BROOKHAVEN NATIONAL LABORATORY
2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

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February 14, 2024

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Executive Summary

This report documents the Operations and Maintenance activities undertaken during calendar year 2023 for the Current Landfill (Area of Concern [AOC] 3) and the Former Landfill Areas. The Former Landfill Areas include the Former Landfill (AOC 2A), Interim Landfill (AOC 2D), and Slit Trench (AOC 2E). Brookhaven National Laboratory is responsible for performing this work to comply with the post-closure O&M requirements specified in 6 New York State Code of Rules and Regulations (NYCRR) Part 360, Solid Waste Management Facilities, updated November 4, 2017. The landfill caps are functioning as designed and the 2023 monitoring results are consistent with results from previous years.

GROUNDWATER QUALITY

The groundwater quality at the Current Landfill remains relatively unchanged from 2022. Volatile organic compounds (VOCs) and metals continue to be detected downgradient of the Current Landfill. The most prevalent VOCs detected above NYSDEC Class GA Groundwater/Guidance Values are chloroethane, 1,1-dichloroethane and benzene, at maximum concentrations of 42 micrograms per liter (µg/L), 10 µg/L and 2.0 µg/L, respectively. As with previous years, antimony, arsenic, iron, manganese, and sodium were detected downgradient from the Current Landfill at concentrations above applicable standards. Concentrations of these metals were similar to those detected historically. Maximum concentrations of antimony, arsenic, iron, manganese, and sodium in downgradient wells were 8.32 µg/L, 17 µg/L, 81,600 µg/L, 3,000 µg/L and 69,700 µg/L, respectively. These results are an indicator of continued low-level leachate generation at this landfill. There were no detections of radionuclides above standards at the Current Landfill during 2023 nor have there been since 1998.

The groundwater monitoring well network for the Current Landfill Area is adequate at this time. VOCs, metals and water quality parameters will continue to be monitored semi-annually but VOCs will be monitored quarterly in wells 088-109 and 098-99. Radionuclides will continue to be monitored annually on wells 087-23, 087-27, 088-109 and 088-21.

The Former Landfill groundwater monitoring program was discontinued in 2020.

SOIL-GAS MONITORING

Soil-gas monitoring at the Current Landfill indicates that decomposition is still occurring. However, as with prior years, there is no indication that the vapors are migrating beyond the monitoring well network. Soil-gas monitoring at the Former Landfill Area indicates that there is no detection of gas emanating from the landfill. The existing soil gas monitoring well networks are sufficient to monitor both landfill areas.

MAINTENANCE AND REPAIR

Monthly inspections and routine maintenance of the cap, drainage channels and wells were performed throughout 2023. Ruts created by mower activities were regraded and seeded at the Former Landfill cap. Cracks in the asphalt access roadway around the Current Landfill were filled and sealed.

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ACRONYMS

AOC	Area of concern
BNL	Brookhaven National Laboratory
BSA	Brookhaven Science Associates
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CY	Calendar year
DCS	Derived concentration technical standard
DOE	U.S. Department of Energy
DQOs	Data quality objectives
EIMS	Environmental Info. Mgmt. System
HWMF	Former Hazardous Waste Management Facility
LEL	Lower explosive limit
LUIC	Land Use and Institutional Controls
µg/L	Micrograms per liter
mg/L	Milligrams per liter
ng/L	Nanograms per liter
mrem	Millirem
MS/MSDs	Matrix spike/matrix spike duplicates
NPL	National Priorities List
NYSDEC	NY State Dept. of Environmental Conservation
NYSDOH	NY State Dept. of Health
O&M	Operations and Maintenance
OU	Operable Unit
PCBs	Polychlorinated biphenyls
pCi/L	Picocuries per liter
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
SCDHS	Suffolk County Department of Health Services
Sr-90	Strontium 90
TDS	Total dissolved solids
TKN	Total Kjeldahl nitrogen
TSS	Total suspended solids
TVOCs	Total volatile organic compounds
UEL	Upper explosive limit
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds

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1.0 INTRODUCTION

This report documents the Operation and Maintenance (O&M) activities and summarizes monitoring data collected during calendar year (CY) 2023 for the Current Landfill (Area of Concern [AOC] 3) and the Former Landfill Areas (Former Landfill AOC 2A, Interim Landfill AOC 2D, and Slit Trench AOC 2E). Brookhaven National Laboratory (BNL) is responsible for performing this work to comply with the post-closure O&M requirements specified in the 6 New York State Code of Rules and Regulations (6NYCRR) Part 360, Solid Waste Management Facilities, revised November 4, 2017. The details of the O&M programs are described in the Final Operations and Maintenance Manuals for the Current Landfill (CDM Federal, 1996a) and the Former Landfill Areas (CDM Federal, 1996c).

The following are the primary objectives of the O&M program:

- Monitor the effectiveness of the impermeable caps in protecting groundwater quality;
- Monitor the potential generation and migration of soil-gas; and
- Maintain and monitor the various components of the closure system (e.g., landfill caps, drainage structures, and environmental monitoring systems).

This is the twenty-eighth year of O&M for the Current Landfill, the twenty-seventh year for the Former Landfill and Slit Trench, and the twenty-sixth year for the Interim Landfill.

1.1 Site Description and Project Background

BNL is a 5,265-acre site located in central eastern Long Island, New York. The facility is a federally owned and funded international research and learning center managed by Brookhaven Science Associates (BSA) under contract with the United States Department of Energy (DOE). On December 21, 1989, the site was placed on the United States Environmental Protection Agency's (USEPA's) National Priorities List (NPL), a ranking of hazardous waste sites compiled by the federal government as part of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Placing BNL on the NPL resulted in the establishment of a remediation

and removal action task list for various Areas of Concern (AOCs) around the facility. At the onset of the landfill closures the site was divided into seven separate remediation/removal action work areas known as Operable Units (OUs). Since the completion of the landfill closures, the site has subsequently been divided into ten Operable Units. The Current Landfill and Former Landfill Areas are located in OU I, near the south-central portion of the BNL site **(Figure 1)**.

Current Landfill. The Current Landfill consists of one unlined waste-cell that operated from the late 1960s until 1990 for disposing of waste generated at the Laboratory. An impermeable cap system covering the cell was completed in November 1995. The capping system consists of the following: eight-ounce geotextile fabric; one foot of gas venting layer material (screened soil); ten gas vents; a double-sided, textured, 40-mil Linear Low-Density Polyethylene (LLDPE) geomembrane liner; two feet of protection layer material (screened soil); six inches of topsoil; vegetation; and erosion control blankets on areas with slopes greater than or equal to four percent. Additional information about the cap's construction can be obtained from the *Construction Certification Report for the Current Landfill* (CDM Federal, 1996b). Following the installation of the cap, the post-closure groundwater monitoring program was implemented in January 1996, in compliance with 6 NYCRR Part 360 Section 2.15, Solid Waste Management Facilities.

Groundwater quality near the Current Landfill is monitored under the O&M program for a wide variety of volatile organic compounds (VOCs), metals, radiological, and water chemistry (landfill leachate) parameters. Monitoring in this vicinity was expanded in 1999 to include a wetland area adjacent to the landfill's eastern boundary. The area shown on **Figure 2**, known as the Wooded Wetland area, is a two-acre wetland located between the Former Hazardous Waste Management Facility (HWMF) and the Current Landfill. The wetland receives surface runoff from the Current Landfill and usually contains standing surface water during the spring/early summer and is dry in late summer/fall. When monitoring of the Wooded Wetland area was incorporated into the Current Landfill Monitoring Program, it consisted of sampling and analyzing surface water and sediment annually through 2008. Beginning in 2009, the sampling frequency was reduced to every other year to evaluate the potential for leachate migrating into this area, as originally performed under the *OU I Ecological Risk Assessment* (CDM Federal, 1999). In response to information provided in the *2015 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2016) and additional tiger salamander information provided upon the request of the NYSDEC, it was

agreed that future monitoring of the Wooded Wetlands would be limited to visual tiger salamander assessments. Furthermore, it was agreed to that no further sediment and surface water samples will be collected, and care would be taken by BNL to not disturb the buildup of detritus material in the Wooded Wetland.

As required under 6 NYCRR Part 360, groundwater quality must be monitored for a minimum of five years, after which the permittee may request modification of the sampling and analysis requirements. In October 2001, BNL submitted the *Five-Year Evaluation Report for the Current Landfill* (BNL, 2001b). This report assessed groundwater trends over the five years after capping, and proposed changes to the sampling program. These changes were implemented in CY 2002. In July 2006, March 2011, June 2016 and June 2021 BNL issued CERCLA Five-Year Review Reports which discussed all remediation and removal areas at the site, including the Current Landfill (BNL 2006, BNL 2011, BNL 2016, BNL 2021).

Former Landfill Area. The Former Landfill Area encompasses three closely located landfill units; the Former Landfill, the Slit Trench, and the Interim Landfill. The Former Landfill is an unlined waste-disposal area originally used by the United States Army starting in 1918. Waste disposal operations ceased in 1966, and the landfill was covered with soil. The Interim Landfill also is unlined and was reportedly used for approximately one year between the time the Former Landfill was closed, and the Current Landfill was opened. The Slit Trench is unlined as well and is believed to have operated between 1960 and 1967 for disposal of construction and demolition debris (CDM Federal, 1996c).

The Former Landfill and Slit Trench were capped in November 1996 and the Interim Landfill was capped in October 1997. The Former Landfill and Slit Trench cap system consists of eight-ounce geotextile, twelve inches of gas venting material (screened soil), a 40-mil LLDPE geomembrane liner, eighteen to twenty-four inches of liner protection soil, six inches of topsoil, vegetation, and erosion control fabric. In areas where the slope exceeds 15 percent, the geomembrane is textured on both sides and the protection layer is twenty-four inches. In the remaining locations, the geomembrane is smooth on both sides and protection layer is eighteen inches. Additionally, the cap is equipped with ten passive vents. The Interim Landfill cap system consists of eight-ounce geotextile, twelve inches of gas venting material, a 40-mil LLDPE geomembrane liner, eighteen

inches of protection soil, six inches of topsoil, vegetation, and erosion control fabric. All of the membrane is of double textured variety, with the protection layer a minimum of eighteen inches thick over the entire landfill. Additionally, the cap is equipped with two passive vents. Additional information about the construction of the caps can be found in the *Construction Certification Report for the Former Landfill* (Roy F. Weston, 1997) and *Construction Certification Report for the Interim Landfill Capping* (PW Grosser, 1997). BNL started O&M activities in December 1996 at the Former Landfill and Slit Trench, and in November 1997 at the Interim Landfill. Under this O&M program, groundwater quality in downgradient wells near the Former Landfill was monitored for VOCs, metals, radionuclides, and landfill-leachate parameters.

In March 2002, BNL submitted a *Five-Year Evaluation Report for the Former Landfill* (P.W. Grosser, 2002), which assessed trends in groundwater quality over the five-year period following capping and proposed changes to the sampling program. These changes were implemented in CY 2003. In July 2006, March 2011, June 2016 and June 2021 BNL issued CERCLA Five-Year Review Reports which discussed all remediation areas at the site including the Former Landfill Area (BNL 2006, BNL 2011, BNL 2016, BNL 2021). With the groundwater data collected during the past two decades as evidence, and groundwater impact nonexistent, it was recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021) that groundwater monitoring of the Former Landfill monitoring well network be discontinued. With NYSDEC acceptance of the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021) Report, these changes were implemented in CY 2021.

1.2 Overview of the Monitoring Program

Groundwater Monitoring

Data quality objectives (DQOs) for each of BNL's groundwater monitoring programs are presented in the *BNL Environmental Monitoring Plan* (BNL, 2024). The design of the data collection network was optimized as part of the process. Such optimization continues annually as part of the O&M program and is based on the interpretation of new data as well as historical trends. The primary DQO decision identified for the landfill monitoring programs is "Are the controls effectively improving groundwater quality below and downgradient of the landfill?"

Groundwater samples were collected from monitoring wells positioned upgradient and downgradient of the Current Landfill area. Analytical data are reviewed, and determinations are made regarding the effectiveness of landfill controls.

The additional monitoring programs for the landfill areas consist of:

Soil-gas Monitoring. Measurements of methane, Lower Explosive Limit (LEL), and hydrogen sulfide are taken quarterly from monitoring locations surrounding the Current Landfill and annually from monitoring locations surrounding the Former Landfill to evaluate the movement of soil-gas from the landfills.

