundwater pesticide analytical results indicates one compound, dieldrin, was detected at a concentration above the groundwater criteria of 0.004 µg/l in MW-08S (0.027 µg/l).

Review of the groundwater PCB analytical results indicates that no PCBs were detected above criteria.

Review of the groundwater metals analytical results indicates that arsenic, iron, manganese, sodium and/or thallium were detected above groundwater criteria in all ten monitoring wells samples except MW-01.

Review of the groundwater PFC analytical results indicate that nine of the 12 PFC compounds were detected at least once in the groundwater samples. Groundwater criteria are available only for PFOA, PFOS, and combined PFOA and PFOS. The groundwater samples from MW-3, MW-4, MW-7S, MW-7D, MW-8S and MW-8D exceeded the criteria. The highest combined PFOA and PFOS concentrations were detected in MW-7D (1,605 ng/l), MW-3 (1,320 ng/l), and MW-4 (1,230 ng/l).

4.4 Surface Water Analytical Results

Surface water samples were collected from six locations. The surface water analytical results are presented in **Table 4-3** and **Figure 4-3**.

Review of the surface water analytical results indicates that no VOCs, SVOCs, or PCBs were detected at concentrations above the Class A stream criteria.

Review of the surface water metals analytical results indicates that aluminum was detected above Class A stream criteria in SW-02 (in the duplicate). Iron was above Class A stream criteria for SW-02, SW-03, and SW-04. Manganese was above criteria for SW-02 (in the duplicate), SW-03, and SW-05.

Review of the PFC analytical results shows that eight of the 12 PFC compounds were detected. Criteria are available only for PFOA, PFOS, and combined PFOA and PFOS. The surface water samples

from SW-05 and SW-06 exceeded the criteria. The highest combined PFOA and PFOS concentrations were detected in SW-05 (2,048 ng/l).

4.5 Sediment Analytical Results

Sediment samples were collected from the six surface water locations. The analytical results are presented in **Table 4-4** and **Figure 4-3**. In **Table 4-4**, the results are compared to both Class B and Class C criteria.

Review of the analytical results indicates that no VOCs, SVOCs, pesticides, or PCBs were detected at concentrations exceeding either the Class B or C criteria. Each sediment sample location had at least one metal that exceeded either the Class B or C criteria. Only nickel in SED-03 and arsenic in SED-05 exceeded both criteria.

Review of the PFC results shows that ten PFCs were detected at least once in the sediment samples. However, no PFOA or PFOS were detected above 140 µg/kg criterion.

4.6 Leachate Seep Analytical Results

Leachate samples were collected on December 14, 2016 and January 24, 2017 from the LC-01 location. The December 14, 2016 sample was analyzed for VOCs, SVOCs, pesticides, PCBs, metals, six PFCs, and various wet chemistry parameters. The sample collected on January 24, 2017 was only analyzed for 12 PFCs. The analytical results, presented in **Table 4-3** and in **Figure 4-3**, are compared to TOGS criteria.

Review of the VOC analytical results indicates that benzene was detected at 1.5 µg/l, which is just above the 1 µg/l criterion. No other VOCs were detected at concentrations above the criteria.

No SVOCs, pesticides, or PCBs were detected at a concentration above the criteria.

Ten metals (aluminum, arsenic, barium, cobalt, copper, iron, manganese, mercury, selenium, and vanadium) were detected above criteria. Most of these metals were detected at concentrations several orders of magnitude above the criteria.

The December 14, 2016 results show that each of the six PFCs analyzed for was detected. The January 24, 2017 PFC results show that eight of the 12 PFCs were detected. The individual PFOA and PFOS and combined PFOA and PFOS criteria were well exceeded in both samples. The maximum combined PFOA and PFOS concentration was 5,591 ng/l, compared to the criterion of 70 ng/l.

5.0 CONCLUSIONS

5.1 Conclusions

The following conclusions are provided based upon the results of the SC and previous investigations.

5.1.1 General

Landfilling activities began in the 1980s and ended in 1997. Wastes were received from the towns of Berlin and Petersburgh. An engineered cover, compliant with Part 360 requirements, was constructed over the landfill in 1997. The landfill covers approximately eight acres on the 23 acre property. It is suspected that some landfilled wastes may have included PFC-containing materials.

Investigations at the Site began with the installation of two test wells sometime prior to 1990. In 1991, investigations were performed in preparation for landfill closure. The 1991 landfill closure investigation included the installation of four shallow and two deep monitoring wells, and collection of subsurface soil, surface water, and groundwater samples. The deepest well, MW-3, was advanced to a depth of approximately 150 ft bgs. The NYSDEC collected surface water, sediment and leachate samples in 2016. The SC included installation of two shallow and three deep wells, collection of subsurface soil, surface water, sediment, and leachate samples. Based on investigation findings, the Site contains up to 34 ft of non-cohesive glacial deposits consisting of fine to coarse gray/brown sand with varying amounts of silt, clay and gravel. The glacial deposits overly slate/phyllite bedrock which has high angle bedding/foliation planes. Bedrock becomes more competent and less permeable with depth.

Groundwater occurs under unconfined conditions in both the upper and lower water-bearing zones. Groundwater flows to the west and east from an apparent north-south divide at the landfill. There is no distinct confining zone or aquiclude that separates the upper and lower water-bearing zones. Both water-bearing zones appear to be within the same unconfined aquifer.

Surface water drains radially off the landfill with drainage swales directing flow to the west. A leachate seep on the western side of the landfill discharges to the surface water. Site drainage eventually discharges to Little Hoosic River located approximately 1.3 miles to the northwest.

5.1.2 Soil

Based upon the SC investigation, the soils investigated do not appear to have been impacted by PFCs at levels above the preliminary PFOS/PFOA health SCO. VOCs, SVOCs, Pesticides, and PCBs are

also not contaminants of concern based upon their concentrations. Select metals are above unrestricted use criteria.

5.1.3 Groundwater

Investigation findings show that groundwater quality in the Site area has been impacted by PFCs. Exceedance of the health advisory criteria for PFOA, PFOS or a combined exceedance for these two compounds was noted in groundwater samples from MW-03, MW-04, MW-07D, MW-07S, MW-08D, and MW-08S. These wells are located on the eastern and western sides of the landfill. The recent groundwater results are consistent with historical results and show that VOCs (with the exception of benzene in MW-03), SVOCs, metals, PCBs, and pesticides are not contaminants of concern in groundwater.

5.1.4 Surface Water, Leachate Seep, and Sediment

Surface water quality at the leachate seep and immediately downstream of the leachate seep location has been impacted by PFCs. Exceedance of the health advisory criteria for PFOA, PFOS was noted in surface water samples SW-05 and SW-06 and at the leachate seep location LC-01. Some metals also exceeded criteria.

PFOA and PFOS were not detected above the 140 µg/kg soil criteria in the sediment samples. Some metals detected in the surface water were also detected in the sediment.

5.1.5 Contaminant Fate and Transport

PFCs can be released into the air, water, and soil in places where they are produced or used. The highest levels are typically found near facilities that have made or used PFCs. PFCs do not occur naturally and do not readily biodegrade. As a result, they are persistent in the environment. PFCs are highly soluble in water and have very low volatility and can be transported long distances via groundwater or surface water.

6.0 REFERENCES

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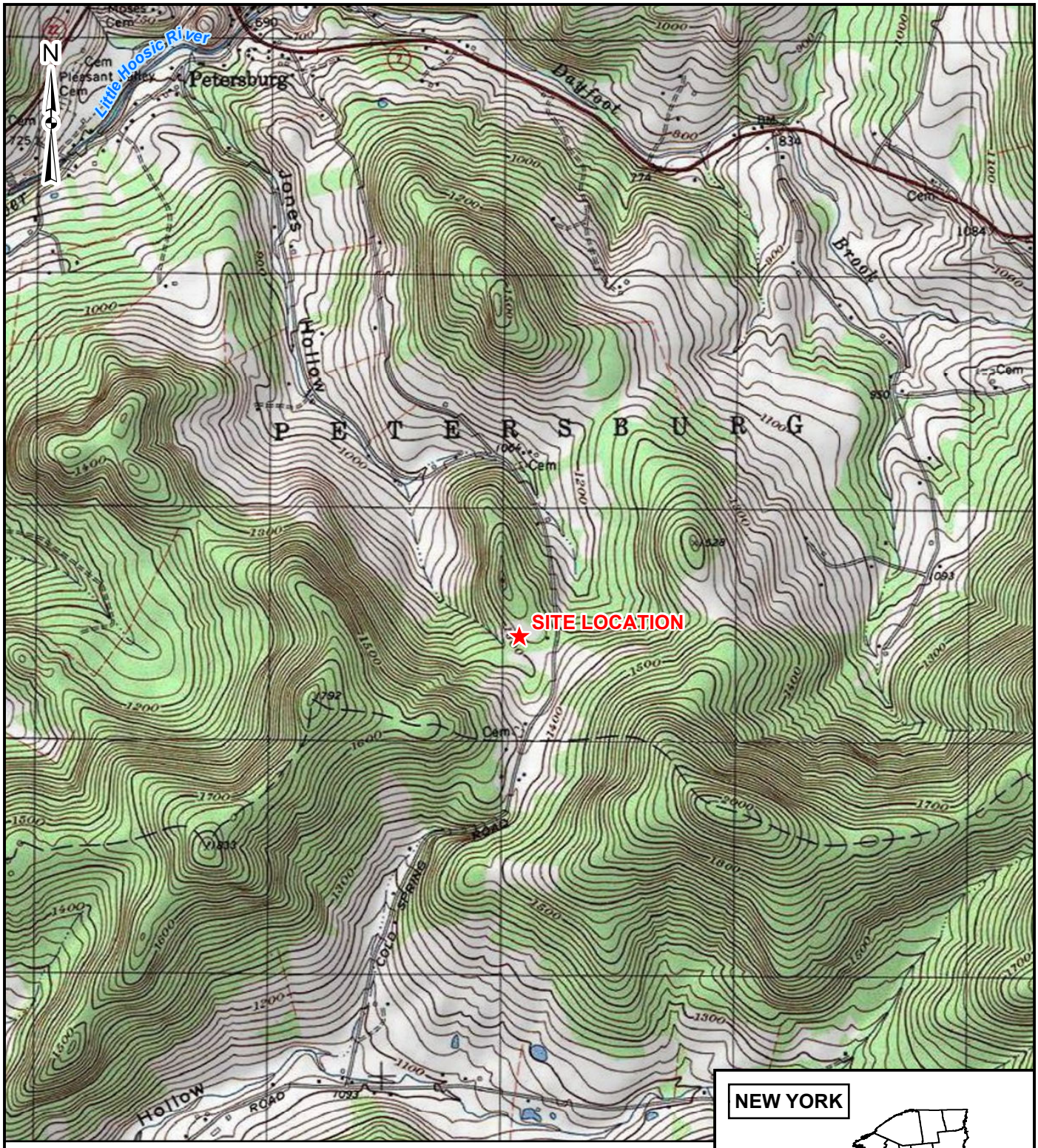
FIGURES

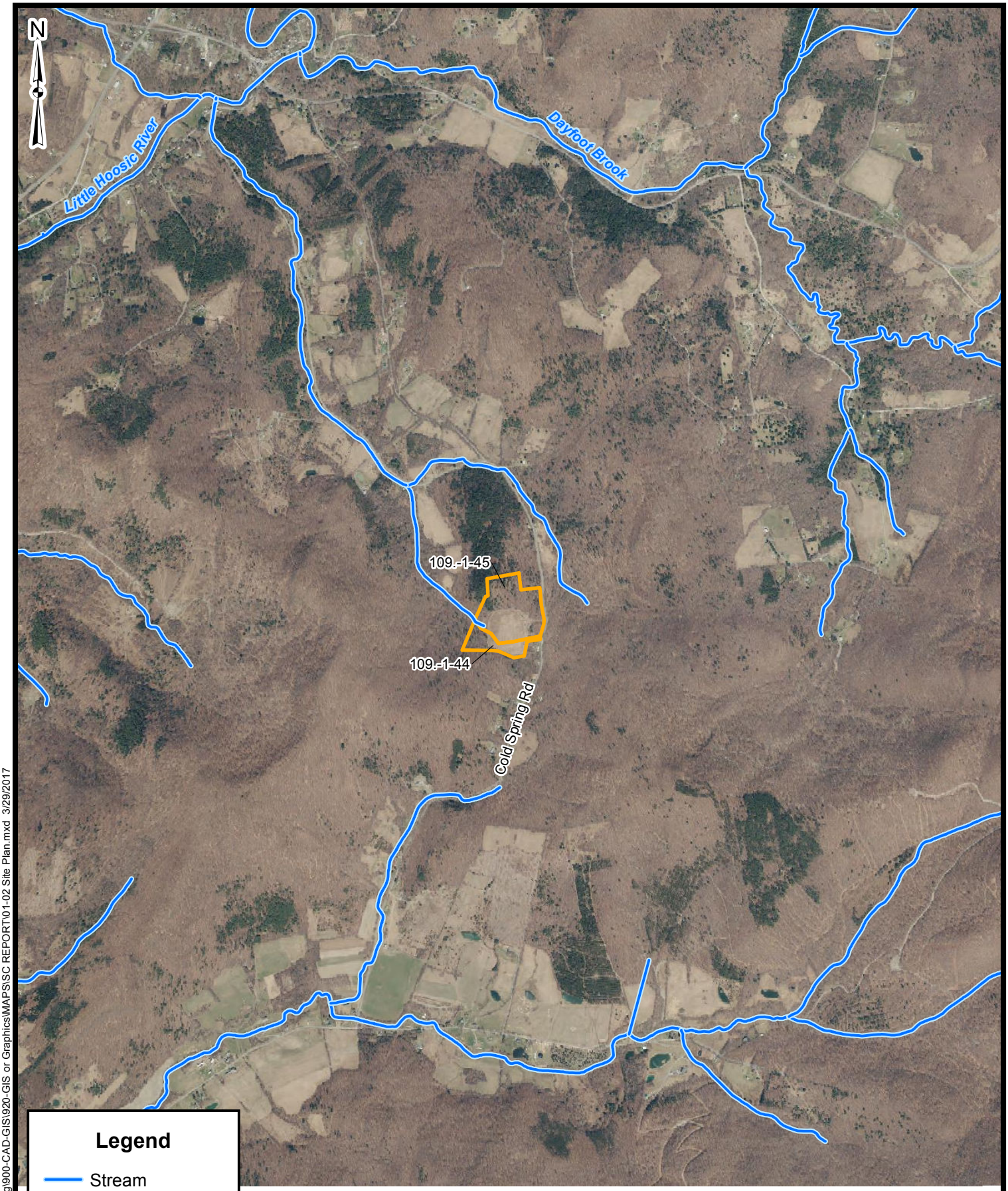


URS

PETERSBURGH LANDFILL
SITE LOCATION

FIGURE 1-1

J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\01-01 Site Location.mxd 3/27/2017