Routine Visual Inspection, Maintenance, and Repair. Monthly inspections are performed to monitor the structural and/or operational status of the landfill caps, drainage structures, and environmental monitoring systems. Semi-annual inspections of the landfills are also performed to ensure that institutional controls continue to be maintained.

Leachate Discharge. Visual inspections of the landfills are performed monthly to monitor for signs of leachate discharge. If observed, samples of the leachate are collected and analyzed. Leachate was not observed during 2023.

These activities are discussed in greater detail in **Sections 2 through 4** of this report. **Section 5** contains the conclusions and recommendations. References are included in **Section 6**.

2.0 GROUNDWATER MONITORING

2.1 Monitoring Well Networks

2.1.1 Current Landfill

Since January 1996, groundwater quality at the Current Landfill has been monitored using eleven downgradient wells and one background monitoring well. **Figure 2** depicts the location of the monitoring wells. **Figure 3** shows the water table contours for this area in August 2023. The depths of the screen intervals for the Current Landfill wells and fourth quarter depth to water elevations are listed below.

Well ID	Depth to Water (ft BLS) 4th Q 2023	Screen Interval (ft BLS)	Screen Zone
087-09*	30.38	24–34	Shallow Glacial
087-11	17.12	11–21	Shallow Glacial
087-23	35.53	25–40	Shallow Glacial
087-24	35.46	70–80	Middle Glacial
087-26	15.96	70–80	Middle Glacial
087-27	16.14	5–20	Shallow Glacial
088-109	14.54	6–21	Shallow Glacial
088-110	16.36	10–25	Shallow Glacial
088-21	11.00	5–20	Shallow Glacial
088-22	11.06	70–80	Middle Glacial
088-23	10.85	120–130	Deep Glacial
098-99	13.91	39.5-49.5	Middle Glacial

BLS = Below Land Surface

*Background well

2.1.2 Former Landfill

Since January 1997, groundwater quality at the Former Landfill area has been monitored using 14 shallow monitoring wells (three background and 11 downgradient). However, as recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021), groundwater monitoring of the Former Landfill monitoring well network has been discontinued. This change was implemented during CY 2021. For historical purposes, the screen zones for the Former Landfill Area wells are summarized below.

Well ID	Depth to Water (ft BLS) 4th Q 2023	Screen Interval (ft BLS)	Screen Zone
086-42*	NS	65–75	Middle Glacial
086-72*	NS	41.5–56.5	Shallow Glacial
087-22*	NS	43–53	Shallow Glacial
097-17	NS	29–39	Shallow Glacial
097-64	NS	29–44	Shallow Glacial
097-277	NS	40–55	Shallow Glacial
106-02	NS	55–65	Middle Glacial
106-30	NS	29–44	Shallow Glacial
106-20	NS	85-95	Middle Glacial
106-21	NS	55-65	Shallow Glacial
106-43	NS	43-53	Shallow Glacial
106-44	NS	44-54	Shallow Glacial

106-45	NS	44-55	Shallow Glacial
106-64	NS	30-40	Shallow Glacial

BLS = Below Land Surface
*Background well
NS = Not sampled

2.1.3 Sampling Frequency and Analytical Parameters

The majority of monitoring wells for the Current Landfill were sampled semiannually during May and December 2023, for VOCs, metals, and water chemistry parameters. A quarterly VOC sampling frequency was maintained for wells 088-109 and 098-99. Samples were analyzed for radionuclides once during 2023 for wells 087-23, 087-27, 088-21, and 088-109.

The BNL sampling team conducted the groundwater sampling, and General Engineering Laboratories, Inc., of Charleston, South Carolina and Eurofins/TestAmerica Laboratories Inc., analyzed the samples. Groundwater samples were collected using BNL standard operating procedure (SOP) EM-SOP-302, *Groundwater Sampling-Low Flow Purging and Sampling Using Dedicated Bladder Pumps.* See **Table 1** for a summary of analyses performed, by well and sampling round.

2.1.4 Quality Assurance / Quality Control

The groundwater samples were collected and analyzed in accordance with strict quality assurance/ quality control (QA/QC) requirements as described in the BNL SOPs for groundwater monitoring. The analytical results for groundwater samples collected during 2023 satisfied the data-quality objectives. Furthermore, a master calibration/maintenance log is maintained for each field-measuring device (e.g., pH, conductivity, turbidity meters).

The analytical results of samples collected for the Current Landfill project underwent data verification, using EM-SOP-203, *Chemical Data Verification*, and EM-SOP-204, *Radiochemical Data Verification*. These procedures are designed to verify the accuracy and/or completeness of analytical data. The data verification process is implemented to detect the most common analytical problems that affect the quality of the results. To accomplish this task, the following QA/QC items were checked: holding times, matrix spikes, laboratory and field blanks, and field logs. If items are found that can affect the use and interpretation of the data, they are either corrected, as in the case of unreadable information on the field logs, or the data are "qualified," as in the case of

contamination of the blanks or violations of the holding time.

Guidance on the collection of QA/QC samples is contained in BNL procedure EM-SOP-200, *Collection and Frequency of Field Quality Control Samples*. The QA/QC samples collected included trip blanks, field blanks, matrix spike/matrix spike duplicate (MS/MSDs), and blind duplicates.

Trip blanks were analyzed for aqueous VOCs only. One trip blank was shipped to the analytical laboratory with each set of samples submitted for VOC analyses. The results of the blank samples did not indicate any significant impact on the quality of the results. One blind duplicate sample was collected from the Current Landfill during each of the four quarters. No inconsistencies were detected in the blind duplicate analyses. The results are indicative of consistency with contract analytical laboratories and sampling methods, resulting in valid, reproduceable data. The MS/MSD samples were collected at the same frequency as the duplicates. Due to lab exceedances of some internal method blank quality control standards, BNL provided a secondary data verification review qualifier on a limited set of analytical data. The data has been qualified for the samples that were affected by this exceedance and subsequently denoted in the respective data tables. All qualified data was within acceptable limits and did not adversely impact the review of groundwater quality.

2.2 Landfill Groundwater Monitoring Results

This section summarizes the 2023 results for VOCs, metals, water-chemistry parameters, and radionuclides detected for the Current Landfill. The historical trends in concentrations of key contaminants are assessed and shown graphically in **Figures 4 through 7**. Summary tables of all 2023 landfill groundwater data are presented in **Tables 2 through 5**. Detections that exceed groundwater standards are in bold text. The tables include groundwater standards, laboratory results, reporting limits, minimum detectable activity, laboratory data qualifiers and BNL data verification qualifiers.

The groundwater standards used for evaluating non-radiological groundwater data are those contained in the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values (June 1998, with addendums April 2000,

June 2004 and February 2023) (NYSDEC 1998, 2000, 2004 and 2023) and 6NYCRR Part 703.5. Groundwater standards for radiological isotopes were supplemented with New York State Department of Health's (NYSDOH's) and United States Environmental Protection Agency (EPA) strontium-90 and tritium standards for drinking water. There were no groundwater standards for the gamma constituents; therefore, a Groundwater Screening Level was used. This value is based on a dose equivalent of 4 millirem (mrem)/year and was calculated as 4 percent of the DOE Derived Concentration Technical Standards (DCS) (DOE-STD-1196-2021) for the isotope of concern. These values are listed under the "groundwater standards" column in the summary tables and annotated where appropriate. Laboratory results that exceed the lower of the groundwater standards or the Cleanup Goals listed in the Record of Decision (ROD) are highlighted in the data summary tables to facilitate review of the information.

The laboratory data qualifiers included in the tables vary for the different analyses. Explanations for the data qualifiers are included in the notes in each table. Complete 2023 laboratory data reports and chain of custody forms are archived and available upon request. The 2023 Groundwater Sampling Logs are included as **Appendix C**. In addition, analytical results are stored in the BNL Environmental Information Management System (EIMS) database.

2.2.1 Current Landfill

2.2.1.1 Volatile Organic Compounds (VOCs)

Benzene and chloroethane have historically been the primary groundwater contaminants detected downgradient of the Current Landfill. Benzene was detected above its standard of 1 microgram per liter (µg/L) in downgradient monitoring well 087-11. 1,1-Dichloroethane was detected above the groundwater standard of 5 µg/L in downgradient monitoring well 088-109 during 2023 **(Table 2)**. Chloroethane was detected in downgradient well 088-109 above the groundwater standard of 5 µg/L. No other VOCs were detected above groundwater standards during 2023.

Benzene exceeded the 1 µg/L standard in well 087-11 during the May 2023 and November 2023 sampling events, with a maximum concentration of 2.0 µg/L. Chloroethane exceeded the 5 µg/L standard in well 088-109 for March, May, September and November with a concentration of 8.5 µg/L, 12.5 µg/L, 24 µg/L, and 42 µg/L respectively. These concentrations are significantly below the historic high of 560 µg/L detected in this well in 1998. Well 088-109 detected 1,1-

Dichloroethane above the standard of 5 µg/L in November at a concentration of 10 µg/L. There is no apparent seasonal or water table elevation correlation with VOC concentrations in this well based on an assessment of historical data.

Figure 4 plots the concentration trends of total VOCs (TVOCs), benzene and chloroethane. Overall, the trend plots also show a distinct decrease in VOC concentrations from the high concentrations seen prior to the installation of the cap. This reflects the positive effects of the capping on the groundwater quality downgradient of the landfill. During 2023 well 088-109 has shown VOC concentrations slightly increasing during the year.

2.2.1.2 Water Chemistry Parameters

Groundwater samples obtained semi-annually and annually from wells 088-22 and 088-23, were analyzed for ammonia, total Kjeldahl nitrogen (TKN), cyanide, sulfate, nitrite, nitrate, total nitrogen, chloride, alkalinity, total dissolved solids (TDS or residue, nonfilterable), and total suspended solids (TSS or residue, filterable) during 2023. The results are provided in **Table 3**. Elevated levels of these parameters can be indicative of the presence of landfill leachate. A comparison of downgradient and background wells shows that leachate continues to be generated from the Current Landfill, albeit at low concentrations. The establishment of stable water chemistry concentration levels indicates that the capping continues to effectively reduce the generation and migration of leachate.

During 2023, ammonia was the only water chemistry parameter detected above standards. Ammonia was detected above the standard of 2 milligrams per liter (mg/L) in well 087-11. The highest concentration in well 087-11 was 2.4 mg/L in May 2023 **(Table 3)**. The levels of ammonia detected in downgradient wells are consistent with historic data.

Chloride was not detected above the standard of 250 mg/L in any wells in 2023. Downgradient well 088-21 had the highest concentration of chloride at 101 mg/L. **Figure 5** plots the trends for alkalinity and chloride. The trends for downgradient wells show low levels of chloride concentrations near the Current Landfill. The historical concentration trends plotted show overall stable levels of chloride apart from 087-26 and 087-27 which are showing a slight overall upward trend.

Alkalinity, in the form of bicarbonate, is the concentration of anions available to neutralize acid, and is often used as an indicator of leachate contamination. The alkalinity in background well 087-09 ranged from 29 mg/L to 30 mg/L. The highest alkalinity concentration during 2023 was detected in downgradient, shallow Upper Glacial aquifer well 087-11, at 150 mg/L. There is no groundwater standard for alkalinity. The historical concentration trends plotted in **Figure 5** show overall stable to decreasing levels of alkalinity apart from 087-24, 087-26 and 088-23 which are showing a slight upward trend.

During 2023, all sulfate concentrations remained below the groundwater standard of 250 mg/L. The highest sulfate value reported for 2023 was detected in the May sample from monitoring well 087-09 at a concentration of 19 mg/L. This is consistent with historic background levels at the Current Landfill.

TDS and TSS results were similar to those from previous years. TDS concentrations in background well 087-09 ranged from 105 mg/L to 170 mg/L. TSS concentrations were non-detect for well 087-09. The maximum concentrations observed in downgradient wells were 250 mg/L and 27 mg/L of TDS and TSS, respectively.

No water chemistry parameters have exceeded groundwater standards in downgradient wells 087-24, 088-22, and 088-23, since 1998. These wells are all screened in the mid to deep-Upper Glacial aquifer to monitor the vertical extent of contamination from the Current Landfill.

2.2.1.3 Metals

Historically, iron is detected above groundwater standards in the upgradient well, and the majority of downgradient wells surrounding the landfill. Precipitated iron from the BNL Water Treatment Plant was disposed of at the Current Landfill during past operations. However, metals concentrations in upgradient well 087-09 are still lower than in several downgradient wells, suggesting continued leachate migration from the landfill into the groundwater.

During 2023, antimony and sodium exceeded the groundwater standard in background well 087-09. Antimony, arsenic, iron, manganese, and sodium exceeded their respective groundwater standards in several downgradient wells **(Table 4)**.

Antimony was reported above the standard of 3 µg/L in upgradient well 087-09 and downgradient wells 087-24, 087-26, 087-27, 088-109 and 088-21 with a maximum concentration of 8.3 µg/L. These results are consistent with historic results reported for several Current Landfill wells, including background well 087-09.

Arsenic was reported above the standard of 10 µg/L in wells 087-11 and 087-23 at a high concentration of 17 µg/L in well 087-11. Arsenic detections have historically been observed at similar concentrations in Current Landfill wells.

Iron was reported above the standard of 300 µg/L in wells 087-11, 087-23, 087-27, 088-23, 088-109, and 088-110. The background concentrations were non-detect while downgradient concentrations ranged up to 81,600 µg/L in well 087-11. Well 087-11 has shown decreasing iron concentrations since the fourth quarter of 2022. Iron trend graphs are plotted on **Figure 6**.

Manganese was detected above the standard of 300 µg/L in wells 087-11, 087-23, 087-27, 088-109, and 088-110. Manganese ranged from non-detect to 40 µg/L in background well 087-09, and up to 3,000 µg/L in the downgradient well 087-23.

Sodium was detected above the standard of 20,000 µg/L in wells 087-09, 087-24, 087-26, 087-27 088-21, 088-22, and 088-110. Downgradient sodium levels ranged up to 69,700 µg/L in well 088-21.

2.2.1.4 Radionuclides

No radionuclides were detected above groundwater standards for strontium-90 and tritium during 2023 as shown in **Table 5**. As noted in **Section 2.2**, there are no groundwater standards for the gamma constituents; therefore, a groundwater screening level was used for comparison purposes and annotated where appropriate. No gamma constituents were detected above the screening level during 2023. During November, Sr-90 was detected in wells 087-23, 088-109 and 088-21 at concentrations of 0.676, 0.687 and 0.652 picocuries per liter (pCi/L) respectively. This is below the standard of 8 pCi/L. Tritium was not detected in any wells sampled during 2023. The last time tritium was detected was in December of 2015 in well 087-27 at 318 pCi/L. This is significantly

below the groundwater standard of 20,000 pCi/L. **Figure 7** shows the historical strontium-90 and tritium concentration trends for the four wells sampled.

2.2.2 Former Landfill

As recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021), groundwater monitoring of the Former Landfill monitoring well network has been discontinued.

3.0 SOIL-GAS MONITORING

3.1 Soil-gas Monitoring Networks

Soil-gas readings were collected from wells surrounding the Current Landfill in March, June, September, and December 2023, and from the Former Landfill in August 2023. Methane, LEL, and hydrogen sulfide were measured using a Landtec® GEM2000 and GEM5000. The LEL for methane is 5.3% and the upper explosive limit (UEL) is 15%.

3.1.1 Current Landfill

Along the perimeter of the Current Landfill, 58 points were sampled for soil-gas, which includes four outpost soil-gas well clusters, GSGM-1 to GSGM-4, located along the south side of Brookhaven Avenue. The sampling points include 12 soil-gas well clusters consisting of three sampling intervals per cluster, and 11 soil-gas well couplets consisting of two sampling intervals per couplet. **Table 6** describes each soil-gas well adjacent to the landfill. Their locations are illustrated on **Figure 8**.

3.1.2 Former Landfill Area

Twenty-four sampling points were monitored for the Former Landfill Area. These points include 12 well couplets consisting of two sampling points per couplet. Details of each soil-gas well are given in **Table 6** and their locations shown in **Figure 9**.

3.1.3 Sampling Frequency

Soil-gas was monitored for each landfill in the following months.

Sampling Event	Current Landfill	Former Landfill
Round 1	March 2023	August 2023
Round 2	June 2023	None
Round 3	September 2023	None
Round 4	December 2023	None

3.2 Results of Soil-Gas Monitoring

Action levels for soil-gas are specified in 6 NYCRR Part 360-2.17(f) in terms of percent LEL, which is primarily related to the amount of methane present. This discussion focuses primarily on the methane levels detected during monitoring. Hydrogen sulfide is monitored but has no regulatory action level. 6 NYCRR Part 360-2.17(f) specifies that active measures to control decomposition gases are required when the concentration of methane or other explosive gases exceeds 25 percent of the LEL (or 1.3% methane) in facility structures, or 100 percent (%) of the LEL (or 5.3% methane) at the site boundary.

3.2.1 Current Landfill

A total of 23 soil-gas monitoring well clusters are positioned around the Current Landfill **(Figure 8)** and were sampled quarterly during 2023. Potential receptors, or areas where methane can accumulate near the Current Landfill, include the National Weather Service office building located 480 feet north northwest of the Current Landfill on the north side of Brookhaven Avenue. Four outpost soil-gas locations, GSGM-1 to GSGM-4, are located along the south side of Brookhaven Avenue, and are used to monitor the northern extent of the migration of landfill gas. Should methane extend to the south side of Brookhaven Avenue at concentrations exceeding 25 percent of the LEL (or 1.3% methane), active measures may be required to control its migration. This is a BNL administrative limit that would trigger further evaluation.

The results of the soil-gas monitoring for 2023 are summarized in **Table 7**. **Appendix A** contains the field notes recorded during the sampling events. Instrument measurements show that methane continues to be generated in several areas of the landfill. The percent of the LEL is elevated along the western side and the southeast boundary of the Current Landfill. In addition, SGMW-19B along the northern side of the Current Landfill had elevated LEL readings in three of the four quarterly sampling events. The LEL readings in these areas have remained stable since 1996 when monitoring began. The current gas venting system appears to be effective in controlling gas accumulation. These data are consistent with previous years.

Outpost wells, GSGM-1 through GSGM-4, located along the south side of Brookhaven Avenue and immediately upgradient of the landfill showed no methane during 2023. This indicates that the methane accumulation and migration does not extend to this area. Should methane, at concentrations exceeding 25 percent of the LEL (or 1.3% methane) extend to these outpost wells on the south side of Brookhaven Avenue, active measures may be required to control its migration.

Hydrogen sulfide is a product of anaerobic decay and can produce an odor like rotten eggs. It is a nuisance, but rarely a toxicity problem. For reference, the National Institute of Occupational Safety and Health sets an exposure limit of 10 parts per million (ppm) hydrogen sulfide in the breathing zone for an 8-hour period.

Hydrogen sulfide measurements collected from the soil-gas monitoring wells ranged from 0 ppm to 142 ppm. Well SGMW-15B located along the eastern section of the landfill, had the highest hydrogen sulfide concentration of 142 ppm, which was above the 10-ppm exposure limit. However, the measurement was taken from a vapor point screened 8.5 to 11.5 ft below the surface, and not from the ambient breathing zone. Elevated hydrogen sulfide was also detected in well SGMW-02B west of the landfill, which is screened 10.5 to 16 ft below the surface at a concentration of 35 ppm. Like methane, receptors to hydrogen sulfide are considered to be in areas such as basements where the gas can accumulate. Based upon the readings obtained from the outpost soil-gas wells along the south side of Brookhaven Avenue (GSGM-1 to GSGM-4), there is no evidence that hydrogen sulfide is migrating toward the National Weather Service building.

3.2.1.1 Trend in Soil-Gas Data

Historically the levels of methane and hydrogen sulfide in the wells along the northwest landfill boundary and southeast corner have remained elevated but stable.

3.2.2 Former Landfill Area

A total of 12 soil-gas monitoring well clusters are positioned around the Former Landfill Area **(Figure 9)**. During 2023, the well clusters were monitored once, in August. The only existing operating facility within the immediate vicinity of the Former Landfill Area is Building 670, located approximately 650 feet to the southeast. This building houses the Chemical Holes Sr-90 groundwater treatment system. This facility is not regularly occupied and does not have a

basement. Based upon the sampling event, there was no methane or hydrogen sulfide detected. **Table 8** details the 2023 soil-gas monitoring results for the Former Landfill Area. **Appendix A** contains the field notes recorded during the sampling events.

3.2.2.1 Trends in Soil-Gas Data

The results of monitoring the Former Landfill Area continue to be consistent with the initial survey of the methane gas migration conducted in 1995, during which concentrations between 0% to 0.1% methane were recorded. Methane has not been detected since 2005. Although hydrogen sulfide gas was measured during this initial survey it has not been detected since 2010.

Presently, there is no measured pathway for methane gas migration, nor do the concentrations represent an explosive hazard, as shown by the non-detectable readings on the landfill gas analyzer. The age of the Former Landfill Area and the types of materials disposed of would likely result in low levels or the absence of methane or hydrogen sulfide.

4.0 MAINTENANCE AND REPAIR

Monthly site inspections were performed by BNL at the Current and Former Landfill areas to monitor the structural and/or operational status of the landfill cap, gas vents, drainage structure, fences and environmental monitoring system (groundwater wells, soil-gas wells) in accordance with the O&M Manuals. A copy of the inspection reports and photos taken during inspections is included in **Appendix B**. Maintenance and repair work completed by BNL is discussed below.

4.1 Landfill Cap and Gas Vents

To prevent ruts in the landfills caused by the weight of the lawn mowers during periods of above normal precipitation, grass cutting is typically only conducted when soil conditions are optimal. During 2023, the grass at the Current and Former Landfills was cut during June and October. During the October mowing event, ruts were created by the mowing tractors tires on the south side of the Former Landfill. The ruts were inspected and determined not to have caused any damage to the protective cap and was limited to surface soils and surface vegetation. The ruts were filled in with topsoil, regraded and reseeded. Photos of this area have been included in **Appendix B.** Several animal burrows at the Current Landfill were filled in throughout 2023. The burrows did not penetrate past the protection layer of the cap.

4.2 Drainage Structures

The drainage structures at both the Current and Former Landfill areas were maintained. They were observed to be operational and structurally sound during the site inspections. Small pine seedlings and weeds were noted growing in the drainage channels of both landfills during various times of the year. The weeds died off as cold weather set in. If they grow back in sufficient numbers, they will either be cut back or sprayed with herbicide.

4.3 Environmental Monitoring System

The monitoring wells and soil-gas monitoring wells associated with the landfills required no significant maintenance. Access to the soil-gas monitoring wells was cleared via mechanical weed whacking prior to each sampling event.

4.4 Related Structures

During October, cracks on the asphalt access roadway around the Current Landfill were filled using hot-applied asphalt crack sealant. The purpose of the crack sealing is to prevent the deterioration of the asphalt roadway that provides access around the landfill structure. Photos of some of the cracks filled can be found in **Appendix B**.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Groundwater Monitoring

5.1.1 Conclusions for the Current Landfill

- Although low levels of contaminants continue to be detected, the landfill controls are effective at reducing the impact of the Current Landfill on groundwater quality as evidenced by the improving quality of groundwater downgradient of the landfill.

- Benzene was detected in downgradient well 087-11 at concentrations slightly above the groundwater standard with a maximum concentration of 2.0 µg/L in well 087-11. The other VOCs detected above the groundwater standard were chloroethane and 1,1-dichloroethane. 1,1-Dichloroethane was detected above the standard of 5 µg/L in monitoring well 088-109 with a maximum concentration of 10 µg/L. Chloroethane was detected in wells 088-109 above the groundwater standard of 5 µg/L with concentrations up to 42 µg/L. Although VOCs continue to be detected in downgradient wells, an analysis of the trends of VOCs indicate the concentrations are stable to decreasing apart from well 088-109 which has shown VOC concentrations slightly increasing during the year. The long-term historical trend on this well shows fluctuating levels of VOCs. These VOCs are naturally attenuating as they migrate south as shown by groundwater monitoring and are not detected at the site boundary above the drinking water standard.

- Concentrations of landfill water chemistry parameters and metals such as ammonia and iron in several downgradient wells were above the upgradient values. This suggests that leachate continues to emanate from the landfill into groundwater. Ammonia was the only water chemistry parameter detected above the standard of 2 mg/L, in downgradient well 087-11 at a maximum of 2.4 mg/L.

- During 2023, antimony, arsenic, iron, manganese, and sodium in several downgradient wells were detected above their respective groundwater standards. These parameters and concentrations are consistent with historic values.