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URS

PETERSBURGH LANDFILL
SITE PLAN

FIGURE 1-2

N

MW-01
MW-01A
MW-08D
MW-08S
SW-06/SED-06
MW-05
SW-05/SED-05
LC-01
MW-04
MW-03
MW-02
MW-02S
Cold Spring Rd
MW-06D
MW-06S
SW-04/SED-04
MW-07S
MW-07D
SW-03/SED-03
SW-02/SED-02
SW-01/SED-01

Legend

- Leachate Seep
- Surface Water/ Sediment Sample
- Monitoring Well
- Monitoring Well (Destroyed)
- Stream

Source: ESRI World Imagery

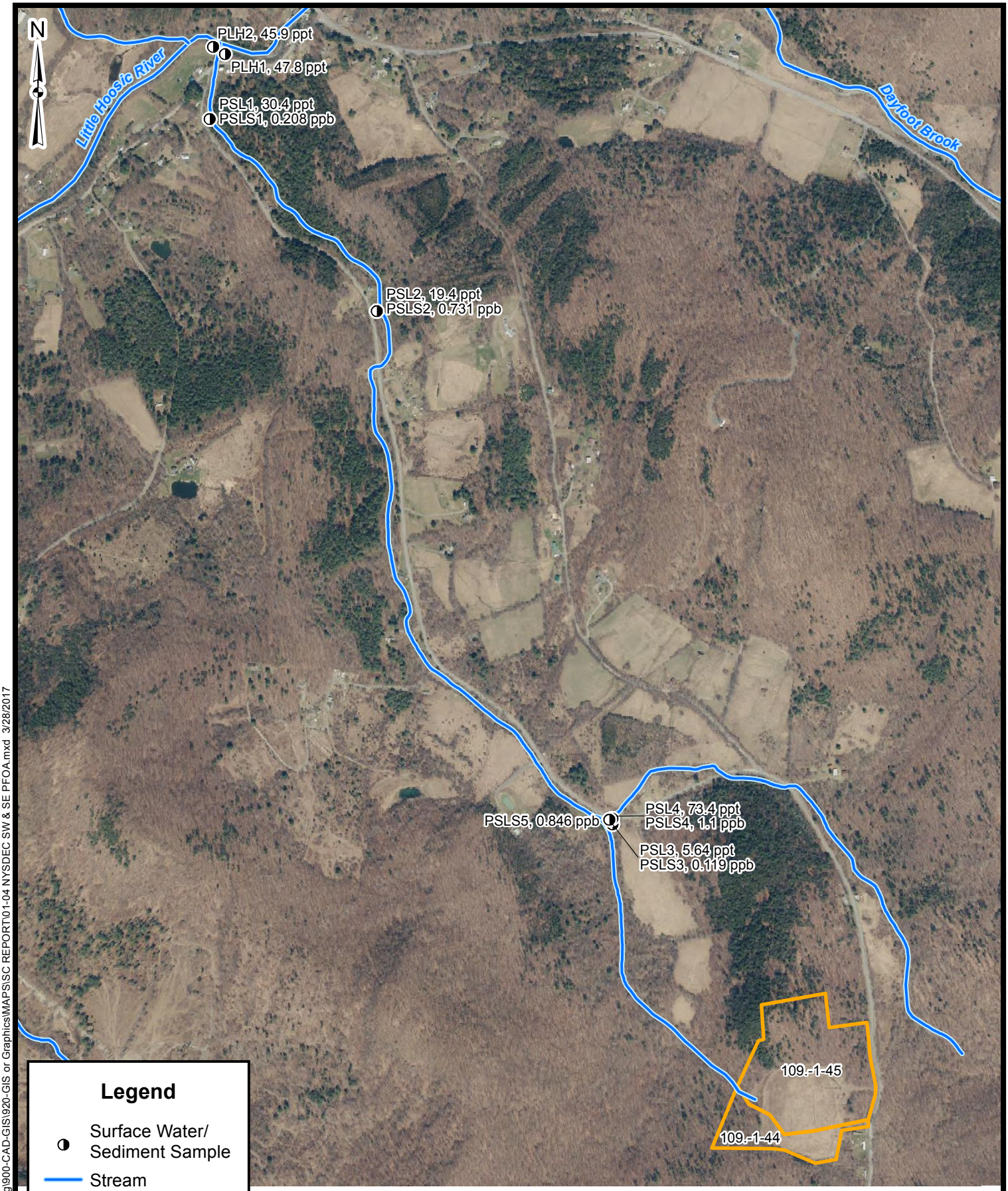
150 0 150 Feet

PETERSBURGH LANDFILL INVESTIGATION LOCATION MAP

URS

FIGURE 1-3

J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\01-03 Investigation Location Map.mxd 3/28/2017



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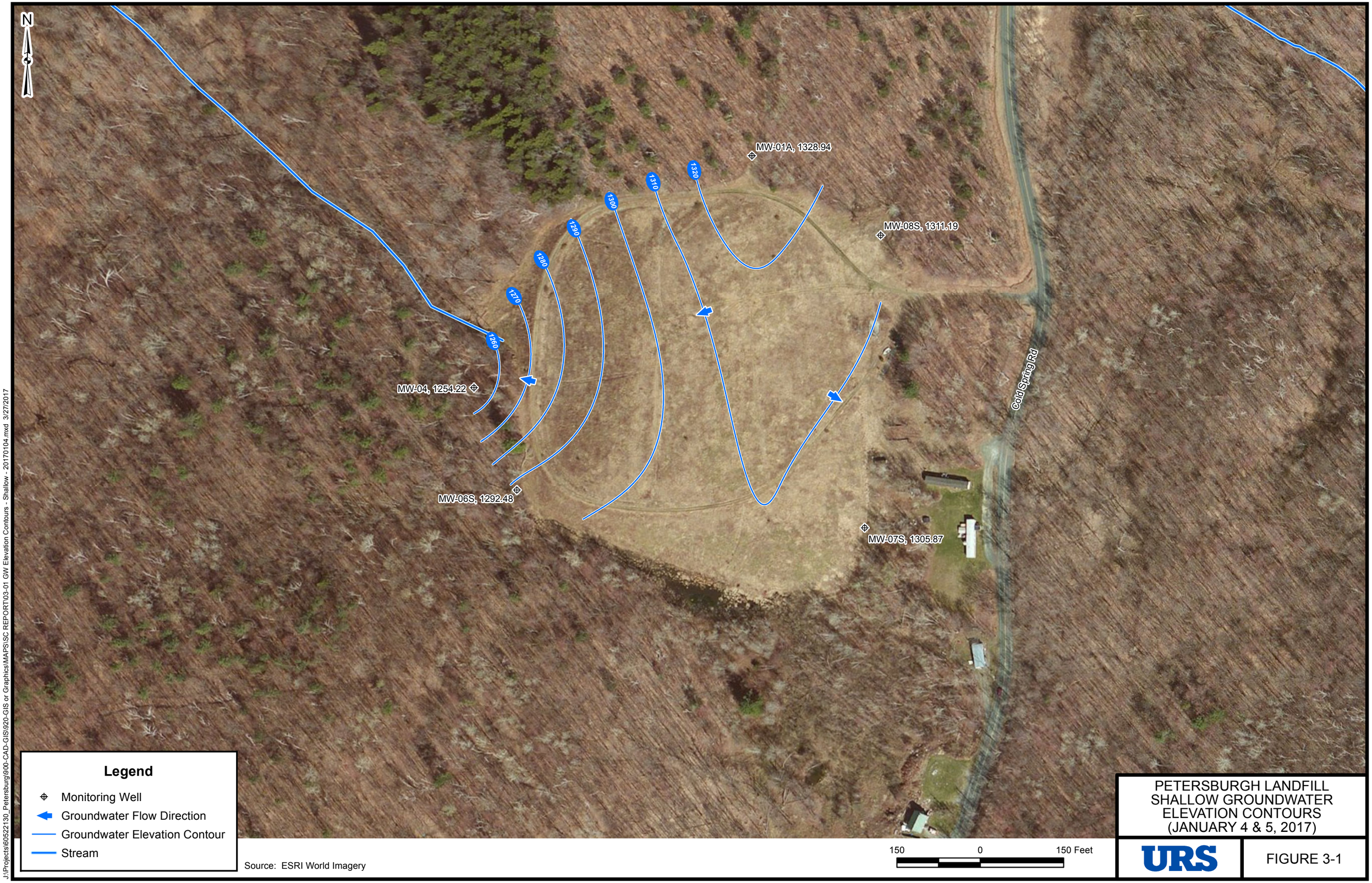
URS

PETERSBURGH LANDFILL
NYSDEC SURFACE WATER AND SEDIMENT PFOA RESULTS
(JULY 2016)

FIGURE 1-4


N
MW-01A, 1328.94
MW-08S, 1311.19
MW-04, 1254.22
MW-06S, 1292.48
MW-07S, 1305.87
Cold Spring Rd
1320
1310
1300
1290
1280
1270
1260
Legend
Monitoring Well
Groundwater Flow Direction
Groundwater Elevation Contour
Stream
Source: ESRI World Imagery
150
0
150 Feet
PETERSBURGH LANDFILL
SHALLOW GROUNDWATER
ELEVATION CONTOURS
(JANUARY 4 & 5, 2017)
URS
FIGURE 3-1
J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\03-01 GW Elevation Contours - Shallow - 20170104.mxd 3/27/2017

N

MW-01, 1321.18

MW-08D, 1308.51

MW-03, 1253.44

MW-06D, 1291.75

MW-07D, 1301.02

Cold Spring Rd

1320
1310
1300
1290
1280
1270
1260

Legend

- Monitoring Well
- Groundwater Flow Direction
- Groundwater Elevation Contour
- Stream