- Tritium was not detected in any of the wells sampled during 2023. Strontium-90 was detected in downgradient wells 088-23, 088-109 and 088-21 of the Current Landfill, but at concentrations well below the groundwater standard. There have been no detections of radionuclides above the drinking water standards since 1998.

5.1.2 Recommendations for the Current Landfill

- The monitoring well network for the Current Landfill is adequate, and no changes to the network or the sampling frequency are recommended at this time.

5.2 Soil-Gas Monitoring

5.2.1 Conclusions for the Current Landfill

- Methane and/or hydrogen sulfide levels in wells located along the west landfill boundary, north landfill boundary and southeast corner have remained stable and have not shown any significant increases or decreases over time. No significant gas migration has been observed this year at the outpost soil-gas wells along Brookhaven Avenue.

5.2.2 Recommendations for the Current Landfill

- The soil-gas monitoring program is adequate at this time and no changes are recommended.

5.2.3 Conclusions for the Former Landfill Area

- Methane and hydrogen sulfide monitoring at the Former Landfill Area continue to show no detectable levels of landfill gas. Methane has not been detected at or above standards since monitoring began in 1996.

5.2.4 Recommendations for the Former Landfill Area

- The soil-gas monitoring program is adequate at this time and no changes are recommended.

5.3 Maintenance and Repair

- Maintenance of the landfill caps will continue in accordance with the O&M requirements.

5.3.1 Current Landfill

- Monthly inspections and maintenance will continue in accordance with the O&M requirements. Access to the soil-gas monitoring wells will continue to be cleared via mechanical weed whacking. Continue the removal of small pines and weeds in the drainage channel during 2024.

5.3.2 Former Landfill Area

- Monthly inspections and maintenance will continue in accordance with the O&M requirements. Access to the soil-gas monitoring wells will continue to be cleared via mechanical weed whacking. Continue the removal of small pines and weeds in the drainage channel during 2024.

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Table 1

2023 Analytical Requirements for Groundwater Samples

Well ID	Project 1	Project 2	Decision Subunit	EPA 8260 Low Level VOCs	Pesticides Method 608	PCBs Method 608	TSS/TDS	Sufates/Chloride/Alkalinity	TK Nitrogen	Total Nitrogen	Nitrates	Nitrites	Ammonia	TAL Metals	Cyanide	EPA 901 Gamma Spec	EPA 906 Tritium	EPA 905 Sr 90	Frequency (events/year)
087-09	CLF		Background	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-11	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-23	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
087-24	CLF		Downgradient	X[a]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-26	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-27	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
088-109	CLF		Downgradient	X			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	4
088-110	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
088-21	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
088-22	CLF		Downgradient	X[a]			X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]				1a
088-23	CLF		Downgradient	X[a]			X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]				1a
098-99	CLF	OU I (South Boundary)	Downgradient	X															4

NOTES:
a: Collect in 4th Quarter only.
b: Collect in 2nd and 4th Quarters.

Table 2
Current Landfill - Summary of 2023 Volatile Organic Compounds.

		087-09		087-09		087-11		087-11		087-23		087-23		087-24	
	Groundwater Standards	5/22/2023		11/14/2023		5/24/2023		11/15/2023		5/24/2023		11/15/2023		11/15/2023	
Analyte	(ug/L)	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	**1.96**		**1.5**		0.5	U	0.48	J	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.9	J	0.49	J	0.5	U	0.5		0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	1.56		1.7		0.47	J	0.5	U	0.5	U
Chloroform	7	0.5	U	0.32	J	0.5	U	0.5	U	0.5	U	0.5	U	0.47	J
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	1	U	0.5	U	1	U	0.5	U	1	U	1	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.51		0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.32	J	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	0		0.32		4.42		3.69		0.47		1.81		0.47	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable.

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2023 Volatile Organic Compounds.

		087-26		087-26		087-27		087-27		088-109		088-109		088-109	
	Groundwater Standards	5/22/2023		11/15/2023		5/22/2023		11/16/2023		3/3/2023		5/22/2023		9/14/2023	
Analyte	(ug/L)	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	2.45		**5.09**		**9.3**	
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	0.68	J	0.65		0.5	U	0.36	J	0.51	
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.58		0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	0.5	U	0.54		**8.49**		**12.5**		**24**	
Chloroform	7	3.43		3.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	1	U	0.5	U	1	U	0.5	U	0.5	U	1	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.26	J	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	3.43		3.8		0.68		2.03		10.94		17.95		33.81	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2023 Volatile Organic Compounds.

		088-109		088-110		088-110		088-21		088-21		088-22		088-23	
	Groundwater Standards	11/14/2023		5/22/2023		11/15/2023		5/24/2023		11/16/2023		11/16/2023		11/16/2023	
Analyte	(ug/L)	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	**10**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.75		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	**42**		1.1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	4.4		0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	1	U	0.5	U	1	U	0.5	U	1	U	1	U	1	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	52.75		1.1		0		0		0		4.4		0	

U: Analyte was analyzed for, but not detected above the MDL.
J: Value is estimated.
R: A rejected result; the data is rejected, not usable, and unreliable
Bold/Shaded: Value exceeds Standard/Guiadance Value.
*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2023 Volatile Organic Compounds.

Analyte	Groundwater Standards (ug/L)	098-99 3/3/2023 (ug/L)		098-99 5/24/2023 (ug/L)		098-99 9/14/2023 (ug/L)		098-99 11/15/2023 (ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	4.16		3.88		3.2		2.5	
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	7	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	0.5	U	1	U	1	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	1.02	U*	0.5	U	0.5	U	0.5	U
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	4.16		3.88		3.2		2.5	

U: Analyte was analyzed for, but not detected above the MDL.
J: Value is estimated.
R: A rejected result; the data is rejected, not usable, and unreliable
Bold/Shaded: Value exceeds Standard/Guiadance Value.
*: Data qualified during secondary data verification review by BNL.

Table 3

Current Landfill-Summary of 2023 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	087-09 5/22/2023 (mg/L)		087-09 11/14/2023 (mg/L)		087-11 5/24/2023 (mg/L)		087-11 11/15/2023 (mg/L)		087-23 5/24/2023 (mg/L)		087-23 11/15/2023 (mg/L)		087-24 5/24/2023 (mg/L)	
Alkalinity (as CaCO3)	--	30.4		29		150		120		49.2		51		38.5	
Ammonia (as N)	2	0.025	U*	0.1	U	**2.36**		**2.3**		0.321		0.42		0.017	U
Chloride	250**	40.2		93		8.86		6.6		9.91		13		76.9	
Cyanide	0.2	0.00167	U	0.01	U	0.00167	U	0.01	U	0.00167	U	0.01	U	0.00167	U
Nitrate (as N)	10	1.14		0.22	B	0.165	U	0.5	U	0.033	U	0.14	B	0.269	
Nitrite (as N)	1	0.033	U	0.5	U	0.033	U	0.5	U	0.033	U	0.5	U	0.033	U
Nitrite + Nitrate-N	10	1.19		0.27		0.017	U	0.1	U	0.017	U	0.057	B	0.295	
Nitrogen	--	1.19		1		2.64		2.7		0.424		0.1	U	0.295	
Sulfate	250**	19.1		6.9		0.345	J	2		1.76		4.6		15.4	
TDS	500**	105		170		163		190		62		110		184	
Total Kjeldahl Nitrogen	--	0.033	U	0.74	B	2.64		2.7		0.418		1	U	0.033	U
TSS	--	0.814	U	4	U	22.4		27		10.9		16		1	J

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

B: The reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs). Non-enforceable secondary drinking water regulations for aesthetics.

Table 3

Current Landfill-Summary of 2023 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	087-24 11/15/2023 (mg/L)		087-26 5/22/2023 (mg/L)		087-26 11/15/2023 (mg/L)		087-27 5/22/2023 (mg/L)		087-27 11/16/2023 (mg/L)		088-109 5/22/2023 (mg/L)		088-109 11/14/2023 (mg/L)	
Alkalinity (as CaCO3)	--	37		31.1		30		106		88		108		10	U
Ammonia (as N)	2	0.1	U	0.017	U*	0.1	U	1.43		1.8		1.48		**2.4**	
Chloride	250**	63		47.6		97		47.7		85		16.1		26	
Cyanide	0.2	0.01	U	0.00167	U	0.01	U	0.00167	U	0.01	U	0.00167	U	0.01	U
Nitrate (as N)	10	0.39	B	0.412		0.93		0.033	U	0.5	U	0.033	U	0.5	U
Nitrite (as N)	1	0.5	U	0.033	U	0.5	U	0.033	U	0.5	U	0.033	U	0.5	U
Nitrite + Nitrate-N	10	0.42		0.437		0.96		0.0296	U*	0.1	U	0.026	U*	0.1	U
Nitrogen	--	0.42		0.465		0.96		1.66		2.1		1.74		2.9	
Sulfate	250**	11		9.29		9.5		3.95		9.2		8.19		3.9	U*
TDS	500**	160		107		200		204		250		108		210	
Total Kjeldahl Nitrogen	--	1	U	0.033	U	1	U	1.63		2.1		1.71		2.9	
TSS	--	4	U	0.857	J	4	U	5.29		26		24		18	

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

B: The reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs). Non-enforceable secondary drinking water regulations for aesthetics.

Table 3

Current Landfill-Summary of 2023 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	088-110 5/22/2023 (mg/L)		088-110 11/15/2023 (mg/L)		088-21 5/24/2023 (mg/L)		088-21 11/16/2023 (mg/L)		088-22 11/16/2023 (mg/L)		088-23 11/16/2023 (mg/L)	
Alkalinity (as CaCO3)	--	76.7		45		31.8		26		28		37	
Ammonia (as N)	2	0.408		0.24		0.017	U	0.1	U	0.1	U	0.1	U
Chloride	250**	38		39		101		47		68		20	
Cyanide	0.2	0.00167	U	0.01	U	0.00167	U	0.01	U	0.01	U	0.01	U
Nitrate (as N)	10	0.033	U	0.5	U	0.236		0.5	U	0.23	B	0.38	B
Nitrite (as N)	1	0.033	U	0.5	U	0.033	U	0.5	U	0.5	U	0.5	U
Nitrite + Nitrate-N	10	0.0267	U*	0.1	U	0.249		0.12		0.36		0.54	
Nitrogen	--	0.447		0.1	U	0.365		0.12		0.36		0.54	
Sulfate	250**	12.3		17		4.73		3.9		8.6		14	
TDS	500**	145		150		207		92		130		83	
Total Kjeldahl Nitrogen	--	0.42		1	U	0.116		1	U	1	U	1	U
TSS	--	5		12		1.57	J	1.2	B	4	U	1.2	B

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

B: The reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs). Non-enforceable secondary drinking water regulations for aesthetics.

Table 4

Current Landfill-Summary of 2023 Metals Data

Analyte	Groundwater Standards (ug/L)	087-09 5/22/2023 (ug/L)		087-09 11/14/2023 (ug/L)		087-11 5/24/2023 (ug/L)		087-11 11/15/2023 (ug/L)		087-23 5/24/2023 (ug/L)		087-23 11/15/2023 (ug/L)		087-24 5/24/2023 (ug/L)		087-24 11/15/2023 (ug/L)	
Aluminum	200*	68	U	16	B	68	U	120		68	U	27	B	68	U	50	U
Antimony	3	**6.64**	**B**	2	U	3.5	U	2	U	3.5	U	2	U	**7.4**	**B**	2	U
Arsenic	10**	2	U	5	U	6.82		**17**		**13.1**		**11**		2	U	5	U
Barium	1000	19.1	B	30		24.6	B	21		25.8	B	28		27.6	B	13	B
Beryllium	3	1	U	2	U	1	U	2	U	1	U	2	U	1	U	2	U
Cadmium	5	1	U	2	U	1	U	2	U	1	U	2	U	1	U	2	U
Calcium	--	9860		7200		17500		19000		3230	B	3800		9270		3200	
Chromium	50	7.63	B	15		1.17	B	1.1	B	1	U	3	U	1	U	3	U
Cobalt	--	1	U	1.7	B	1	U	3	B	12	B	12		1	U	5	U
Copper	200	3	U	2.9	B	10.5	B	21		3	U	1.2	B	3	U	10	U
Iron	300	49.2	B	140	B	**81600**		**76000**		**36900**		**38000**		30	U	27	B
Lead	15***	0.5	U	1	U	0.5	U	0.67	B	0.5	U	0.39	B	0.5	U	1	U
Magnesium	35000	4790	B	3000		2890	B	2500		916	B	1100		5510		1700	
Manganese	300	4.04	B	40		**1260**		**1100**		**2780**		**3000**		2	U	0.93	B
Mercury	0.7	0.067	U	0.2	U	0.067	U	0.2	U	0.067	U	0.2	U	0.067	U	0.2	U
Nickel	100	1.5	U	90		1.5	U	1.8	B	1.5	U	1.8	B	1.5	U	10	U
Potassium	--	793	B	970	B	2400	B	2200		932	B	980	B	1760	B	1000	B
Selenium	10	1.5	UN	5	U	1.5	U	5	U	1.5	U	5	U	1.5	U	5	U
Silver	50	1	U	1	U	1.08	B	1	U	1	U	1	U	1	U	1	U
Sodium	20000	**31000**		**46000**		4500	B	3400		5940		6400		**56800**		**46000**	
Thallium	0.5	0.6	U	0.5	U	0.6	U	0.5	U	0.6	U	0.5	U	0.6	U	0.5	U
Vanadium	--	1	U	5	U	2.18	B	5	U	1	U	5	U	1	U	5	U
Zinc	2000	3.3	U	4.4	B	3.3	U	150		3.84	B	6.7	B	3.3	U	10	U

Table 4

Current Landfill-Summary of 2023 Metals Data

Analyte	Groundwater Standards (ug/L)	087-26 5/22/2023 (ug/L)		087-26 11/15/2023 (ug/L)		087-27 5/22/2023 (ug/L)		087-27 11/16/2023 (ug/L)		088-109 5/22/2023 (ug/L)		088-109 11/14/2023 (ug/L)		088-110 5/22/2023 (ug/L)		088-110 11/15/2023 (ug/L)	
Aluminum	200*	68	U	50	U	68	U	23	B	68	U	15	B	68	U	50	U
Antimony	3	**6.72**	**B**	2	U	**7.65**	**B**	2	U	**8.32**	**B**	2	U	3.5	U	2	U
Arsenic	10**	2	U	5	U	5.56		7.1		5.59		6.8		7.93		7.2	
Barium	1000	30.9	B	59		32	B	36		38.5	B	42		29.4	B	27	
Beryllium	3	1	U	2	U	1	U	2	U	1	U	2	U	1	U	2	U
Cadmium	5	1	U	2	U	1	U	2	U	1	U	2	U	1	U	2	U
Calcium	--	6650		15000		15100		19000		24100		30000		14300		11000	
Chromium	50	1	U	3	U	1	U	3	U	1	U	3	U	1	U	3	U
Cobalt	--	1	U	5	U	5.79	B	3.8	B	2.62	B	3.9	B	1.72	B	1.2	B
Copper	200	3	U	1.7	B	3	U	5	U	3	U	10	U	3	U	10	U
Iron	300	186		180	B	**48400**		**51000**		**40700**		**50000**		**31400**		**21000**	
Lead	15***	0.5	U	1	U	0.5	U	1	U	0.5	U	1	U	0.5	U	1	U
Magnesium	35000	3860	B	8500		3570	B	3500		5070		5800		3800	B	2600	
Manganese	300	2	U	2	B	**1060**		**1300**		**1170**		**1100**		**2620**		**2600**	
Mercury	0.7	0.067	U	0.2	U	0.067	U	0.2	U	0.067	U	0.2	U	0.067	U	0.2	U
Nickel	100	1.5	U	10	U	1.5	U	10	U	1.5	U	10	U	1.5	U	10	U
Potassium	--	1460	B	1900	B	2760	B	3400		3410	B	4800		2100	B	2100	
Selenium	10	1.5	UN	5	U	1.5	UN	5	U	1.5	UN	5	U	1.5	UN	5	U
Silver	50	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Sodium	20000	**34200**		**36000**		**29100**		**40000**		12100		17000		**21500**		**22000**	
Thallium	0.5	0.6	U	0.5	U	0.6	U	0.5	U	0.6	U	0.5	U	0.6	U	0.5	U
Vanadium	--	1	U	5	U	1	U	5	U	1	U	5	U	1	U	5	U
Zinc	2000	3.3	U	10	U	3.3	U	4.3	B	3.9	B	2.6	B	3.3	U	10	U

Table 4

Current Landfill-Summary of 2023 Metals Data

Analyte	Groundwater Standards (ug/L)	088-21 5/24/2023 (ug/L)		088-21 11/16/2023 (ug/L)		088-22 11/16/2023 (ug/L)		088-23 11/16/2023 (ug/L)	
Aluminum	200*	68	U	44	B	50	U	14	B
Antimony	3	**4.58**	B	2	U	2	U	2	U
Arsenic	10**	2	U	5	U	5	U	5	U
Barium	1000	39.2	B	20		44		3.9	B
Beryllium	3	1	U	2	U	2	U	2	U
Cadmium	5	1	U	2	U	2	U	2	U
Calcium	--	6200		4700		8300		13000	
Chromium	50	1	U	3	U	3	U	3	U
Cobalt	--	1	U	5	U	5	U	0.96	B
Copper	200	3	U	5	U	5	U	5	U
Iron	300	162		170	B	190	B	**340**	
Lead	15***	0.5	U	1	U	1	U	1	U
Magnesium	35000	3460	B	2500		5600		2900	
Manganese	300	37.3		16		24		63	
Mercury	0.7	0.067	U	0.2	U	0.2	U	0.2	U
Nickel	100	1.5	U	10	U	10	U	10	U
Potassium	--	1780	B	750	B	1900		580	B
Selenium	10	1.5	U	5	U	5	U	1.1	B
Silver	50	1	U	1	U	1	U	1	U
Sodium	20000	**69700**		**22000**		**29000**		13000	
Thallium	0.5	0.6	U	0.5	U	0.5	U	0.5	U
Vanadium	--	1	U	1.1	B	5	U	5	U
Zinc	2000	3.3	U	2.1	B	10	U	10	U

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

B: Indicates that the value was less then the Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit(IDL).

E: %Difference of sample and SD is greater then 10%

N:The Matrix spike sample recovery is not within control limits.

*: USEPA SMCL Secondary Maximum Contaminant Levels (SMCLs)

** USEPA Maximum Contaminiant Level (MCL)

*** OUI Record of Decision Selected Cleanup Goal

Table 5

Current Landfill-Summary of 2023 Radionuclide Data

Analyte	**Groundwater Standards** pCi/L	**087-23 11/15/2023 pCi/L**				**087-27 11/16/2023 pCi/L**				**088-109 11/14/2023 pCi/L**				**088-21 11/16/2023 pCi/L**			
		Result	Qual	MDC	Error	Result	Qual	MDC	Error	Result	Qual	MDC	Error	Result	Qual	MDC	Error
Americium-241	29.6*	-6.78	U DL	26.5	15.9	-0.0785	U	23.9	14.1	-3.9	U	24.2	14.4	-3.39	U	24.5	14.6
Beryllium-7	100000*	-11.6	U DL	75.3	54.7	19.9	U DL	60.2	50.2	10.4	U DL	68.8	54.9	15.8	U	56.3	45
Cesium-134	156*	3.47	U DL	18.2	10.8	-3.53	U DL	17.7	10.5	5.08	U DL	19.2	7.4	1.28	U DL	17.2	3.05
Cesium-137	164*	-1.98	U	8.99	7.36	0.17	U	9.22	7.77	0	U	8.99	2.26	-2.45	U	8.52	7
Co-60	560*	-8.4	U	14.7	8.78	3.75	U	7.14	6.6	-6.53	U	13.8	9.7	-5.79	U	11.9	7.23
Cobalt-57	14800*	0	U DL	7.65	1.89	0.359	U DL	5.92	3.47	-2.43	U DL	7.58	4.56	-2.56	U DL	7	4.22
Europium-152	3000*	-46.3	U DL	146	87.2	10.3	U DL	118	10.8	25.7	U DL	128	33.6	6.28	U DL	134	9.87
Europium-154	2720*	4.27	U DL	85.5	23.1	14.2	U DL	76.6	9.27	17.8	U DL	78.8	66	28.2	U DL	78.8	30.7
Europium-155	40000*	-12.3	U	34.7	20.9	6.06	U	29.4	7	-6.95	U	34.7	38.9	6.35	U	32.8	15.2
Manganese-54	3920*	-1.71	U DL	12.4	9.87	-4.62	U DL	10.9	6.59	0.0976	U DL	8.81	4.95	-0.709	U DL	10.4	10.1
Sodium-22	640*	-8.36	U DL	15.3	9.43	-8.14	U DL	14.4	8.89	4.47	U DL	9.12	5.6	-1.14	U DL	11.9	6.57
Strontium-90	8***	0.676		0.314	0.24	0.466	N2	0.346	0.239	0.687	J	0.372	0.275	0.652		0.31	0.242
Tritium	20000***	-4.5	U	391	215	-64.9	U	391	208	-104	U	398	206	-115	U	384	199
Zinc-65	48*	-1.96	U DL	30.1	17.3	0	U DL	26.7	2.48	0.617	U DL	30.7	17.5	0	U DL	28.6	2.76

N2: Not usable based on the results that are not distinguishable from background. The reported activity value is less than or equal to the sum of the MDC and the uncertainty.

U: Analyte was analyzed for but not detected above the MDC.

J: Estimated value. Based on secondary review verification and review of MS/MSD data collected from this sample.

*: Department of Energy (DOE) Groundwater Screening Level.

***:Environmental Protection Agency (EPA) Drinking Water Standards.

UI: Gamma Spectroscopy-Uncertain identification.

DL: Failed required detection limit.

MDC: Minimum Detectable Concentration.

Table 6
Current Landfill Soil Gas Monitoring Well Description

Current Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-1 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-1 PROBE B	**Intermediate**	**10.5**	**17.5**
SGM-1 PROBE C	**Deep**	**20**	**29.5**
SGM-2 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-2 PROBE B	**Intermediate**	**10.5**	**16**
SGM-2 PROBE C	**Deep**	**19**	**28**
SGM-3 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-3 PROBE B	**Intermediate**	**10.5**	**17**
SGM-3 PROBE C	**Deep**	**20**	**29**
SGM-4 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-4 PROBE B	**Intermediate**	**10.5**	**20**
SGM-4 PROBE C	**Deep**	**23**	**32**
SGM-5 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-5 PROBE B	**Intermediate**	**10.5**	**22**
SGM-5 PROBE C	**Deep**	**25**	**34**
SGM-6 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-6 PROBE B	**Intermediate**	**10.5**	**18.5**
SGM-6 PROBE C	**Deep**	**21.5**	**30.5**
SGM-7 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-7 PROBE B	**Intermediate**	**10.5**	**16**
SGM-7 PROBE C	**Deep**	**19**	**26**
SGM-8 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-8 PROBE B	**Intermediate**	**10.5**	**16.5**
SGM-8 PROBE C	**Deep**	**19.5**	**28.5**
SGM-9 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-9 PROBE B	**Intermediate**	**10.5**	**20.5**
SGM-9 PROBE C	**Deep**	**23.5**	**32.5**
SGM-10 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-10 PROBE B	**Intermediate**	**10.5**	**15.5**
SGM-10 PROBE C	**Deep**	**18.5**	**27.5**
SGM-11 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-11 PROBE B	**Intermediate**	**10.5**	**16**
SGM-12 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-12 PROBE B	**Intermediate**	**10.5**	**15**
SGM-13 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-13 PROBE B	**Intermediate**	**10.5**	**13**
SGM-14 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-14 PROBE B	**Intermediate**	**10.5**	**13**
SGM-15 PROBE A	**Shallow**	**2.5**	**5.5**
SGM-15 PROBE B	**Intermediate**	**8.5**	**11.5**
SGM-16 PROBE A	**Shallow**	**2.5**	**5.5**
SGM-16 PROBE B	**Intermediate**	**8.5**	**11**
SGM-17 PROBE A	**Shallow**	**2.5**	**5.5**

Table 6
Current Landfill Soil Gas Monitoring Well Description

Current Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-17 PROBE B	**Intermediate**	**8.5**	**11**
SGM-18 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-18 PROBE B	**Intermediate**	**10.5**	**13.5**
SGM-19 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-19 PROBE B	**Intermediate**	**10.5**	**17**