Source: ESRI World Imagery

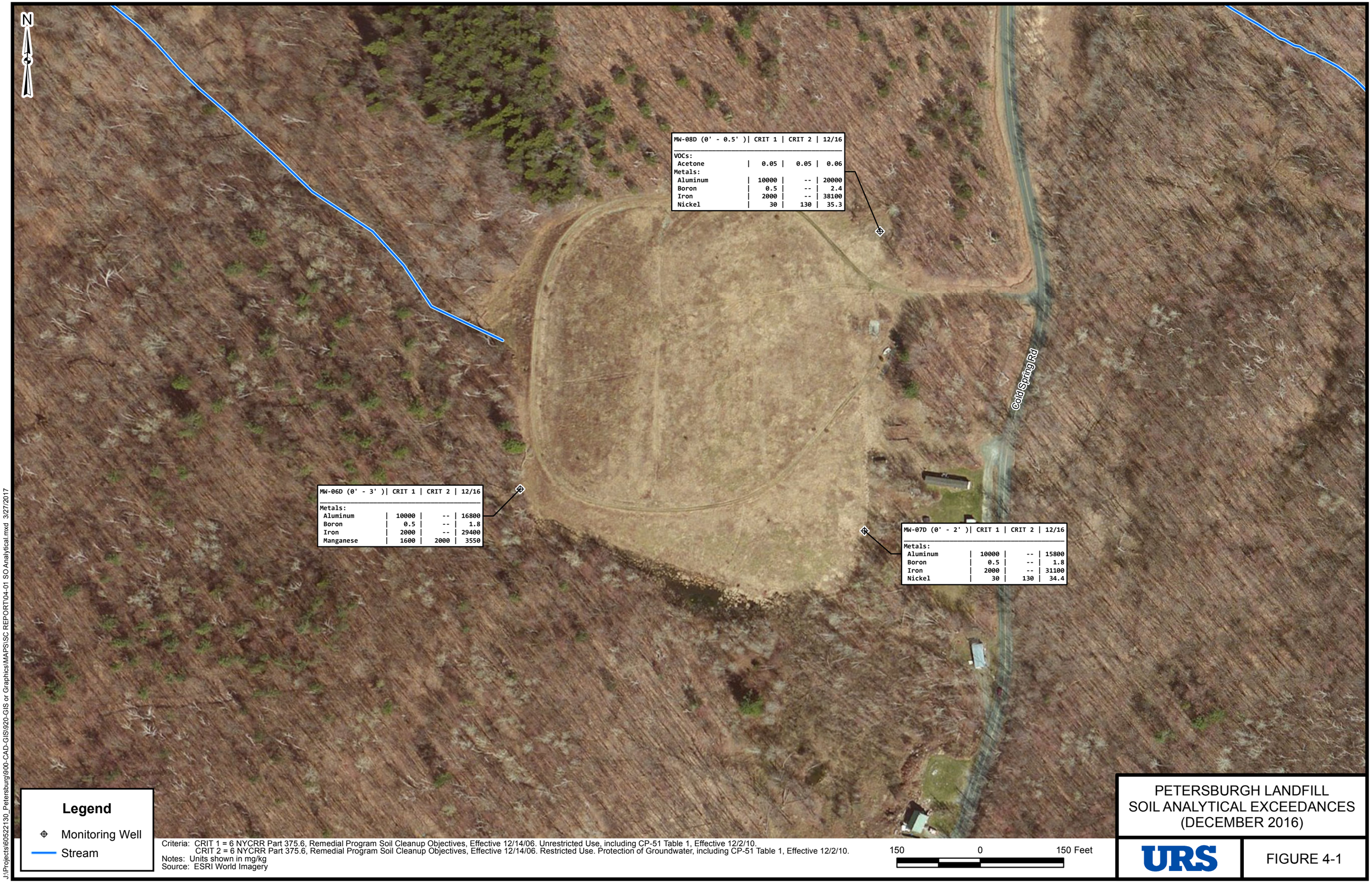
150 0 150 Feet

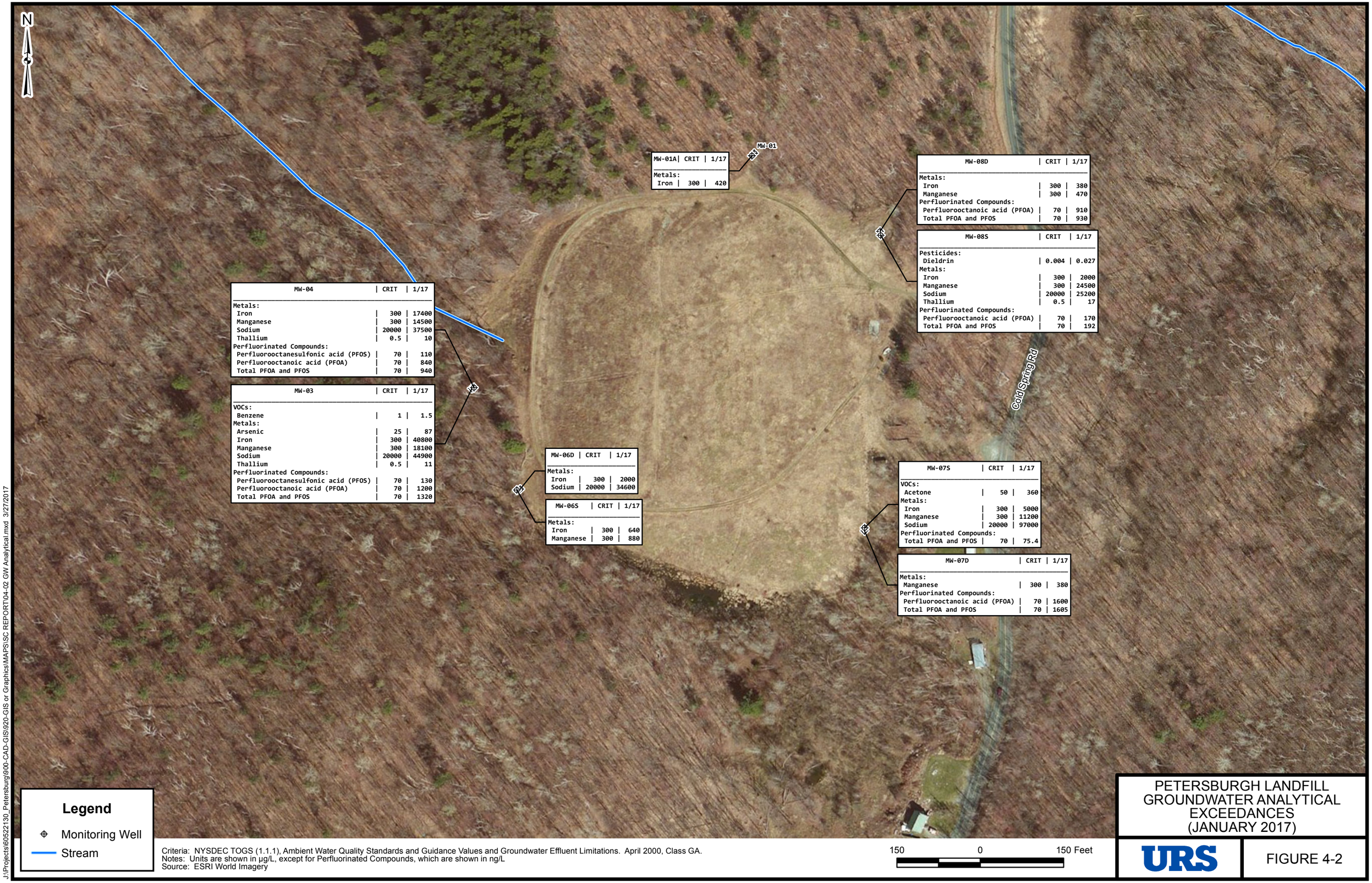
PETERSBURGH LANDFILL
DEEP GROUNDWATER
ELEVATION CONTOURS
(JANUARY 4 & 5, 2017)

URS

FIGURE 3-2

J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\03-02 GW Elevation Contours - Deep - 20170104.mxd 3/27/2017


N
MW-08D (0' - 0.5')| CRIT 1 | CRIT 2 | 12/16
VOCs:
Acetone | 0.05 | 0.05 | 0.06
Metals:
Aluminum | 10000 | -- | 20000
Boron | 0.5 | -- | 2.4
Iron | 2000 | -- | 38100
Nickel | 30 | 130 | 35.3
MW-06D (0' - 3')| CRIT 1 | CRIT 2 | 12/16
Metals:
Aluminum | 10000 | -- | 16800
Boron | 0.5 | -- | 1.8
Iron | 2000 | -- | 29400
Manganese | 1600 | 2000 | 3550
MW-07D (0' - 2')| CRIT 1 | CRIT 2 | 12/16
Metals:
Aluminum | 10000 | -- | 15800
Boron | 0.5 | -- | 1.8
Iron | 2000 | -- | 31100
Nickel | 30 | 130 | 34.4
Cold Spring Rd
Legend
Monitoring Well
Stream
Criteria: CRIT 1 = 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.
CRIT 2 = 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, including CP-51 Table 1, Effective 12/2/10.
Notes: Units shown in mg/kg
Source: ESRI World Imagery
150 0 150 Feet
PETERSBURGH LANDFILL
SOIL ANALYTICAL EXCEEDANCES
(DECEMBER 2016)
URS
FIGURE 4-1
J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\04-01 SO Analytical.mxd 3/27/2017


N
MW-01
MW-01A | CRIT | 1/17
Metals:
Iron | 300 | 420
MW-08D | CRIT | 1/17
Metals:
Iron | 300 | 380
Manganese | 300 | 470
Perfluorinated Compounds:
Perfluorooctanoic acid (PFOA) | 70 | 910
Total PFOA and PFOS | 70 | 930
MW-08S | CRIT | 1/17
Pesticides:
Dieldrin | 0.004 | 0.027
Metals:
Iron | 300 | 2000
Manganese | 300 | 24500
Sodium | 20000 | 25200
Thallium | 0.5 | 17
Perfluorinated Compounds:
Perfluorooctanoic acid (PFOA) | 70 | 170
Total PFOA and PFOS | 70 | 192
MW-04 | CRIT | 1/17
Metals:
Iron | 300 | 17400
Manganese | 300 | 14500
Sodium | 20000 | 37500
Thallium | 0.5 | 10
Perfluorinated Compounds:
Perfluorooctanesulfonic acid (PFOS) | 70 | 110
Perfluorooctanoic acid (PFOA) | 70 | 840
Total PFOA and PFOS | 70 | 940
MW-03 | CRIT | 1/17
VOCs:
Benzene | 1 | 1.5
Metals:
Arsenic | 25 | 87
Iron | 300 | 40800
Manganese | 300 | 18100
Sodium | 20000 | 44900
Thallium | 0.5 | 11
Perfluorinated Compounds:
Perfluorooctanesulfonic acid (PFOS) | 70 | 130
Perfluorooctanoic acid (PFOA) | 70 | 1200
Total PFOA and PFOS | 70 | 1320
MW-06D | CRIT | 1/17
Metals:
Iron | 300 | 2000
Sodium | 20000 | 34600
MW-06S | CRIT | 1/17
Metals:
Iron | 300 | 640
Manganese | 300 | 880
MW-07S | CRIT | 1/17
VOCs:
Acetone | 50 | 360
Metals:
Iron | 300 | 5000
Manganese | 300 | 11200
Sodium | 20000 | 97000
Perfluorinated Compounds:
Total PFOA and PFOS | 70 | 75.4
MW-07D | CRIT | 1/17
Metals:
Manganese | 300 | 380
Perfluorinated Compounds:
Perfluorooctanoic acid (PFOA) | 70 | 1600
Total PFOA and PFOS | 70 | 1605
Cold Spring Rd
Legend
Monitoring Well
Stream
Criteria: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.
Notes: Units are shown in µg/L, except for Perfluorinated Compounds, which are shown in ng/L
Source: ESRI World Imagery
150 0 150 Feet
PETERSBURGH LANDFILL
GROUNDWATER ANALYTICAL
EXCEEDANCES
(JANUARY 2017)
URS
FIGURE 4-2
J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\04-02 GW Analytical.mxd 3/27/2017

N

SW-06	CRIT	12/16	1/17
Perfluorinated Compounds:			
Perfluorooctanoic acid (PFOA)	70	160	130
Total PFOA and PFOS	70	165	134

SW-05	CRIT	12/16	1/17
Metals:			
Manganese	300	2900	NA
Perfluorinated Compounds:			
Perfluorooctanoic acid (PFOA)	70	2000	1600
Total PFOA and PFOS	70	2048	1645

LC-01	CRIT	12/16	1/17
VOCs:			
Benzene	1	1.5	NA
Metals:			
Aluminum	100	5100	NA
Arsenic	50	6900	NA
Barium	1000	15200	NA
Cobalt	5	110	NA
Copper	14.6	35	NA
Iron	300	3590000	NA
Manganese	300	34900	NA
Mercury	0.0007	0.25	NA
Selenium	4.6	73	NA
Vanadium	14	30	NA
Perfluorinated Compounds:			
Perfluorooctanesulfonic acid (PFOS)	70	81	91
Perfluorooctanoic acid (PFOA)	70	4900	5500
Total PFOA and PFOS	70	4981	5591

Cold Spring Rd

SW-04	CRIT	12/16	1/17
Metals:			
Iron	300	490	NA

SW-03	CRIT	12/16	1/17
Metals:			
Iron	300	1100	NA
Manganese	300	2200	NA

SW-02	CRIT	12/16	1/17
Metals:			
Aluminum	100	590	NA
Iron	300	1500	NA
Manganese	300	350	NA

SW-01

Legend

- △ Leachate Seep
- ◑ Surface Water Sample
- Stream

Criteria: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.
Notes: Units are shown in µg/L, except for Perfluorinated Compounds, which are shown in ng/L; NA = Not Analyzed
Source: ESRI World Imagery

150 0 150 Feet

PETERSBURGH LANDFILL
LEACHATE SEEP AND SURFACE WATER ANALYTICAL EXCEEDANCES (DECEMBER 2016 & JANUARY 2017)

URS

FIGURE 4-3

J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\04-03 WS-WL Analytical.mxd 3/29/2017


N
Cold Spring Rd
SED-06 | CRIT 1 | CRIT 2 | 12/16
Metals:
Arsenic | 10 | 33 | 14.4
Nickel | 23 | 49 | 40.1
SED-05 | CRIT 1 | CRIT 2 | 12/16
Metals:
Arsenic | 10 | 33 | 54
Copper | 32 | 150 | 32.2
Nickel | 23 | 49 | 29
SED-04 | CRIT 1 | CRIT 2 | 12/16
Metals:
Nickel | 23 | 49 | 39.6
SED-03 | CRIT 1 | CRIT 2 | 12/16
Metals:
Arsenic | 10 | 33 | 17.2
Copper | 32 | 150 | 81.8
Lead | 36 | 130 | 61
Nickel | 23 | 49 | 50.4
Zinc | 120 | 460 | 147
SED-02 | CRIT 1 | CRIT 2 | 12/16
Metals:
Nickel | 23 | 49 | 31.7
SED-01 | CRIT 1 | CRIT 2 | 12/16
Metals:
Arsenic | 10 | 33 | 26.1
Copper | 32 | 150 | 45.4
Zinc | 120 | 460 | 153
Legend
Sediment Sample
Stream
Criteria: CRIT 1 = NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.
CRIT 2 = NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.
Notes: Units shown in mg/kg
Source: ESRI World Imagery
150 0 150 Feet
PETERSBURGH LANDFILL
SEDIMENT SAMPLE
ANALYTICAL EXCEEDANCES
(DECEMBER 2016)
URS
FIGURE 4-4
J:\Projects\60522130_Petersburg\900-CAD-GIS\920-GIS or Graphics\MAPS\SC REPORT\04-04 SE Analytical.mxd 3/29/2017

TABLES

Table 1-1
NYSDEC Surface Water and Sediment Sample Results - July 21, 2016
Petersburgh, New York

Surface Water Samples (ppt or ng/l)