BLS – Below Land Surface

Current Landfill Outpost Wells		
Site ID	**Depth to Bottom from top PVC (feet)**	**PVC Stick Up from Ground (feet)**
GSGM-1A	**12.00**	**2.50**
GSGM-1B	**21.00**	**2.50**
GSGM-1C	**29.40**	**2.50**
GSGM-2A	**14.25**	**2.50**
GSGM-2B	**20.05**	**2.50**
GSGM-2C	**27.00**	**2.50**
GSGM-3A	**13.91**	**2.50**
GSGM-3B	**17.75**	**2.50**
GSGM-4A	**11.50**	**2.50**
GSGM-4B	**15.20**	**2.50**

Table 6
Former Landfill Soil Gas Monitoring Well Description

Former Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-1 PROBE A	**Shallow**	**2.5**	**10**
SGM-1 PROBE B	**Intermediate**	**15**	**43**
SGM-2PROBE A	**Shallow**	**2.5**	**10**
SGM-2 PROBE B	**Intermediate**	**15**	**40**
SGM-3 PROBE A	**Shallow**	**2**	**9.5**
SGM-3 PROBE B	**Intermediate**	**14.5**	**36**
SGM-4 PROBE A	**Shallow**	**2.5**	**10**
SGM-4 PROBE B	**Intermediate**	**15**	**35.5**
SGM-5 PROBE A	**Shallow**	**2.5**	**10**
SGM-5 PROBE B	**Intermediate**	**15**	**37**
SGM-6 PROBE A	**Shallow**	**2.7**	**10.2**
SGM-6 PROBE B	**Intermediate**	**22**	**37.2**
SGM-7 PROBE A	**Shallow**	**2.8**	**10.3**
SGM-7 PROBE B	**Intermediate**	**15**	**42**
SGM-8 PROBE A	**Shallow**	**2.5**	**10**
SGM-8 PROBE B	**Intermediate**	**15**	**47**
SGM-9 PROBE A	**Shallow**	**2.5**	**10**
SGM-9 PROBE B	**Intermediate**	**15**	**52**
SGM-10 PROBE A	**Shallow**	**2.5**	**10**
SGM-10 PROBE B	**Intermediate**	**15**	**52**
SGM-11 PROBE A	**Shallow**	**2.5**	**10**
SGM-11 PROBE B	**Intermediate**	**15**	**46**
SGM-12 PROBE A	**Shallow**	**2.5**	**10**
SGM-12 PROBE B	**Intermediate**	**15**	**43.5**

BLS – Below Land Surface

Table 7

2023 Current Landfill Soil Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 3/20-21/2023	Methane (% By Volume) 6/1-2/2023	Methane (% By Volume) 9/26-28/2023	Methane (% By Volume) 12/26-28/2023	LEL (% By Volume) 3/20-21/2023	LEL (% By Volume) 6/1-2/2023	LEL (% By Volume) 9/26-28/2023	LEL (% By Volume) 12/26-28/2023	Hydrogen Sulfide (ppm By Volume) 3/20-21/2023	Hydrogen Sulfide (ppm By Volume) 6/1-2/2023	Hydrogen Sulfide (ppm By Volume) 9/26-28/2023	Hydrogen Sulfide (ppm By Volume) 12/26-28/2023
GSGM-1A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-1B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-1C		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2C		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-3A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-3B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-4A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-4B		0	0	0	0	0	0	0	0	0	0	0	0
SGMW-01A (CLF)	087-62	7.1	6.2	3.4	6.8	>100	>100	68	>100	2	2	7	3
SGMW-01B (CLF)	087-78	6.2	6.1	1.5	6.5	>100	>100	30	>100	1	1	1	1
SGMW-01C (CLF)	087-79	5.1	5	3	5.8	>100	100	60	>100	0	0	1	1
SGMW-02A (CLF)	087-63	33.4	36.4	41.5	43.6	>100	>100	>100	>100	0	3	0	0
SGMW-02B (CLF)	087-80	30.2	36.7	42.6	35	>100	>100	>100	>100	35	12	15	8
SGMW-02C (CLF)	087-81	32	36.4	41.6	36.5	>100	>100	>100	>100	3	4	4	4
SGMW-03A (CLF)	087-64	4.7	23.1	29.8	18	94	>100	>100	>100	1	5	13	0
SGMW-03B (CLF)	087-82	40	42	44.2	40.2	>100	>100	>100	>100	17	21	22	9
SGMW-03C (CLF)	087-83	35.3	41.9	42.1	37.3	>100	>100	>100	>100	0	23	5	22
SGMW-04A (CLF)	087-65	29.3	35	33.7	32.2	>100	>100	>100	>100	0	3	4	0
SGMW-04B (CLF)	087-84	29.8	33.2	30.5	29.2	>100	>100	>100	>100	2	4	6	3
SGMW-04C (CLF)	087-85	21.8	25.7	22.4	20.9	>100	>100	>100	>100	1	4	2	4
SGMW-05A (CLF)	087-66	0	14	5.7	7.4	0	>100	>100	>100	0	0	3	0
SGMW-05B (CLF)	087-86	19.3	23.4	18.2	19.8	>100	>100	>100	>100	0	3	0	2
SGMW-05C (CLF)	087-87	16.7	17.5	15.1	14.4	>100	>100	>100	>100	0	0	1	1
SGMW-06A (CLF)	087-67	0.1	0	0	11.8	2	0	0	>100	0	0	0	0
SGMW-06B (CLF)	087-88	24.5	25.5	24.1	25.1	>100	>100	>100	>100	1	4	2	3
SGMW-06C (CLF)	087-89	22.3	23	21.6	22.3	>100	>100	>100	>100	1	2	1	2
SGMW-07A (CLF)	087-68	0	0	0	0	0	0	0	0	0	0	0	0

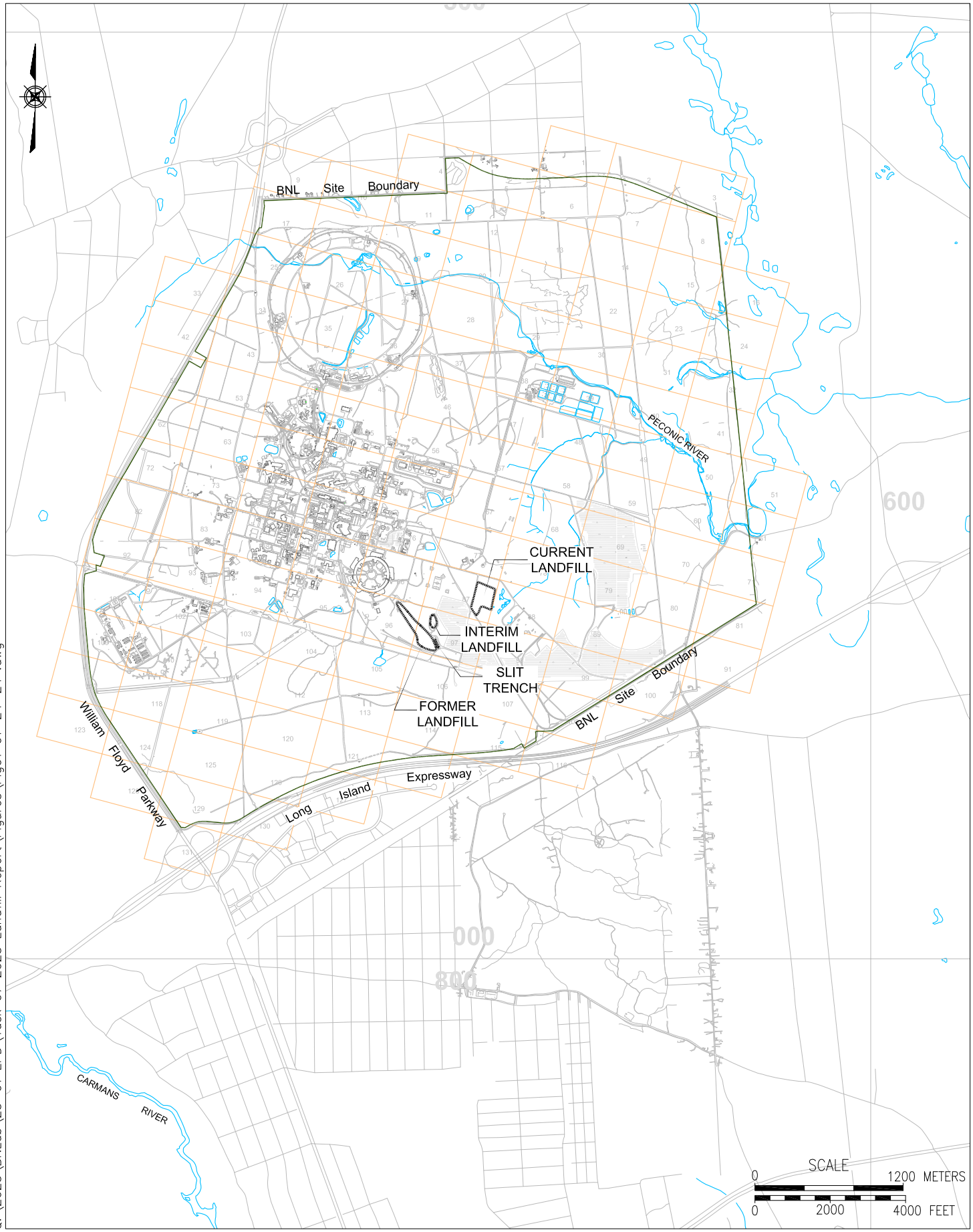
Table 7

2023 Current Landfill Soil Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 3/20-21/2023	Methane (% By Volume) 6/1-2/2023	Methane (% By Volume) 9/26-28/2023	Methane (% By Volume) 12/26-28/2023	LEL (% By Volume) 3/20-21/2023	LEL (% By Volume) 6/1-2/2023	LEL (% By Volume) 9/26-28/2023	LEL (% By Volume) 12/26-28/2023	Hydrogen Sulfide (ppm By Volume) 3/20-21/2023	Hydrogen Sulfide (ppm By Volume) 6/1-2/2023	Hydrogen Sulfide (ppm By Volume) 9/26-28/2023	Hydrogen Sulfide (ppm By Volume) 12/26-28/2023
SGMW-07B (CLF)	087-90	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-07C (CLF)	087-91	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08A (CLF)	087-69	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08B (CLF)	087-92	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08C (CLF)	087-93	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09A (CLF)	087-70	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09B (CLF)	087-94	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09C (CLF)	087-95	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-10A (CLF)	087-71	0	7.4	0	1.3	0	>100	0	26	0	1	0	0
SGMW-10B (CLF)	087-96	2.1	11.6	11.6	8.6	42	>100	>100	>100	0	4	9	9
SGMW-10C (CLF)	087-97	3.8	10.1	9.8	7.5	76	>100	>100	>100	3	3	6	9
SGMW-11A (CLF)	087-72	2.3	10.3	14.2	6.5	46	>100	>100	>100	4	16	19	7
SGMW-11B (CLF)	087-98	0.2	10.1	11.3	4.1	4	>100	>100	82	0	2	1	1
SGMW-12A (CLF)	087-73	26.3	33.1	33.1	35.8	>100	>100	>100	>100	0	34	10	22
SGMW-12B (CLF)	087-99	21.7	26.8	31.5	23.6	>100	>100	>100	>100	1	2	2	2
SGMW-13A (CLF)	087-74	0	24	0.2	0	0	>100	4	0	0	4	0	0
SGMW-13B (CLF)	087-100	16.9	23.8	24	17.6	>100	>100	>100	>100	0	1	1	1
SGMW-14A (CLF)	087-75	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-14B (CLF)	087-101	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-15A (CLF)	088-111	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-15B (CLF)	088-114	17.8	25	25.4	20.7	>100	>100	>100	>100	31	142	14	23
SGMW-16A (CLF)	088-112	0	0	0	1.6	0	0	0	32	0	0	0	0
SGMW-16B (CLF)	088-115	0	0	0	1.7	0	0	0	34	0	0	0	0
SGMW-17A (CLF)	088-113	0	0	0	1.6	0	0	0	32	0	0	0	0
SGMW-17B (CLF)	088-116	0	0	0	1.6	0	0	0	32	0	0	0	0
SGMW-18A (CLF)	087-76	0	0	0	1.6	0	0	0	32	0	0	0	0
SGMW-18B (CLF)	087-102	0	0	0	2.7	0	0	0	54	0	0	0	0
SGMW-19A (CLF)	087-77	0	3.3	0	1.7	0	>100	0	34	0	0	0	0
SGMW-19B (CLF)	087-103	0.3	13.2	5.2	5.2	6	>100	>100	>100	0	0	7	0

Table 8
2023 Former Landfill Soil-Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 8/28/2023	LEL (% By Volume) 8/28/2023	Hydrogen Sulfide (ppm By Volume) 8/28/2023
SGMW-01A (FLF)	096-41	0	0	0
SGMW-01B (FLF)	096-42	0	0	0
SGMW-02A (FLF)	096-43	0	0	0
SGMW-02B (FLF)	096-44	0	0	0
SGMW-03A (FLF)	096-45	0	0	0
SGMW-03B (FLF)	096-46	0	0	0
SGMW-04A (FLF)	096-47	0	0	0
SGMW-04B (FLF)	096-48	0	0	0
SGMW-05A (FLF)	097-50	0	0	0
SGMW-05B (FLF)	097-51	0	0	0
SGMW-06A (FLF)	097-52	0	0	0
SGMW-06B (FLF)	097-53	0	0	0
SGMW-07A (FLF)	097-54	0	0	0
SGMW-07B (FLF)	097-55	0	0	0
SGMW-08A (FLF)	097-56	0	0	0
SGMW-08B (FLF)	097-57	0	0	0
SGMW-09A (FLF)	097-58	0	0	0
SGMW-09B (FLF)	097-59	0	0	0
SGMW-10A (FLF)	097-60	0	0	0
SGMW-10B (FLF)	097-61	0	0	0
SGMW-11A (FLF)	097-62	0	0	0
SGMW-11B (FLF)	097-63	0	0	0
SGMW-12A (FLF)	096-49	0	0	0
SGMW-12B (FLF)	096-50	0	0	0



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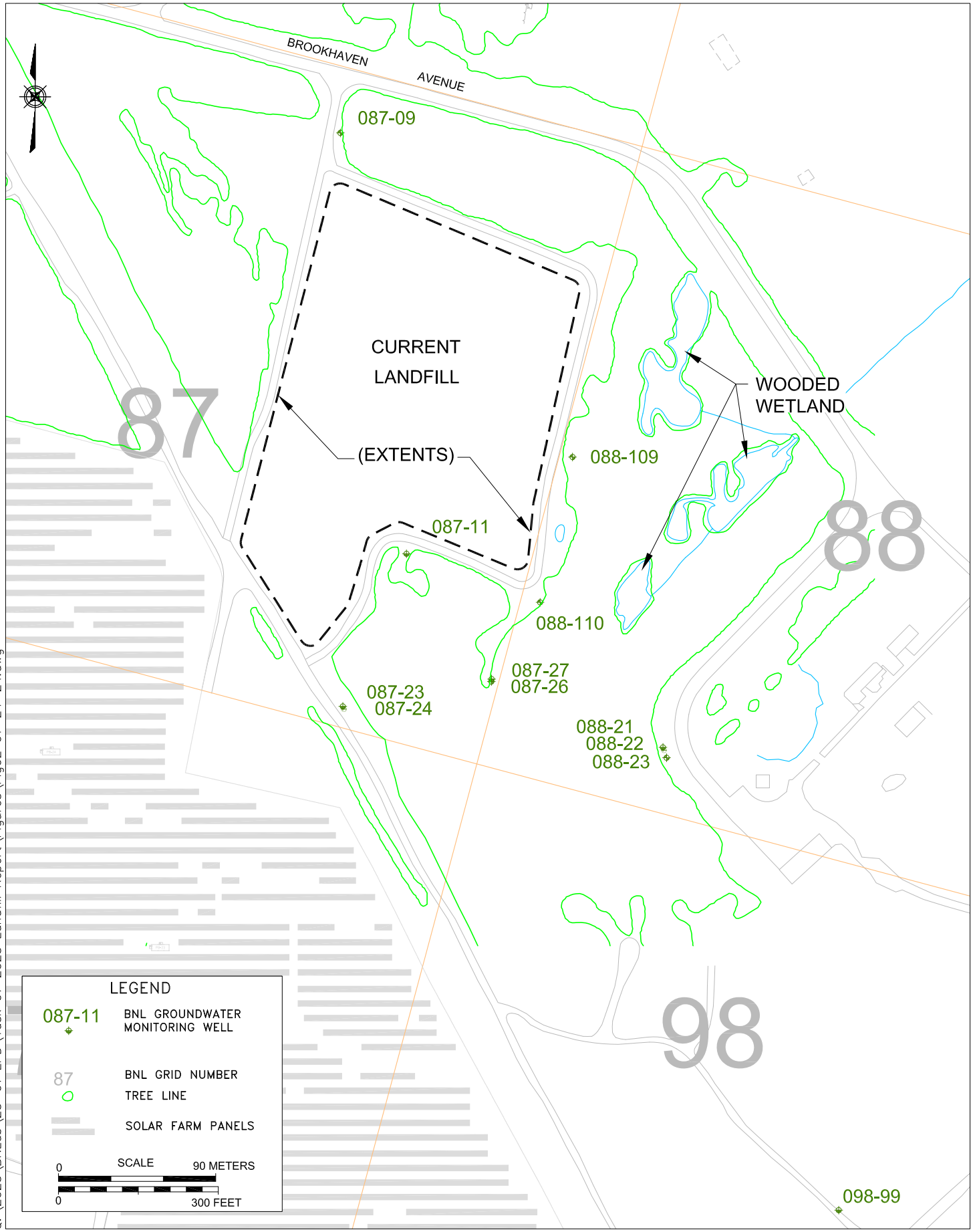
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:

SITE LOCATION MAP
2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 1



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

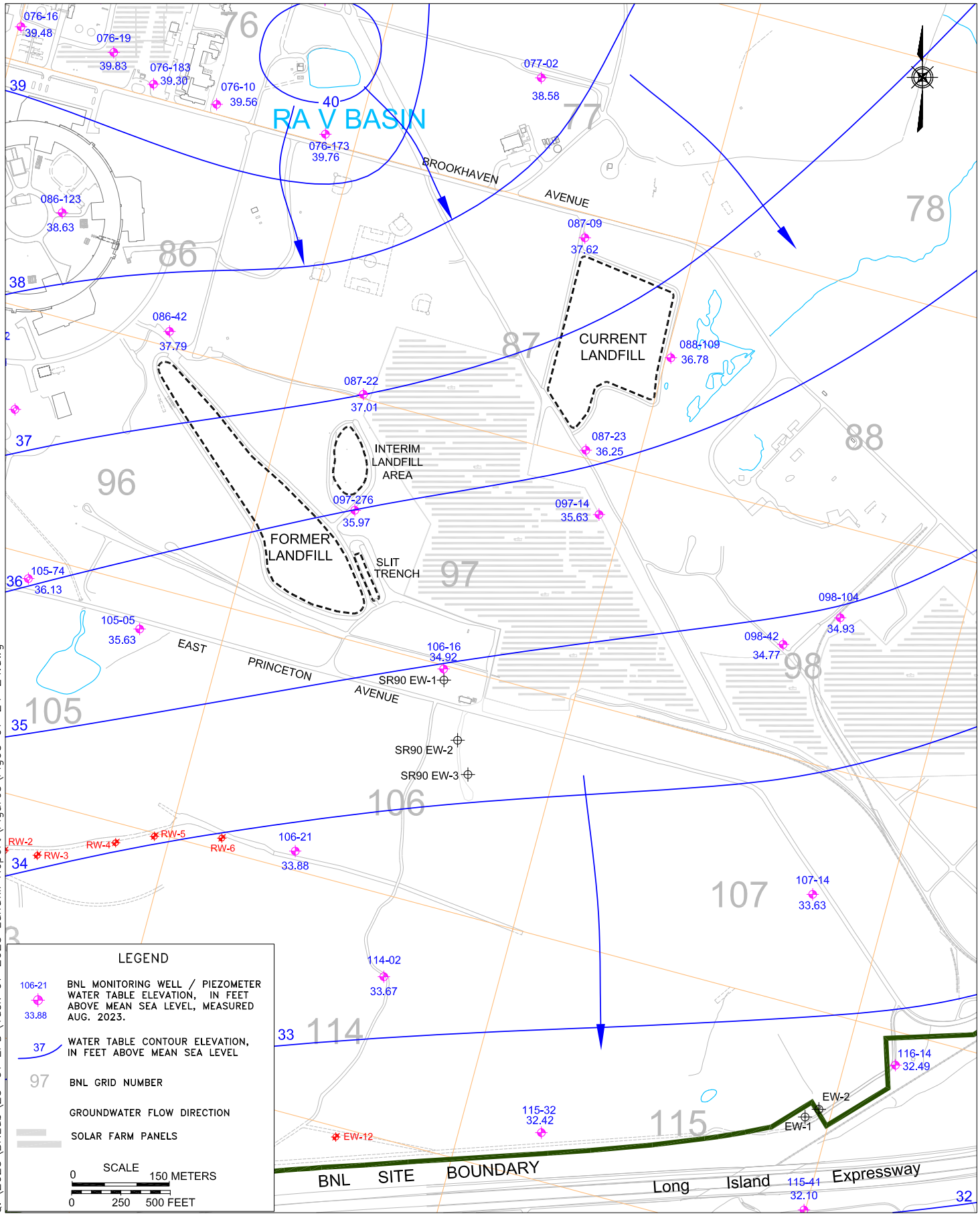
TITLE:

CURRENT LANDFILL GROUNDWATER MONITORING WELL LOCATIONS

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 2



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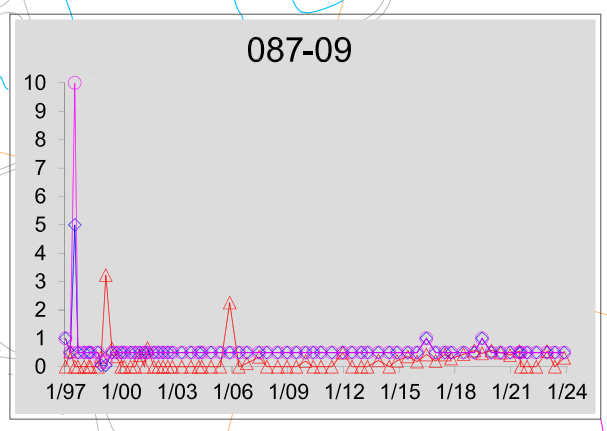
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

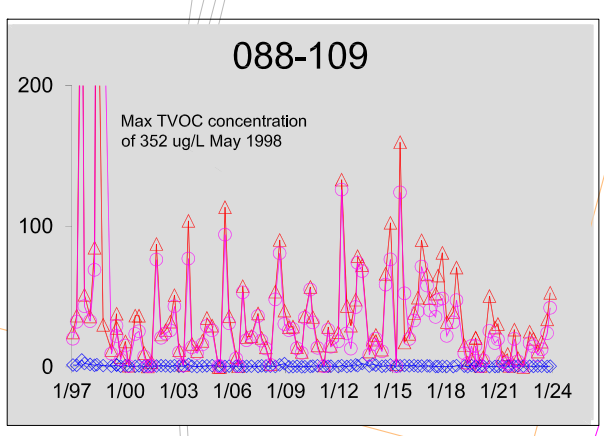
TITLE:

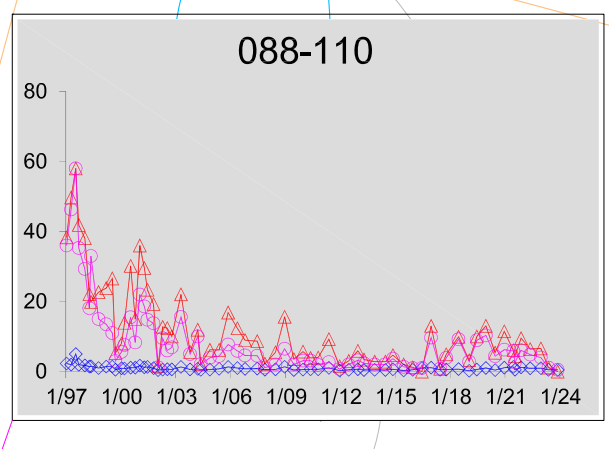
WATER TABLE CONTOUR MAP
2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