Sample Location		PLH1	PLH2	PSL1	PSL2	PSL2	PSL3	PSL4	EB1
Sample ID		PLH1	PLH2	PSL1	PSL2	DUP2	PSL3	PSL4	EB1
Date		7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016
Analyte	Criteria[1]								
PERFLUOROBUTANESULFONIC ACID (PFBS)	-	1.81 U	1.84 U	1.86 U	1.79 U	1.78 U	1.75 U	1.86 U	1.70 U
PERFLUOROHEPTAOIC ACID (PFHpA)	-	1.81 U	1.84	1.86 U	1.79 U	1.78 U	1.75 U	2.91	1.70 U
PERFLUOROHEXANESULFONIC ACID (PFHxS)	-	1.81 U	1.84 U	1.86 U	1.79 U	1.78 U	1.75 U	1.86 U	1.70 U
PERFLURONONANOIC ACID (PFNA)	-	1.81 U	1.84 U	1.86 U	1.79 U	1.78 U	1.75 U	1.86 U	1.70 U
PERFLUOROOCTANE SULFONIC ACID (PFOS)	70	1.81 U	1.84 U	1.86 U	1.79 U	1.78 U	1.75 U	3.93	1.70 U
PERFLUOROOCTANOIC ACID (PFOA)	70	47.8	45.9	30.4	16.7	19.4	5.64	73.4	1.70 U

Sediment Samples (ppb or ug/kg)

Sample Location		PSLS1	PSLS2	PSLS2	PSLS3	PSLS4	PSLS5
Sample ID		PSLS1	PSLS2	DUP1	PSLS3	PSLS4	PSLS5
Date		7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016	7/21/2016
Analyte	Criteria[2]						
PERFLUOROBUTANESULFONIC ACID (PFBS)		1.19 U	1.19 U	1.19 U	1.17 U	1.19 U	1.19 U
PERFLUOROHEPTAOIC ACID (PFHpA)		1.19 U	1.19 U	1.19 U	1.17 U	1.19 U	1.19 U
PERFLUOROHEXANESULFONIC ACID (PFHxS)		1.19 U	1.19 U	1.19 U	1.17 U	1.19 U	1.19 U
PERFLURONONANOIC ACID (PFNA)		1.19 U	1.19 U	1.19 U	1.17 U	1.19 U	1.19 U
PERFLUOROOCTANE SULFONIC ACID (PFOS)	140	0.0949 J	0.177 J	0.200 J	1.17 U	0.315 J	0.387 J
PERFLUOROOCTANOIC ACID (PFOA)	140	0.208 J	0.731 J	0.708 J	0.119 J	1.10 J	0.846 J

Notes:
1 - USEPA drinking water health advisory
2 - NYSDEC preliminary residential soil cleanup objective
ppt: parts per tillion
ng/l: nanograms per liter
ppb: parts per billion
ug/kg: micrograms per kilogram
U: not detected at the reporting limit.
J: estimated value.
DUP: Duplicate

TABLE 2-1
ANALYTICAL PARAMETERS
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Parameter	Method Number	No. of Samples	QC Samples					Total # of Samples
			MS	MSD or MD	FD	TB/EB	Source Water/FB	
I. Soils								
TCL VOCs + TICs	8260C	4	1	1	1	1	0	8
TCL SVOCs + TICs	8270D	4	1	1	1	1	0	8
TCL Pesticides & PCBs	8081B/8082A	4	1	1	1	1	0	8
TAL Metals plus Boron	6010C/7471B	4	1	1	1	1	0	8
Cyanide	9012B	4	1	1	1	1	0	8
Perfluorinated Alkyl Acids (PFAA)*	537 Mod	4	1	1	1	1	2	10
II. Groundwaters								
TCL VOCs + TICs	8260C	10	1	1	1	2	0	15
TCL SVOCs + TICs	8270D	10	1	1	1	0	0	13
TCL Pesticides & PCBs	8081B/8082A	10	1	1	1	0	0	13
TAL Metals plus Boron	6010C/7470A	10	1	1	1	0	0	13
Cyanide	9012B	10	1	1	1	0	0	13
Perfluorinated Alkyl Acids (PFAA)*	537 Mod	10	1	1	1	1	1	15
TDS	SM2540C	10	0	1	1	0	0	12
COD	410.4	10	0	1	1	0	0	12
BOD5	SM5210B	10	0	1	1	0	0	12
TOC	9060A	10	0	1	1	0	0	12
Sulfate	300.0	10	1	1	1	0	0	13
Alkalinity	310.2	10	0	1	1	0	0	12
Chloride	300.0	10	1	1	1	0	0	13
Hardness	SM2340C	10	0	0	1	0	0	11
TKN	351.2	10	1	1	1	0	0	13
Ammonia	350.1	10	0	1	1	0	0	12
Nitrate	353.2	10	1	1	1	0	0	13
Phenols	420.1	10	1	1	1	0	0	13
Bromide	300.0	10	1	1	1	0	0	13
Color	SM2120B	10	0	0	1	0	0	11
Hexavalent Chromium	SM3500CRB	10	1	1	1	0	0	13
III. Surface Water								
TCL VOCs + TICs	8260C	6	1	1	1	2	0	11
TCL SVOCs + TICs	8270D	6	1	1	1	0	0	9
TCL Pesticides & PCBs	8081B/8082A	6	1	1	1	0	0	9
TAL Metals plus Boron	6010C/7470A	6	1	1	1	0	0	9
Cyanide	9012B	6	1	1	1	0	0	9
Perfluorinated Alkyl Acids (PFAA)*	537 Mod	6	1	1	1	1	1	11
TDS	SM2540C	6	0	1	1	0	0	8
COD	410.4	6	0	1	1	0	0	8
BOD5	SM5210B	6	0	1	1	0	0	8
TOC	9060A	6	0	1	1	0	0	8
Sulfate	300.0	6	1	1	1	0	0	9
Alkalinity	310.2	6	0	1	1	0	0	8
Chloride	300.0	6	1	1	1	0	0	9
Hardness	SM2340C	6	0	0	1	0	0	7
TKN	351.2	6	0	1	1	0	0	8
Ammonia	350.1	6	0	1	1	0	0	8
Nitrate	353.2	6	1	1	1	0	0	9
Phenols	420.1	6	1	1	1	0	0	9
Bromide	300.0	6	1	1	1	0	0	9
Color	SM2120B	6	0	0	1	0	0	7
Hexavalent Chromium	SM3500CRB	6	1	1	1	0	0	9

TABLE 2-1
ANALYTICAL PARAMETERS
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Parameter	Method Number	No. of Samples	QC Samples					Total # of Samples
			MS	MSD or MD	FD	TB/EB	Source Water/FB	
IV. Sediment								
TCL VOCs + TICs	8260C	6	1	1	1	0	0	9
TCL SVOCs + TICs	8270D	6	1	1	1	0	0	9
TCL Pesticides & PCBs	8081B/8082A	6	1	1	1	0	0	9
TAL Metals plus Boron	6010C/7471B	6	1	1	1	0	0	9
Cyanide	9012B	6	1	1	1	0	0	9
Perfluorinated Alkyl Acids (PFAA)*	537 Mod	6	1	1	1	1	1	11
TOC	Lloyd Kahn	6	0	1	1	0	0	8
Sulfate	9056A	6	1	1	1	0	0	9
Chloride	9056A	6	1	1	1	0	0	9
TKN	351.2	6	0	1	1	0	0	8
Ammonia	350.1	6	0	1	1	0	0	8
Nitrate	9056A	6	1	1	1	0	0	9
Phenols	9065	6	1	1	1	0	0	9
Bromide	9056A	6	1	1	1	0	0	9
Hexavalent Chromium	7196A	6	1	1	1	0	0	9
V. Disposal Samples - 1 week turn-around time premium								
Perfluorinated Alkyl Acids (PFAA)	537 Mod	1	0	0	0	0	0	1
RCRA Characteristics	1030/9045C/SW846 CH.7 Sec 7.3	1	0	0	0	0	0	1
Full TCLP Analysis	1311/8260C/8270D/8081B/8151A/6010C/7470A	1	0	0	0	0	0	1

NOTES:

EB - Equipment Blank
FB - Field Blank
FD - Field Duplicate
MD - Matrix Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
PCBs - Polychlorinated Biphenyls
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
TB - Trip Blank
TCL - Target Compound List
TICs - Tentatively Identified Compounds
TOC - Total Organic Carbon
VOCs - Volatile Organic Compounds

*PFAA - Perfluorinated Alkyl Acids: (Perfluorobutanesulfonic acid (PFBS), Perfluorodecanoic acid (PFDA), Perfluorododecanoic acid (PFDoA), Perfluoroheptanoic acid (PFHpA), Perfluorononanoic acid (PFNA), Perfluoroundecanoic acid (PFUnA), Perfluorotridecanoic acid (PFTriA), Perfluorotetradecanoic acid (PFTeA), Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorohexanesulfonic (PFHxS), Perfluorohexanoic acid (PFHxA), Perfluorohexanesulfonic acid (PFHxS), and Perfluoroheptanoic acid (PFHpA)

TABLE 2-2
MONITORING WELL CONSTRUCTION SUMMARY
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Well ID	Date Installed	Groundwater Zone	Top of Rock (ft bgs)	Well Depth (installed) (ft bsg)	Boring Depth (ft bgs)	Screen Length (feet)	Screen Interval (ft bgs)	Well Diameter (inches)	PVC Stickup Height (ft ags)	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser) Elev. (ft)
MW-1	6/22/1990	Deep	3.5	62.5	63.4	30	32.5-62.5	2	2.5	1420354.24	807792.36	1342.68	1344.98	1345.15
MW-1A	6/1/1990	Shallow	3.5	25	28	10	15-25	2	2.3	1420349.73	807788.34	1342.67	1344.89	1345.02
MW-3	5/25/1990	Shallow	14	29	154*	10	19-29	2	2.1	1419930.76	807284.48	1263.76	1265.96	1265.83
MW-4	6/22/1990	Shallow	14	15	15.5	10	5-15	2	2.3	1419932.46	807288.04	1263.69	1266.41	1266.03
MW-6D	12/20/2016	Deep	34.5	80	80.4	10	70-80	2	1.7	1419749.89	807371.38	1293.75	1295.64	1295.44
MW-6S	5/14/1991	Shallow	38	55	56	15	40-55	2	1.5	1419747.99	807365.38	1293.40	1294.93	1294.85
MW-7D	12/23/2016	Deep	16	72	72.1	10	62-72	2	2.1	1419674.62	807990.79	1319.80	1322.10	1321.91
MW-7S	12/23/2016	Shallow	16	32	32	10	22-32	2	2.3	1419680.19	807991.31	1319.94	1322.51	1322.26
MW-8D	12/14/2016	Deep	4.5	60	60	10	50-60	2	2.0	1420213.41	808018.92	1326.08	1328.38	1328.12
MW-8S	12/15/2016	Shallow	4.5	20	20	10	10-20	2	2.1	1420206.44	808020.14	1326.24	1328.58	1328.38

Notes:
ft btgs - feet below ground surface
ft ags - feet above ground surface
*MW-3: Grouted cored interval 30-154' bgs.
MW-1A also known as MW-1S; MW-6S formerly known as MW-6.
MW-1, MW-1A, MW-3, MW-4, and MW-6S data from the Berlin/Petersburg Landfill Final Closure Report (Sith & Mahoney, P.C., July 1991) and January 2017 survey data.

TABLE 3-1
GROUNDWATER LEVEL MEASUREMENTS
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID	Reference Elev. (ft)	Date	Depth to Water (ft)	Water Elev. (ft)
MW-01	1345.15	1/4/2017	23.97	1321.18
MW-01A	1345.02	1/4/2017	16.08	1328.94
MW-03	1265.83	1/5/2017	12.39	1253.44
MW-04	1266.03	1/5/2017	11.81	1254.22
MW-06D	1295.44	1/5/2017	3.69	1291.75
MW-06S	1294.85	1/5/2017	2.37	1292.48
MW-07D	1321.91	1/5/2017	20.89	1301.02
MW-07S	1322.26	1/4/2017	16.39	1305.87
MW-08D	1328.12	1/4/2017	19.61	1308.51
MW-08S	1328.38	1/4/2017	17.19	1311.19

TABLE 4-1
SUMMARY OF DETECTED COMPOUNDS IN SOIL SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				MW-06D	MW-07D	MW-07D	MW-08D
Sample ID				MW-6-0-3	MW-7-0-2-20161202	MW-DUP-20161202	MW-8-0-6
Matrix				Soil	Soil	Soil	Soil
Depth Interval (ft)				0.0-3.0	0.0-2.0	0.0-2.0	0.0-0.5
Date Sampled				12/07/16	12/02/16	12/02/16	12/01/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			Field Duplicate (1-1)	
Volatile Organic Compounds							
Acetone	MG/KG	0.05	0.05				0.060 J
Semivolatile Organic Compounds							
Benzo(a)anthracene	MG/KG	1	1	0.079 J			
Benzo(b)fluoranthene	MG/KG	1	1.7	0.053 J			
Benzo(g,h,i)perylene	MG/KG	100	1000	0.035 J			
Benzo(k)fluoranthene	MG/KG	0.8	1.7	0.028 J			
Chrysene	MG/KG	1	1	0.089 J			
Fluoranthene	MG/KG	100	1000	0.15 J			
Indeno(1,2,3-cd)pyrene	MG/KG	0.5	8.2	0.029 J			
Phenanthrene	MG/KG	100	1000	0.13 J			
Pyrene	MG/KG	100	1000	0.14 J			
Pesticide Organic Compounds							
4,4'-DDD	MG/KG	0.0033	14			0.00061 J	
4,4'-DDE	MG/KG	0.0033	17				0.0011 J
4,4'-DDT	MG/KG	0.0033	136		0.00089 J		
delta-BHC	MG/KG	0.04	0.25		0.00089 J	0.00065 J	0.00065 J
Dieldrin	MG/KG	0.005	0.1				0.00080 J
Metals							
Aluminum	MG/KG	10000	-	16,800	15,400	15,800	20,000
Arsenic	MG/KG	13	16	8.0	5.3	5.7	5.7

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, including CP-51 Table 1, Effective 12/2/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4-1
SUMMARY OF DETECTED COMPOUNDS IN SOIL SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				MW-06D	MW-07D	MW-07D	MW-08D
Sample ID				MW-6-0-3	MW-7-0-2-20161202	MW-DUP-20161202	MW-8-0-6
Matrix				Soil	Soil	Soil	Soil
Depth Interval (ft)				0.0-3.0	0.0-2.0	0.0-2.0	0.0-0.5
Date Sampled				12/07/16	12/02/16	12/02/16	12/01/16
Parameter	Units	Criteria (1)	Criteria (2)			Field Duplicate (1-1)	
Metals							
Barium	MG/KG	350	820	114	53.3	74.3	61.9 J
Beryllium	MG/KG	7.2	47	0.43	0.41	0.57	0.45
Boron	MG/KG	0.5	-	1.8 J	1.4 J	1.8 J	2.4 J
Cadmium	MG/KG	2.5	7.5	0.29	0.080 J	0.11 J	0.13 J
Calcium	MG/KG	10000	-	2,780	1,200	1,490	1,950
Chromium	MG/KG	30	NS	18.0	15.3	16.1	29.0 J
Cobalt	MG/KG	20	-	18.8	15.3	13.5	18.5
Copper	MG/KG	50	1720	22.6	23.3	29.8	23.3
Iron	MG/KG	2000	-	29,400	29,300	31,100	38,100
Lead	MG/KG	63	450	22.2	13.6	15.0	17.0
Magnesium	MG/KG	-	-	5,120	5,780	6,440	7,120 J
Manganese	MG/KG	1600	2000	3,550	680	696	977 J
Mercury	MG/KG	0.18	0.73	0.038	0.014 J	0.012 J	0.028
Nickel	MG/KG	30	130	27.5	34.4	29.6	35.3
Potassium	MG/KG	-	-	1,360	1,230	1,770	1,610
Selenium	MG/KG	3.9	4				0.81 J
Sodium	MG/KG	-	-	68.4 J	64.7 J	56.2 J	72.8 J
Vanadium	MG/KG	39	-	17.0	14.0	15.9	18.1
Zinc	MG/KG	109	2480	82.6	84.8	75.9	103 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, including CP-51 Table 1, Effective 12/2/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4-1
SUMMARY OF DETECTED COMPOUNDS IN SOIL SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				MW-06D	MW-07D	MW-07D	MW-08D
Sample ID				MW-6-0-3	MW-7-0-2-20161202	MW-DUP-20161202	MW-8-0-6
Matrix				Soil	Soil	Soil	Soil
Depth Interval (ft)				0.0-3.0	0.0-2.0	0.0-2.0	0.0-0.5
Date Sampled				12/07/16	12/02/16	12/02/16	12/01/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			Field Duplicate (1-1)	
Perfluorinated Compounds							
Perfluorodecanoic acid (PFDA)	UG/KG	-	-			0.090 J	0.37 J
Perfluorododecanoic acid (PFDoA)	UG/KG	-	-				0.16 J
Perfluorononanoic acid (PFNA)	UG/KG	-	-	0.11 J			0.10 J
Perfluorooctanesulfonic acid (PFOS)	UG/KG	140	-	2.2		0.48	9.5
Perfluorooctanoic acid (PFOA)	UG/KG	140	-	0.42			0.61
Perfluorotetradecanoic acid (PFTA)	UG/KG	-	-				0.19 J
Perfluoroundecanoic acid (PFUnA)	UG/KG	-	-				0.18 J
Total PFOA and PFOS	UG/KG	140	-	2.62		0.48	10.1

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, including CP-51 Table 1, Effective 12/2/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-01	MW-01	MW-01A	MW-01A	MW-03
Sample ID			MW-1-010417	MW-1-010417	MW-1A-010417	MW-1A-010417	MW-3-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)			(2-1)	
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5	NA			NA	
Acetone	UG/L	50	NA			NA	
Benzene	UG/L	1	NA			NA	1.5
Carbon disulfide	UG/L	60	NA			NA	
Chlorobenzene	UG/L	5	NA			NA	4.4
Chloroethane	UG/L	5	NA			NA	0.74 J
Semivolatile Organic Compounds							
Dimethylphthalate	UG/L	50	NA			NA	0.62 J
Pesticide Organic Compounds							
4,4'-DDD	UG/L	0.3	NA			NA	
alpha-BHC	UG/L	0.01	NA			NA	
Dieldrin	UG/L	0.004	NA			NA	
Metals							
Aluminum	UG/L	-	NA	170 J	270	NA	310
Arsenic	UG/L	25	NA			NA	87
Barium	UG/L	1000	NA	76	44	NA	430
Boron	UG/L	1000	NA	5.5 J	5.2 J	NA	250
Calcium	UG/L	-	NA	36,100	20,200	NA	92,500
Chromium	UG/L	50	NA			NA	2.6 J
Cobalt	UG/L	-	NA			NA	45
Copper	UG/L	200	NA			NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-01	MW-01	MW-01A	MW-01A	MW-03
Sample ID			MW-1-010417	MW-1-010417	MW-1A-010417	MW-1A-010417	MW-3-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)			(2-1)	
Metals							
Iron	UG/L	300	NA	250	420	NA	40,800
Lead	UG/L	25	NA			NA	4.2 J
Magnesium	UG/L	35000	NA	7,400	3,900	NA	25,600
Manganese	UG/L	300	NA	42	15	NA	18,100
Nickel	UG/L	100	NA			NA	10
Potassium	UG/L	-	NA	750	480 J	NA	15,900
Silver	UG/L	50	NA			NA	
Sodium	UG/L	20000	NA	5,500	2,100	NA	44,900
Thallium	UG/L	0.5	NA			NA	11 J
Vanadium	UG/L	-	NA			NA	
Zinc	UG/L	2000	NA			NA	
Miscellaneous Parameters							
Alkalinity	MG/L	-	NA	117	57.3	NA	444
Ammonia (as N)	MG/L	-	NA			NA	18.2
Biochemical Oxygen Demand (BOD)	MG/L	-	NA			NA	8 J
Bromide	MG/L	2	NA		0.16 J	NA	0.4 J
Chemical Oxygen Demand (COD)	MG/L	-	NA			NA	26.1
Chloride	MG/L	2.50E+05	NA	1	1.7	NA	58.3
Color	COLOR UNIT	15	NA	5.00	5.00	NA	5.00
Cyanide	MG/L	0.2	NA			NA	0.0067 J
Hardness (as CaCO3)	MG/L	-	NA	140	68	NA	530

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-01	MW-01	MW-01A	MW-01A	MW-03
Sample ID			MW-1-010417	MW-1-010417	MW-1A-010417	MW-1A-010417	MW-3-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)			(2-1)	
Miscellaneous Parameters							
Nitrate-Nitrogen	MG/L	10	NA		0.045 J	NA	
Phenolics, Total Recoverable	MG/L	1	NA			NA	0.0085 J
Sulfate (as SO4)	MG/L	250	NA	22	5.6	NA	1.7 J
Total Dissolved Solids	MG/L	-	NA	156	71	NA	582
Total Kjeldahl Nitrogen	MG/L	-	NA			NA	16.8
Total Organic Carbon (TOC)	MG/L	-	NA	0.46 J	0.64 J	NA	9.1
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-					2.2
Perfluorodecanoic acid (PFDA)	NG/L	-		NA	NA	0.49 J	NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-					44
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-					16
Perfluorohexanoic acid (PFHxA)	NG/L	-		NA	NA		NA
Perfluorononanoic acid (PFNA)	NG/L	-					2.1
Perfluorooctanesulfonic acid (PFOS)	NG/L	70					120
Perfluorooctanoic acid (PFOA)	NG/L	70			2.1	2.4	1,200
Perfluoroundecanoic acid (PFUnA)	NG/L	-		NA	NA		NA
Total PFOA and PFOS	NG/L	70			2.1	2.4	1,320

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-03	MW-04	MW-04	MW-06D	MW-06D
Sample ID			MW-3-010517	MW-4-010517	MW-4-010517	DUP-010517	DUP-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)		(2-1)	Field Duplicate (2-1)	Field Duplicate (1-1)
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5	NA		NA	NA	
Acetone	UG/L	50	NA		NA	NA	
Benzene	UG/L	1	NA	0.97 J	NA	NA	
Carbon disulfide	UG/L	60	NA		NA	NA	
Chlorobenzene	UG/L	5	NA	3.2	NA	NA	
Chloroethane	UG/L	5	NA		NA	NA	
Semivolatile Organic Compounds							
Dimethylphthalate	UG/L	50	NA		NA	NA	
Pesticide Organic Compounds							
4,4'-DDD	UG/L	0.3	NA		NA	NA	
alpha-BHC	UG/L	0.01	NA		NA	NA	
Dieldrin	UG/L	0.004	NA		NA	NA	
Metals							
Aluminum	UG/L	-	NA		NA	NA	1,700
Arsenic	UG/L	25	NA	21	NA	NA	9.5 J
Barium	UG/L	1000	NA	310	NA	NA	110
Boron	UG/L	1000	NA	200	NA	NA	24
Calcium	UG/L	-	NA	78,700	NA	NA	46,200
Chromium	UG/L	50	NA	1.3 J	NA	NA	1.6 J
Cobalt	UG/L	-	NA	32	NA	NA	
Copper	UG/L	200	NA		NA	NA	2 J

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-03	MW-04	MW-04	MW-06D	MW-06D
Sample ID			MW-3-010517	MW-4-010517	MW-4-010517	DUP-010517	DUP-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/05/17
Parameter	Units	Criteria*	(2-1)		(2-1)	Field Duplicate (2-1)	Field Duplicate (1-1)
Metals							
Iron	UG/L	300	NA	17,400	NA	NA	2,000
Lead	UG/L	25	NA	3.3 J	NA	NA	
Magnesium	UG/L	35000	NA	21,800	NA	NA	2,800
Manganese	UG/L	300	NA	14,500	NA	NA	44
Nickel	UG/L	100	NA	8 J	NA	NA	1.5 J
Potassium	UG/L	-	NA	11,900	NA	NA	15,100
Silver	UG/L	50	NA		NA	NA	
Sodium	UG/L	20000	NA	37,500	NA	NA	30,700
Thallium	UG/L	0.5	NA	10 J	NA	NA	
Vanadium	UG/L	-	NA		NA	NA	4.2 J
Zinc	UG/L	2000	NA		NA	NA	
Miscellaneous Parameters							
Alkalinity	MG/L	-	NA	373	NA	NA	87.8
Ammonia (as N)	MG/L	-	NA	12.4 J	NA	NA	0.34
Biochemical Oxygen Demand (BOD)	MG/L	-	NA	4.5 J	NA	NA	16.8 J
Bromide	MG/L	2	NA	0.38 J	NA	NA	
Chemical Oxygen Demand (COD)	MG/L	-	NA	18.3	NA	NA	12.1
Chloride	MG/L	2.50E+05	NA	50.4	NA	NA	2.3
Color	COLOR UNIT	15	NA		NA	NA	
Cyanide	MG/L	0.2	NA	0.0074 J	NA	NA	
Hardness (as CaCO3)	MG/L	-	NA	332	NA	NA	160

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-03	MW-04	MW-04	MW-06D	MW-06D
Sample ID			MW-3-010517	MW-4-010517	MW-4-010517	DUP-010517	DUP-010517
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)		(2-1)	Field Duplicate (2-1)	Field Duplicate (1-1)
Miscellaneous Parameters							
Nitrate-Nitrogen	MG/L	10	NA	0.045 J	NA	NA	
Phenolics, Total Recoverable	MG/L	1	NA	0.012	NA	NA	0.0056 J
Sulfate (as SO4)	MG/L	250	NA	2.3 J	NA	NA	10.6
Total Dissolved Solids	MG/L	-	NA	499	NA	NA	139
Total Kjeldahl Nitrogen	MG/L	-	NA	10.5	NA	NA	0.35 J
Total Organic Carbon (TOC)	MG/L	-	NA	6.4	NA	NA	8.9 J
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-	2.2	2.8	2.4		
Perfluorodecanoic acid (PFDA)	NG/L	-	1.1 J	NA	0.96 J		NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-	36	32	28		
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-	15	14	14		
Perfluorohexanoic acid (PFHxA)	NG/L	-	47	NA	33		NA
Perfluorononanoic acid (PFNA)	NG/L	-	2.1 J	1.8 J	1.9 J		
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	130	100	110		
Perfluorooctanoic acid (PFOA)	NG/L	70	1,100	840	810		
Perfluoroundecanoic acid (PFUnA)	NG/L	-		NA			NA
Total PFOA and PFOS	NG/L	70	1,230	940	920		

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-06D	MW-06D	MW-06S	MW-06S	MW-07D
Sample ID			MW-6D-010517	MW-6D-010517	MW-6S-010517	MW-6S-010517	MW-7D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/04/17
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5		NA		NA	
Acetone	UG/L	50	3.1 J	NA		NA	5.3 J
Benzene	UG/L	1		NA		NA	
Carbon disulfide	UG/L	60		NA		NA	
Chlorobenzene	UG/L	5		NA		NA	
Chloroethane	UG/L	5		NA		NA	
Semivolatile Organic Compounds							
Dimethylphthalate	UG/L	50		NA		NA	
Pesticide Organic Compounds							
4,4'-DDD	UG/L	0.3		NA		NA	
alpha-BHC	UG/L	0.01		NA		NA	
Dieldrin	UG/L	0.004		NA		NA	
Metals							
Aluminum	UG/L	-	1,300 J	NA	750	NA	280
Arsenic	UG/L	25	9.5 J	NA		NA	
Barium	UG/L	1000	120	NA	39	NA	160
Boron	UG/L	1000	25	NA	7.1 J	NA	37
Calcium	UG/L	-	50,900	NA	25,200	NA	33,800
Chromium	UG/L	50	1.5 J	NA		NA	
Cobalt	UG/L	-		NA		NA	
Copper	UG/L	200		NA	2 J	NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-06D	MW-06D	MW-06S	MW-06S	MW-07D
Sample ID			MW-6D-010517	MW-6D-010517	MW-6S-010517	MW-6S-010517	MW-7D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/04/17
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Metals							
Iron	UG/L	300	1,400	NA	640	NA	280
Lead	UG/L	25		NA		NA	
Magnesium	UG/L	35000	2,000 J	NA	3,700	NA	8,300
Manganese	UG/L	300	31	NA	880	NA	380 J
Nickel	UG/L	100	1.4 J	NA	1.6 J	NA	
Potassium	UG/L	-	17,200	NA	1,200	NA	3,800
Silver	UG/L	50		NA		NA	
Sodium	UG/L	20000	34,600	NA	8,700	NA	13,400
Thallium	UG/L	0.5		NA		NA	
Vanadium	UG/L	-	4.4 J	NA		NA	
Zinc	UG/L	2000		NA		NA	
Miscellaneous Parameters							
Alkalinity	MG/L	-	86	NA	86.8	NA	75.6
Ammonia (as N)	MG/L	-	0.46	NA		NA	0.26
Biochemical Oxygen Demand (BOD)	MG/L	-	10.5 J	NA	6.9 J	NA	
Bromide	MG/L	2		NA		NA	0.11 J
Chemical Oxygen Demand (COD)	MG/L	-	27.4 J	NA	8.5 J	NA	43.5
Chloride	MG/L	2.50E+05	2.4	NA	3.3	NA	24.8
Color	COLOR UNIT	15		NA	10.0	NA	5.00
Cyanide	MG/L	0.2		NA		NA	
Hardness (as CaCO3)	MG/L	-	140	NA	84	NA	92

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-06D	MW-06D	MW-06S	MW-06S	MW-07D
Sample ID			MW-6D-010517	MW-6D-010517	MW-6S-010517	MW-6S-010517	MW-7D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/05/17	01/05/17	01/05/17	01/05/17	01/04/17
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Miscellaneous Parameters							
Nitrate-Nitrogen	MG/L	10		NA		NA	
Phenolics, Total Recoverable	MG/L	1	0.012 J	NA	0.0065 J	NA	0.019 J
Sulfate (as SO4)	MG/L	250	10.8	NA	12.5	NA	10.5
Total Dissolved Solids	MG/L	-	117	NA	166	NA	122
Total Kjeldahl Nitrogen	MG/L	-	0.48 J	NA		NA	0.25 J
Total Organic Carbon (TOC)	MG/L	-	6.5 J	NA	2.5	NA	5.5
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-					1.2 J
Perfluorodecanoic acid (PFDA)	NG/L	-	NA		NA		NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-					20
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-					2.3
Perfluorohexanoic acid (PFHxA)	NG/L	-	NA		NA		NA
Perfluorononanoic acid (PFNA)	NG/L	-					
Perfluorooctanesulfonic acid (PFOS)	NG/L	70					4.5
Perfluorooctanoic acid (PFOA)	NG/L	70					1,600
Perfluoroundecanoic acid (PFUnA)	NG/L	-	NA		NA		NA
Total PFOA and PFOS	NG/L	70					1,605

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-07D	MW-07S	MW-07S	MW-08D	MW-08D
Sample ID			MW-7D-010417	MW-7S-010417	MW-7S-010417	MW-8D-010417	MW-8D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/04/17
Parameter	**Units**	**Criteria***	(2-1)		(2-1)		(2-1)
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5	NA		NA	0.41 J	NA
Acetone	UG/L	50	NA	360	NA		NA
Benzene	UG/L	1	NA		NA		NA
Carbon disulfide	UG/L	60	NA		NA	0.19 J	NA
Chlorobenzene	UG/L	5	NA		NA		NA
Chloroethane	UG/L	5	NA		NA		NA
Semivolatile Organic Compounds							
Dimethylphthalate	UG/L	50	NA		NA		NA
Pesticide Organic Compounds							
4,4'-DDD	UG/L	0.3	NA		NA		NA
alpha-BHC	UG/L	0.01	NA		NA		NA
Dieldrin	UG/L	0.004	NA		NA		NA
Metals							
Aluminum	UG/L	-	NA	2,400	NA	340	NA
Arsenic	UG/L	25	NA		NA		NA
Barium	UG/L	1000	NA	260	NA	220	NA
Boron	UG/L	1000	NA	31	NA	15 J	NA
Calcium	UG/L	-	NA	29,300	NA	74,000	NA
Chromium	UG/L	50	NA	2.5 J	NA		NA
Cobalt	UG/L	-	NA	3.6 J	NA		NA
Copper	UG/L	200	NA	4 J	NA		NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-07D	MW-07S	MW-07S	MW-08D	MW-08D
Sample ID			MW-7D-010417	MW-7S-010417	MW-7S-010417	MW-8D-010417	MW-8D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/04/17
Parameter	**Units**	**Criteria***	(2-1)		(2-1)		(2-1)
Metals							
Iron	UG/L	300	NA	5,000	NA	380	NA
Lead	UG/L	25	NA	3.3 J	NA		NA
Magnesium	UG/L	35000	NA	12,200	NA	14,000	NA
Manganese	UG/L	300	NA	11,200	NA	470	NA
Nickel	UG/L	100	NA	8.3 J	NA		NA
Potassium	UG/L	-	NA	1,900	NA	1,500	NA
Silver	UG/L	50	NA		NA		NA
Sodium	UG/L	20000	NA	97,000	NA	11,800	NA
Thallium	UG/L	0.5	NA		NA		NA
Vanadium	UG/L	-	NA	1.8 J	NA		NA
Zinc	UG/L	2000	NA	15	NA		NA
Miscellaneous Parameters							
Alkalinity	MG/L	-	NA	98	NA	244	NA
Ammonia (as N)	MG/L	-	NA	0.039	NA		NA
Biochemical Oxygen Demand (BOD)	MG/L	-	NA	50.6	NA	6.9	NA
Bromide	MG/L	2	NA		NA		NA
Chemical Oxygen Demand (COD)	MG/L	-	NA	79.1	NA	6 J	NA
Chloride	MG/L	2.50E+05	NA	77	NA	9.4 UJ	NA
Color	COLOR UNIT	15	NA	5.00	NA	5.00	NA
Cyanide	MG/L	0.2	NA	0.0086 J	NA		NA
Hardness (as CaCO3)	MG/L	-	NA	172	NA	232	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-07D	MW-07S	MW-07S	MW-08D	MW-08D
Sample ID			MW-7D-010417	MW-7S-010417	MW-7S-010417	MW-8D-010417	MW-8D-010417
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/04/17	01/04/17	01/04/17	01/04/17	01/04/17
Parameter	**Units**	**Criteria***	(2-1)		(2-1)		(2-1)
Miscellaneous Parameters							
Nitrate-Nitrogen	MG/L	10	NA	0.31	NA		NA
Phenolics, Total Recoverable	MG/L	1	NA		NA	0.0059 J	NA
Sulfate (as SO4)	MG/L	250	NA	16.6	NA	15.3	NA
Total Dissolved Solids	MG/L	-	NA	291	NA	359	NA
Total Kjeldahl Nitrogen	MG/L	-	NA		NA		NA
Total Organic Carbon (TOC)	MG/L	-	NA	18.9	NA	3.2	NA
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-					0.92 J
Perfluorodecanoic acid (PFDA)	NG/L	-		NA	0.87 J	NA	0.68 J
Perfluoroheptanoic acid (PFHpA)	NG/L	-	21	2.8	2.8	20	20
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-	2.4	1.7 J	1.8	4.1	4.5
Perfluorohexanoic acid (PFHxA)	NG/L	-	40	NA	4.1	NA	23
Perfluorononanoic acid (PFNA)	NG/L	-			0.70 J	2.8	6.8
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	5.2	7.4	8.4	20	24
Perfluorooctanoic acid (PFOA)	NG/L	70	1,600	64	67	910	890
Perfluoroundecanoic acid (PFUnA)	NG/L	-		NA		NA	0.94 J
Total PFOA and PFOS	NG/L	70	1,605	71.4	75.4	930	914

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-08S	MW-08S
Sample ID			MW-8S-010517	MW-8S-010517
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			01/05/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)	
Volatile Organic Compounds				
1,1-Dichloroethane	UG/L	5	NA	
Acetone	UG/L	50	NA	4.9 J
Benzene	UG/L	1	NA	
Carbon disulfide	UG/L	60	NA	
Chlorobenzene	UG/L	5	NA	
Chloroethane	UG/L	5	NA	
Semivolatile Organic Compounds				
Dimethylphthalate	UG/L	50	NA	
Pesticide Organic Compounds				
4,4'-DDD	UG/L	0.3	NA	0.014 J
alpha-BHC	UG/L	0.01	NA	0.0099 J
Dieldrin	UG/L	0.004	NA	0.027 J
Metals				
Aluminum	UG/L	-	NA	1,300
Arsenic	UG/L	25	NA	6 J
Barium	UG/L	1000	NA	810
Boron	UG/L	1000	NA	27
Calcium	UG/L	-	NA	85,500
Chromium	UG/L	50	NA	3.6 J
Cobalt	UG/L	-	NA	130
Copper	UG/L	200	NA	6.9 J

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-08S	MW-08S
Sample ID			MW-8S-010517	MW-8S-010517
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			01/05/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)	
Metals				
Iron	UG/L	300	NA	2,000
Lead	UG/L	25	NA	4.2 J
Magnesium	UG/L	35000	NA	16,700
Manganese	UG/L	300	NA	24,500
Nickel	UG/L	100	NA	11
Potassium	UG/L	-	NA	2,800
Silver	UG/L	50	NA	1.7 J
Sodium	UG/L	20000	NA	25,200
Thallium	UG/L	0.5	NA	17 J
Vanadium	UG/L	-	NA	1.7 J
Zinc	UG/L	2000	NA	
Miscellaneous Parameters				
Alkalinity	MG/L	-	NA	361
Ammonia (as N)	MG/L	-	NA	0.78
Biochemical Oxygen Demand (BOD)	MG/L	-	NA	8.2 J
Bromide	MG/L	2	NA	0.082 J
Chemical Oxygen Demand (COD)	MG/L	-	NA	17
Chloride	MG/L	2.50E+05	NA	11.4
Color	COLOR UNIT	15	NA	10.0
Cyanide	MG/L	0.2	NA	
Hardness (as CaCO3)	MG/L	-	NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-2
SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			MW-08S	MW-08S
Sample ID			MW-8S-010517	MW-8S-010517
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			01/05/17	01/05/17
Parameter	**Units**	**Criteria***	(2-1)	
Miscellaneous Parameters				
Nitrate-Nitrogen	MG/L	10	NA	
Phenolics, Total Recoverable	MG/L	1	NA	0.006 J
Sulfate (as SO4)	MG/L	250	NA	16.4
Total Dissolved Solids	MG/L	-	NA	432
Total Kjeldahl Nitrogen	MG/L	-	NA	1
Total Organic Carbon (TOC)	MG/L	-	NA	6.3
Perfluorinated Alkyl Acids				
Perfluorobutanesulfonic acid (PFBS)	NG/L	-	1.3 J	
Perfluorodecanoic acid (PFDA)	NG/L	-		NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-	17	18
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-	5.7	5.7
Perfluorohexanoic acid (PFHxA)	NG/L	-	22	NA
Perfluorononanoic acid (PFNA)	NG/L	-	2.1	1.8 J
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	22	20
Perfluorooctanoic acid (PFOA)	NG/L	70	170	170
Perfluoroundecanoic acid (PFUnA)	NG/L	-		NA
Total PFOA and PFOS	NG/L	70	192	190

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was extracted and reanalyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			LC-01	LC-01	SW-01/SED-01	SW-01/SED-01	SW-02/SED-02
Sample ID			LC-1-121416	LC-1-012417	SW-1-121316	SW-1-012417	SW-2-120816
Matrix			GW Seep	GW Seep	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/14/16	01/24/17	12/13/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Volatile Organic Compounds							
1,4-Dichlorobenzene	UG/L	3	0.87 J	NA		NA	
Acetone	UG/L	50		NA		NA	
Benzene	UG/L	1	1.5	NA		NA	
Chlorobenzene	UG/L	5	2.3	NA		NA	
Methyl tert-butyl ether	UG/L	10	0.74 J	NA		NA	
Semivolatile Organic Compounds							
2-Methylnaphthalene	UG/L	4.7		NA		NA	
Acenaphthene	UG/L	5.3		NA		NA	
Benzaldehyde	UG/L	-	0.34 J	NA		NA	
Dibenzofuran	UG/L	-		NA		NA	
Fluoranthene	UG/L	50		NA		NA	
Fluorene	UG/L	0.54		NA		NA	
Naphthalene	UG/L	10		NA		NA	
Phenanthrene	UG/L	5		NA		NA	
Pyrene	UG/L	4.6		NA		NA	
Pesticide Organic Compounds							
gamma-BHC (Lindane)	UG/L	-		NA		NA	
gamma-Chlordane	UG/L	-		NA		NA	
Metals							
Aluminum	UG/L	100 ionic	5,100	NA		NA	78 J
Arsenic	UG/L	50	6,900	NA		NA	
Barium	UG/L	1000	15,200	NA	7.0	NA	10 J

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			LC-01	LC-01	SW-01/SED-01	SW-01/SED-01	SW-02/SED-02
Sample ID			LC-1-121416	LC-1-012417	SW-1-121316	SW-1-012417	SW-2-120816
Matrix			GW Seep	GW Seep	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/14/16	01/24/17	12/13/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Metals							
Beryllium	UG/L	3	1.1 J	NA		NA	
Boron	UG/L	10000	590	NA		NA	
Calcium	UG/L	-	172,000	NA	5,300	NA	12,600
Chromium	UG/L	50	11 J	NA		NA	
Chromium VI	UG/L	11		NA		NA	
Cobalt	UG/L	5	110	NA		NA	
Copper	UG/L	14.6 calc	35 J	NA		NA	
Iron	UG/L	300	3,590,000	NA		NA	310 J
Magnesium	UG/L	35000	29,900	NA	1,000	NA	2,000
Manganese	UG/L	300	34,900	NA	3.6	NA	100 J
Mercury	UG/L	7.00E-04 dissolved	0.25	NA		NA	
Nickel	UG/L	84 calc	44 J	NA		NA	
Potassium	UG/L	-	25,500	NA	140 J	NA	1,000
Selenium	UG/L	4.6 dissolved	73 J	NA		NA	
Sodium	UG/L	-	61,200	NA	12,400	NA	45,600
Vanadium	UG/L	14	30	NA		NA	
Zinc	UG/L	134 calc	130	NA		NA	1.6 J
Miscellaneous Parameters							
Alkalinity	MG/L	-	472	NA	13.8	NA	30.4
Ammonia (as N)	MG/L	-	32.5	NA		NA	
Biochemical Oxygen Demand (BOD)	MG/L	-	36.7	NA		NA	
Bromide	MG/L	2	0.41	NA		NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			LC-01	LC-01	SW-01/SED-01	SW-01/SED-01	SW-02/SED-02
Sample ID			LC-1-121416	LC-1-012417	SW-1-121316	SW-1-012417	SW-2-120816
Matrix			GW Seep	GW Seep	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/14/16	01/24/17	12/13/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***		(2-1)		(2-1)	
Miscellaneous Parameters							
Chemical Oxygen Demand (COD)	MG/L	-	403	NA		NA	
Chloride	MG/L	250	78.0	NA	17.6	NA	72.8
Color	COLOR UNIT	-	20.0	NA	10.0	NA	10.0
Cyanide	MG/L	0.2	0.013	NA		NA	
Hardness (as CaCO3)	MG/L	-	320	NA	28.0	NA	44.0
Nitrate-Nitrogen	MG/L	10	0.23	NA	0.65 J	NA	0.32
Phenolics, Total Recoverable	MG/L	1	0.039	NA		NA	
Sulfate (as SO4)	MG/L	250	1.0 J	NA	5.5	NA	6.9
Total Dissolved Solids	MG/L	-	512	NA	71.0	NA	232
Total Kjeldahl Nitrogen	MG/L	-	46.6	NA		NA	0.28
Total Organic Carbon (TOC)	MG/L	-	14.0	NA	1.4	NA	2.6
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-	3.4				
Perfluorodecanoic acid (PFDA)	NG/L	-	NA	1.9	NA		NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-	110	120			
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-	16	22			
Perfluorohexanoic acid (PFHxA)	NG/L	-	NA	140	NA		NA
Perfluorononanoic acid (PFNA)	NG/L	-	3.3	3.8			
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	81	91			2.8
Perfluorooctanoic acid (PFOA)	NG/L	70	4,900	5,500			4.6
Total PFOA and PFOS	NG/L	70	4,981	5,591			7.4

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-02/SED-02	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID			SW-DUP-120816	SW-2-012417	SW-3-120816	SW-3-012417	SW-4-120816
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/08/16	01/24/17	12/08/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)	(2-1)		(2-1)	
Volatile Organic Compounds							
1,4-Dichlorobenzene	UG/L	3		NA		NA	
Acetone	UG/L	50		NA	3.5 J	NA	
Benzene	UG/L	1		NA		NA	
Chlorobenzene	UG/L	5		NA		NA	
Methyl tert-butyl ether	UG/L	10		NA		NA	
Semivolatile Organic Compounds							
2-Methylnaphthalene	UG/L	4.7		NA	0.69 J	NA	
Acenaphthene	UG/L	5.3		NA	0.73 J	NA	
Benzaldehyde	UG/L	-		NA		NA	
Dibenzofuran	UG/L	-		NA	0.57 J	NA	
Fluoranthene	UG/L	50		NA	0.47 J	NA	
Fluorene	UG/L	0.54		NA	0.50 J	NA	
Naphthalene	UG/L	10		NA	0.76 J	NA	
Phenanthrene	UG/L	5		NA	1.0 J	NA	
Pyrene	UG/L	4.6		NA	0.33 J	NA	
Pesticide Organic Compounds							
gamma-BHC (Lindane)	UG/L	-		NA		NA	
gamma-Chlordane	UG/L	-		NA		NA	0.011 J
Metals							
Aluminum	UG/L	100 ionic	590 J	NA	87 J	NA	
Arsenic	UG/L	50		NA		NA	
Barium	UG/L	1000	15 J	NA	22	NA	9.8

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-02/SED-02	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID			SW-DUP-120816	SW-2-012417	SW-3-120816	SW-3-012417	SW-4-120816
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/08/16	01/24/17	12/08/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)	(2-1)		(2-1)	
Metals							
Beryllium	UG/L	3		NA		NA	
Boron	UG/L	10000		NA		NA	4.1 J
Calcium	UG/L	-	12,600	NA	13,200	NA	11,400
Chromium	UG/L	50		NA		NA	
Chromium VI	UG/L	11	5.3 J	NA	6.1 J	NA	7.0 J
Cobalt	UG/L	5	0.85 J	NA	4.1	NA	
Copper	UG/L	14.6 calc	2.0 J	NA	7.9 J	NA	
Iron	UG/L	300	1,500 J	NA	1,100	NA	490
Magnesium	UG/L	35000	2,100	NA	3,900	NA	1,600
Manganese	UG/L	300	350 J	NA	2,200	NA	200
Mercury	UG/L	7.00E-04 dissolved		NA		NA	
Nickel	UG/L	84 calc	1.3 J	NA		NA	
Potassium	UG/L	-	1,100	NA	360 J	NA	910
Selenium	UG/L	4.6 dissolved		NA		NA	
Sodium	UG/L	-	45,700	NA	6,500	NA	32,900
Vanadium	UG/L	14		NA		NA	
Zinc	UG/L	134 calc	3.6 J	NA	7.9 J	NA	
Miscellaneous Parameters							
Alkalinity	MG/L	-	29.6	NA	54.0	NA	21.9
Ammonia (as N)	MG/L	-		NA		NA	0.022
Biochemical Oxygen Demand (BOD)	MG/L	-	7.5 J	NA	2.7	NA	64.7
Bromide	MG/L	2		NA		NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-02/SED-02	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID			SW-DUP-120816	SW-2-012417	SW-3-120816	SW-3-012417	SW-4-120816
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			12/08/16	01/24/17	12/08/16	01/24/17	12/08/16
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)	(2-1)		(2-1)	
Miscellaneous Parameters							
Chemical Oxygen Demand (COD)	MG/L	-		NA	53.1	NA	
Chloride	MG/L	250	71.2	NA	1.1	NA	51.3
Color	COLOR UNIT	-		NA	25.0	NA	15.0
Cyanide	MG/L	0.2		NA		NA	
Hardness (as CaCO3)	MG/L	-	40.0	NA	60.0	NA	56.0
Nitrate-Nitrogen	MG/L	10	0.32	NA	0.034 J	NA	0.33
Phenolics, Total Recoverable	MG/L	1	0.0056 J	NA		NA	
Sulfate (as SO4)	MG/L	250	6.8	NA	1.8 J	NA	6.4
Total Dissolved Solids	MG/L	-	209	NA	120	NA	176
Total Kjeldahl Nitrogen	MG/L	-	0.23	NA	1.2	NA	0.45 J
Total Organic Carbon (TOC)	MG/L	-	2.6	NA	11.0	NA	2.3
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-				1.0 J	
Perfluorodecanoic acid (PFDA)	NG/L	-	NA		NA		NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-			1.2 J	3.3	
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-			2.0	2.0	
Perfluorohexanoic acid (PFHxA)	NG/L	-	NA		NA	3.3	NA
Perfluorononanoic acid (PFNA)	NG/L	-			0.96 J	1.4 J	
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	2.8	2.8	12	31	
Perfluorooctanoic acid (PFOA)	NG/L	70	4.9	4.0	9.5	14	4.5
Total PFOA and PFOS	NG/L	70	7.7	6.8	21.5	45	4.5

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-04/SED-04	SW-04/SED-04	SW-05/SED-05	SW-05/SED-05	SW-06/SED-06
Sample ID			DUP-012417	SW-4-012417	SW-5-120716	SW-5-012417	SW-6-120716
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/24/17	01/24/17	12/07/16	01/24/17	12/07/16
Parameter	**Units**	**Criteria***	Field Duplicate (2-1)	(2-1)		(2-1)	
Volatile Organic Compounds							
1,4-Dichlorobenzene	UG/L	3	NA	NA		NA	
Acetone	UG/L	50	NA	NA		NA	
Benzene	UG/L	1	NA	NA		NA	
Chlorobenzene	UG/L	5	NA	NA		NA	
Methyl tert-butyl ether	UG/L	10	NA	NA	0.17 J	NA	
Semivolatile Organic Compounds							
2-Methylnaphthalene	UG/L	4.7	NA	NA		NA	
Acenaphthene	UG/L	5.3	NA	NA		NA	
Benzaldehyde	UG/L	-	NA	NA		NA	
Dibenzofuran	UG/L	-	NA	NA		NA	
Fluoranthene	UG/L	50	NA	NA		NA	
Fluorene	UG/L	0.54	NA	NA		NA	
Naphthalene	UG/L	10	NA	NA		NA	
Phenanthrene	UG/L	5	NA	NA		NA	
Pyrene	UG/L	4.6	NA	NA		NA	
Pesticide Organic Compounds							
gamma-BHC (Lindane)	UG/L	-	NA	NA		NA	0.012 J
gamma-Chlordane	UG/L	-	NA	NA		NA	
Metals							
Aluminum	UG/L	100 ionic	NA	NA		NA	62.0 J
Arsenic	UG/L	50	NA	NA		NA	
Barium	UG/L	1000	NA	NA	100	NA	12

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-04/SED-04	SW-04/SED-04	SW-05/SED-05	SW-05/SED-05	SW-06/SED-06
Sample ID			DUP-012417	SW-4-012417	SW-5-120716	SW-5-012417	SW-6-120716
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/24/17	01/24/17	12/07/16	01/24/17	12/07/16
Parameter	**Units**	**Criteria***	Field Duplicate (2-1)	(2-1)		(2-1)	
Metals							
Beryllium	UG/L	3	NA	NA		NA	
Boron	UG/L	10000	NA	NA	NA	NA	NA
Calcium	UG/L	-	NA	NA	42,400	NA	12,400
Chromium	UG/L	50	NA	NA		NA	
Chromium VI	UG/L	11	NA	NA	9.5 J	NA	8.7 J
Cobalt	UG/L	5	NA	NA	2.3 J	NA	
Copper	UG/L	14.6 calc	NA	NA	1.7 J	NA	
Iron	UG/L	300	NA	NA	300	NA	210
Magnesium	UG/L	35000	NA	NA	12,600	NA	2,400
Manganese	UG/L	300	NA	NA	2,900	NA	210
Mercury	UG/L	7.00E-04 dissolved	NA	NA		NA	
Nickel	UG/L	84 calc	NA	NA	1.9 J	NA	
Potassium	UG/L	-	NA	NA	11,000	NA	1,800
Selenium	UG/L	4.6 dissolved	NA	NA		NA	
Sodium	UG/L	-	NA	NA	27,300	NA	30,000
Vanadium	UG/L	14	NA	NA		NA	
Zinc	UG/L	134 calc	NA	NA		NA	2.1 J
Miscellaneous Parameters							
Alkalinity	MG/L	-	NA	NA	183	NA	31.2
Ammonia (as N)	MG/L	-	NA	NA	5.0	NA	0.21
Biochemical Oxygen Demand (BOD)	MG/L	-	NA	NA		NA	
Bromide	MG/L	2	NA	NA	0.16 J	NA	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-04/SED-04	SW-04/SED-04	SW-05/SED-05	SW-05/SED-05	SW-06/SED-06
Sample ID			DUP-012417	SW-4-012417	SW-5-120716	SW-5-012417	SW-6-120716
Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/24/17	01/24/17	12/07/16	01/24/17	12/07/16
Parameter	**Units**	**Criteria***	Field Duplicate (2-1)	(2-1)		(2-1)	
Miscellaneous Parameters							
Chemical Oxygen Demand (COD)	MG/L	-	NA	NA	11.6	NA	
Chloride	MG/L	250	NA	NA	34.5	NA	43.9
Color	COLOR UNIT	-	NA	NA	25.0	NA	25.0
Cyanide	MG/L	0.2	NA	NA		NA	
Hardness (as CaCO3)	MG/L	-	NA	NA	188	NA	44.0
Nitrate-Nitrogen	MG/L	10	NA	NA	3.7	NA	0.61
Phenolics, Total Recoverable	MG/L	1	NA	NA	0.011	NA	
Sulfate (as SO4)	MG/L	250	NA	NA	2.5	NA	7.7
Total Dissolved Solids	MG/L	-	NA	NA	274	NA	135
Total Kjeldahl Nitrogen	MG/L	-	NA	NA	4.5	NA	0.52
Total Organic Carbon (TOC)	MG/L	-	NA	NA	8.1	NA	3.0
Perfluorinated Alkyl Acids							
Perfluorobutanesulfonic acid (PFBS)	NG/L	-			2.2	1.7 J	
Perfluorodecanoic acid (PFDA)	NG/L	-			NA	0.67 J	NA
Perfluoroheptanoic acid (PFHpA)	NG/L	-			58	35	3.4
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-			13	10	1.3 J
Perfluorohexanoic acid (PFHxA)	NG/L	-			NA	48	NA
Perfluorononanoic acid (PFNA)	NG/L	-			2.1	2.2	
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	1.5 J		48	45	4.6
Perfluorooctanoic acid (PFOA)	NG/L	70	3.7	3.6	2,000	1,600	160
Total PFOA and PFOS	NG/L	70	5.2	3.6	2,048	1,645	165

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-06/SED-06
Sample ID			SW-6-012417
Matrix			Surface Water
Depth Interval (ft)			-
Date Sampled			01/24/17
Parameter	**Units**	**Criteria***	(2-1)
Volatile Organic Compounds			
1,4-Dichlorobenzene	UG/L	3	NA
Acetone	UG/L	50	NA
Benzene	UG/L	1	NA
Chlorobenzene	UG/L	5	NA
Methyl tert-butyl ether	UG/L	10	NA
Semivolatile Organic Compounds			
2-Methylnaphthalene	UG/L	4.7	NA
Acenaphthene	UG/L	5.3	NA
Benzaldehyde	UG/L	-	NA
Dibenzofuran	UG/L	-	NA
Fluoranthene	UG/L	50	NA
Fluorene	UG/L	0.54	NA
Naphthalene	UG/L	10	NA
Phenanthrene	UG/L	5	NA
Pyrene	UG/L	4.6	NA
Pesticide Organic Compounds			
gamma-BHC (Lindane)	UG/L	-	NA
gamma-Chlordane	UG/L	-	NA
Metals			
Aluminum	UG/L	100 ionic	NA
Arsenic	UG/L	50	NA
Barium	UG/L	1000	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-06/SED-06
Sample ID			SW-6-012417
Matrix			Surface Water
Depth Interval (ft)			-
Date Sampled			01/24/17
Parameter	**Units**	**Criteria***	(2-1)
Metals			
Beryllium	UG/L	3	NA
Boron	UG/L	10000	NA
Calcium	UG/L	-	NA
Chromium	UG/L	50	NA
Chromium VI	UG/L	11	NA
Cobalt	UG/L	5	NA
Copper	UG/L	14.6 calc	NA
Iron	UG/L	300	NA
Magnesium	UG/L	35000	NA
Manganese	UG/L	300	NA
Mercury	UG/L	7.00E-04 dissolved	NA
Nickel	UG/L	84 calc	NA
Potassium	UG/L	-	NA
Selenium	UG/L	4.6 dissolved	NA
Sodium	UG/L	-	NA
Vanadium	UG/L	14	NA
Zinc	UG/L	134 calc	NA
Miscellaneous Parameters			
Alkalinity	MG/L	-	NA
Ammonia (as N)	MG/L	-	NA
Biochemical Oxygen Demand (BOD)	MG/L	-	NA
Bromide	MG/L	2	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-3
SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SEEP AND SURFACE WATER SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID			SW-06/SED-06
Sample ID			SW-6-012417
Matrix			Surface Water
Depth Interval (ft)			-
Date Sampled			01/24/17
Parameter	**Units**	**Criteria***	(2-1)
Miscellaneous Parameters			
Chemical Oxygen Demand (COD)	MG/L	-	NA
Chloride	MG/L	250	NA
Color	COLOR UNIT	-	NA
Cyanide	MG/L	0.2	NA
Hardness (as CaCO3)	MG/L	-	NA
Nitrate-Nitrogen	MG/L	10	NA
Phenolics, Total Recoverable	MG/L	1	NA
Sulfate (as SO4)	MG/L	250	NA
Total Dissolved Solids	MG/L	-	NA
Total Kjeldahl Nitrogen	MG/L	-	NA
Total Organic Carbon (TOC)	MG/L	-	NA
Perfluorinated Alkyl Acids			
Perfluorobutanesulfonic acid (PFBS)	NG/L	-	
Perfluorodecanoic acid (PFDA)	NG/L	-	
Perfluoroheptanoic acid (PFHpA)	NG/L	-	3.1
Perfluorohexanesulfonic acid (PFHxS)	NG/L	-	1.4 J
Perfluorohexanoic acid (PFHxA)	NG/L	-	4.5
Perfluorononanoic acid (PFNA)	NG/L	-	
Perfluorooctanesulfonic acid (PFOS)	NG/L	70	4.1
Perfluorooctanoic acid (PFOA)	NG/L	70	130
Total PFOA and PFOS	NG/L	70	134

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class A.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

(2-1) indicates sample was recollected, extracted and analyzed for 12 perfluorinated compounds (PFCs). The initial analysis was a direct injection and only included 6 PFCs.

J - The reported concentration is an estimated value.

NA - Not analyzed.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

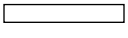
Location ID				SW-01/SED-01	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID				SED-1-121316	SED-2-120816	SED-3-120816	SED-DUP-120816	SED-4-120216
Matrix				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				-	-	-	-	-
Date Sampled				12/13/16	12/08/16	12/08/16	12/08/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**				Field Duplicate (1-1)	
Volatile Organic Compounds								
Chloroform	UG/KG	-	-			5.3 J		
Tetrachloroethene	UG/KG	16000	57000					
Toluene	UG/KG	930	4500				4.5 J	
Pesticide Organic Compounds								
4,4'-DDE	UG/KG	44	48000					
delta-BHC	UG/KG	-	-					0.77 J
Metals								
Aluminum	MG/KG	-	-	12,900	19,000	22,200 J	31,600 J	21,400 J
Arsenic	MG/KG	10	33	26.1 J	5.0	8.8 J	17.2 J	9.4 J
Barium	MG/KG	-	-	150 J	25.5	87.8 J	145 J	86.9 J
Beryllium	MG/KG	-	-	0.36	0.25	0.34 J	0.55 J	0.42 J
Boron	MG/KG	-	-	10.1 J		2.3 J	3.4 J	1.2 J
Cadmium	MG/KG	1	5	0.43	0.11 J	0.27 J	0.33 J	0.12 J
Calcium	MG/KG	-	-	10,900	769	4,310 J	6,990 J	1,310 J
Chromium	MG/KG	43	110	30.1	19.3	23.4 J	36.0 J	22.0 J
Cobalt	MG/KG	-	-	8.9	16.3	26.6 J	36.6 J	20.8 J
Copper	MG/KG	32	150	45.4	21.4	50.2 J	81.8 J	27.0 J
Iron	MG/KG	-	-	22,800	38,300	42,400 J	60,400 J	45,700 J
Lead	MG/KG	36	130	30.6	9.3	61.0 J	38.5 J	18.3 J
Magnesium	MG/KG	-	-	4,570 J	7,780	7,130 J	9,680 J	7,870 J

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)



Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				SW-01/SED-01	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID				SED-1-121316	SED-2-120816	SED-3-120816	SED-DUP-120816	SED-4-120216
Matrix				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				-	-	-	-	-
Date Sampled				12/13/16	12/08/16	12/08/16	12/08/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**				Field Duplicate (1-1)	
Metals								
Manganese	MG/KG	-	-	824 J	1,250	3,260 J	5,730 J	2,000 J
Mercury	MG/KG	0.2	1	0.033		0.063 J	0.068 J	
Nickel	MG/KG	23	49	19.3	31.7	33.6 J	50.4 J	39.6 J
Potassium	MG/KG	-	-	1,220	338	992 J	1,640 J	1,240 J
Selenium	MG/KG	-	-					1.3 J
Sodium	MG/KG	-	-	112 J			442 J	93.1 J
Thallium	MG/KG	-	-					
Vanadium	MG/KG	-	-	17.0	14.1	17.4 J	25.7 J	16.2 J
Zinc	MG/KG	120	460	153 J	98.2	104 J	147 J	107 J
Miscellaneous Parameters								
Chloride	MG/KG	-	-	10	16.0	17.6 J	64.6 J	27.0
Cyanide	MG/KG	-	-	0.63 J		2.5 J		
Nitrate-Nitrogen	MG/KG	-	-	1.0	NA	NA	NA	
Phenolics, Total Recoverable	MG/KG	-	-			2.4 J	3.6 J	
Total Kjeldahl Nitrogen	MG/KG	-	-	2,200	465	10,200 J	11,700 J	333
Total Organic Carbon (TOC)	MG/KG	-	-	68,300	7,050	199,000 J	272,000 J	12,400
Perfluorinated Compounds								
Perfluorodecanoic acid (PFDA)	UG/KG	-	-			2.9 J	2.7 J	
Perfluorododecanoic acid (PFDoA)	UG/KG	-	-			1.1 J	0.91 J	
Perfluoroheptanoic acid (PFHpA)	UG/KG	-	-				0.61 J	

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				SW-01/SED-01	SW-02/SED-02	SW-03/SED-03	SW-03/SED-03	SW-04/SED-04
Sample ID				SED-1-121316	SED-2-120816	SED-3-120816	SED-DUP-120816	SED-4-120216
Matrix				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				-	-	-	-	-
Date Sampled				12/13/16	12/08/16	12/08/16	12/08/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**				Field Duplicate (1-1)	
Perfluorinated Compounds								
Perfluorohexanoic acid (PFHxA)	UG/KG	-	-	0.10 J		1.8 J	1.4 J	
Perfluorononanoic acid (PFNA)	UG/KG	-	-			1.3 J	1.2 J	
Perfluorooctanesulfonic acid (PFOS)	UG/KG	140		0.40	0.35	33 J	27 J	
Perfluorooctanoic acid (PFOA)	UG/KG	140		0.24 J		2.0 J	1.4 J	
Perfluorotetradecanoic acid (PFTA)	UG/KG	-	-			0.34 J	0.40 J	
Perfluorotridecanoic acid (PFTriA)	UG/KG	-	-	0.27				
Perfluoroundecanoic acid (PFUnA)	UG/KG	-	-	0.15 J		2.0 J	3.4 J	
Total PFOA and PFOS	UG/KG	140		0.64	0.35	35.0	28.4	

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				SW-05/SED-05	SW-06/SED-06
Sample ID				SED-5-120216	SED-6-120216
Matrix				Sediment	Sediment
Depth Interval (ft)				-	-
Date Sampled				12/02/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**		
Volatile Organic Compounds					
Chloroform	UG/KG	-	-		
Tetrachloroethene	UG/KG	16000	57000		1.2 J
Toluene	UG/KG	930	4500		
Pesticide Organic Compounds					
4,4'-DDE	UG/KG	44	48000	1.3 J	
delta-BHC	UG/KG	-	-		
Metals					
Aluminum	MG/KG	-	-	17,300	21,300
Arsenic	MG/KG	10	33	54.0	14.4
Barium	MG/KG	-	-	356	48.3
Beryllium	MG/KG	-	-	0.42 J	0.39
Boron	MG/KG	-	-	6.3	1.2 J
Cadmium	MG/KG	1	5	0.20 J	
Calcium	MG/KG	-	-	4,690	1,450
Chromium	MG/KG	43	110	17.0	18.4
Cobalt	MG/KG	-	-	28.5	24.5
Copper	MG/KG	32	150	32.2	27.8
Iron	MG/KG	-	-	68,900	46,800
Lead	MG/KG	36	130	14.9	25.9 J-
Magnesium	MG/KG	-	-	5,840	8,420

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				SW-05/SED-05	SW-06/SED-06
Sample ID				SED-5-120216	SED-6-120216
Matrix				Sediment	Sediment
Depth Interval (ft)				-	-
Date Sampled				12/02/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**		
Metals					
Manganese	MG/KG	-	-	8,730	1,440
Mercury	MG/KG	0.2	1	0.025 J	
Nickel	MG/KG	23	49	29.0	40.1
Potassium	MG/KG	-	-	859	1,020
Selenium	MG/KG	-	-	3.2 J	
Sodium	MG/KG	-	-	128 J	67.7
Thallium	MG/KG	-	-	1.9 J	
Vanadium	MG/KG	-	-	15.2	16.5
Zinc	MG/KG	120	460	91.2	112 J-
Miscellaneous Parameters					
Chloride	MG/KG	-	-	34.7 J	8.9
Cyanide	MG/KG	-	-	1.0 J	
Nitrate-Nitrogen	MG/KG	-	-	0.61 J	
Phenolics, Total Recoverable	MG/KG	-	-		
Total Kjeldahl Nitrogen	MG/KG	-	-	3,180 J	253 J
Total Organic Carbon (TOC)	MG/KG	-	-	64,100	20,100
Perfluorinated Compounds					
Perfluorodecanoic acid (PFDA)	UG/KG	-	-	0.23 J	
Perfluorododecanoic acid (PFDoA)	UG/KG	-	-		
Perfluoroheptanoic acid (PFHpA)	UG/KG	-	-	0.25 J	

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.

TABLE 4-4
SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
PETERSBURGH LANDFILL SITE CHARACTERIZATION

Location ID				SW-05/SED-05	SW-06/SED-06
Sample ID				SED-5-120216	SED-6-120216
Matrix				Sediment	Sediment
Depth Interval (ft)				-	-
Date Sampled				12/02/16	12/02/16
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**		
Perfluorinated Compounds					
Perfluorohexanoic acid (PFHxA)	UG/KG	-	-	0.49 J	
Perfluorononanoic acid (PFNA)	UG/KG	-	-		
Perfluorooctanesulfonic acid (PFOS)	UG/KG	140		6.4 J	0.31
Perfluorooctanoic acid (PFOA)	UG/KG	140		14 J	0.74
Perfluorotetradecanoic acid (PFTA)	UG/KG	-	-		
Perfluorotridecanoic acid (PFTriA)	UG/KG	-	-		
Perfluoroundecanoic acid (PFUnA)	UG/KG	-	-	0.30 J	
Total PFOA and PFOS	UG/KG	140		20.4	1.05

Criteria (1)- NYSDEC Screening and Assessment of Contaminated Sediments, Class B (based on 2% TOC), June 24, 2014.

Criteria (2)- NYSDEC Screening and Assessment of Contaminated Sediments, Class C (based on 2% TOC), June 24, 2014.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

J - The reported concentration is an estimated value.

J- -The reported concentration is an estimated value with a low bias.

Only Detected Results Reported.