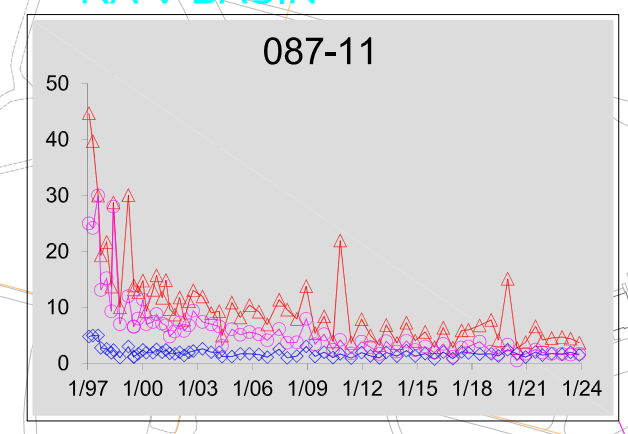
FIGURE NO.: 3

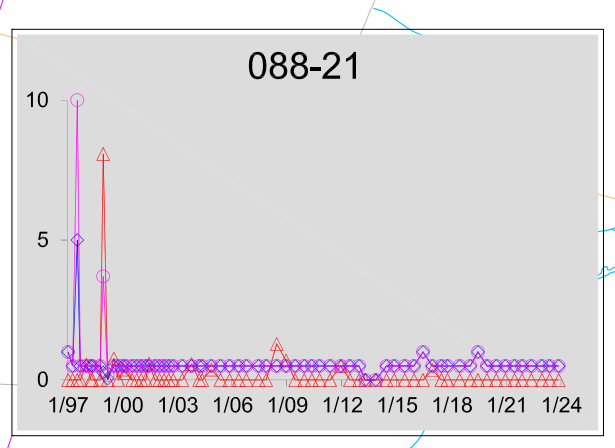


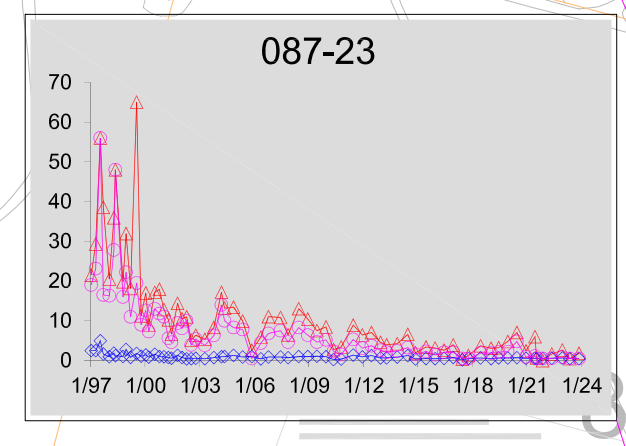


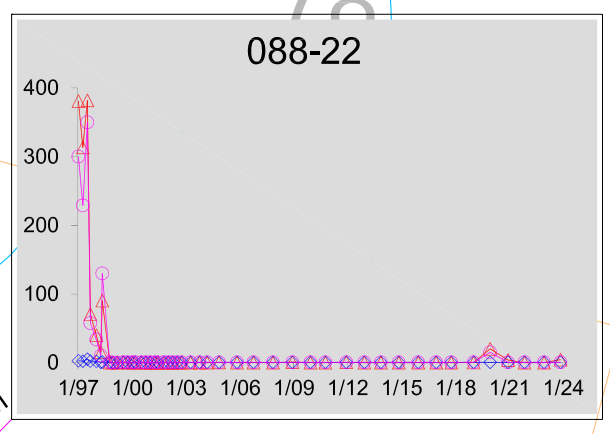


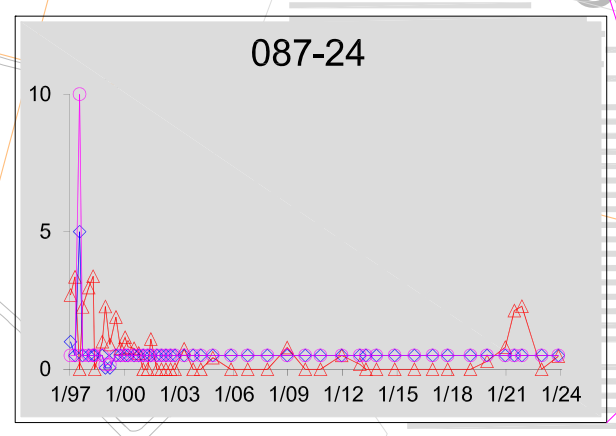
RA V BASIN

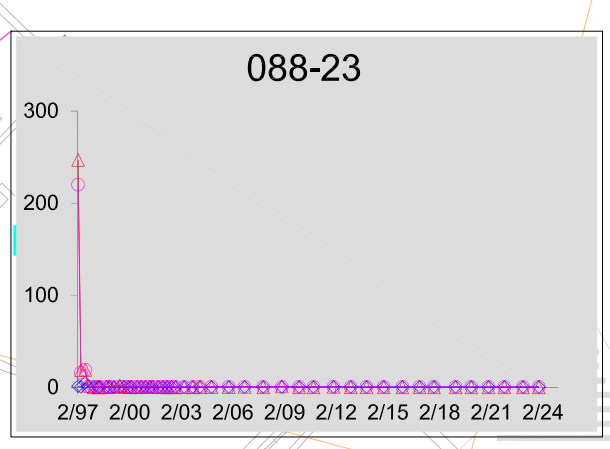


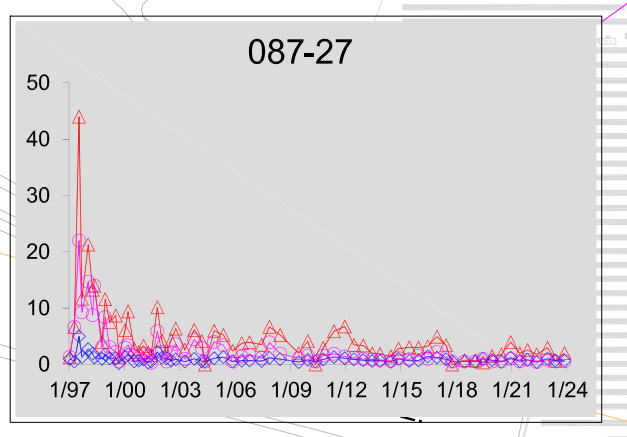








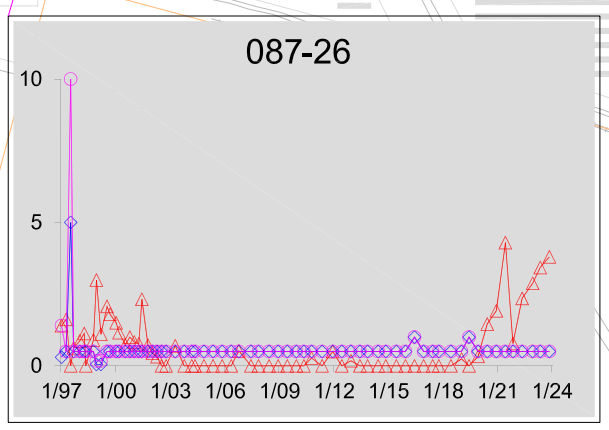


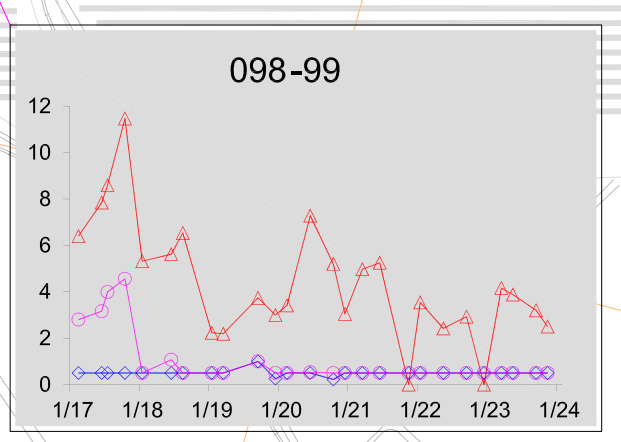


77
78
37
107
98

087-09
CURRENT LANDFILL
088-109
087-11
088-110
087-23
087-24
087-27
087-26
088-21
088-22
088-23
098-99

BROOKHAVEN AVE.





LEGEND

- 11 — MONITORING WELL
- Benzene (µG/L)
- Chloroethane (µG/L)
- TVOC (µG/L)
- 107 — BNL GRID NUMBER
- BNL RECHARGE BASIN
- RA V
- 087-09 — BACKGROUND
- 087-11 — DOWNGRADIENT
- SOLAR FARM PANELS

SCALE
0 500 FEET

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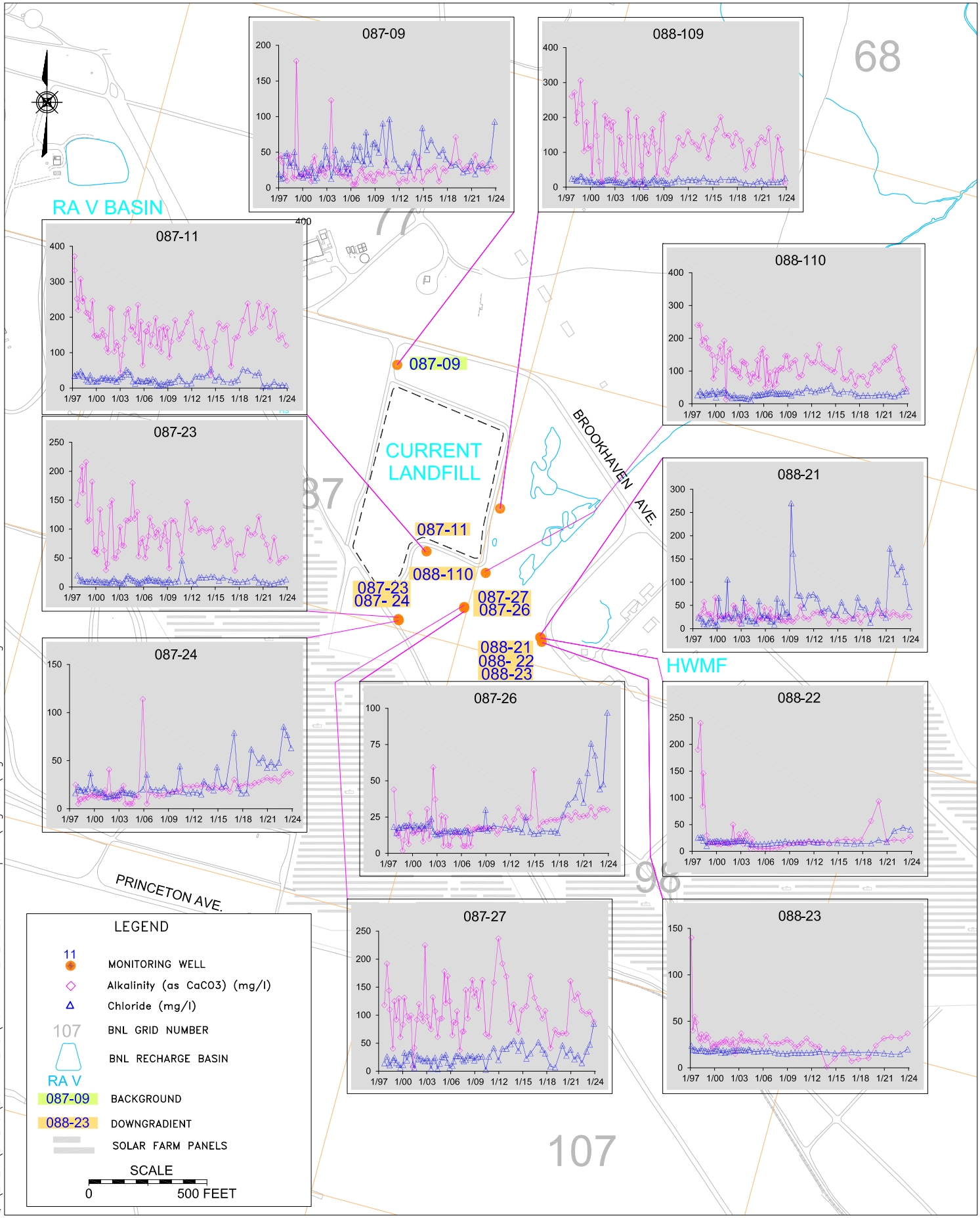
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:
CURRENT LANDFILL
VOC TREND PLOTS
2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 4



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

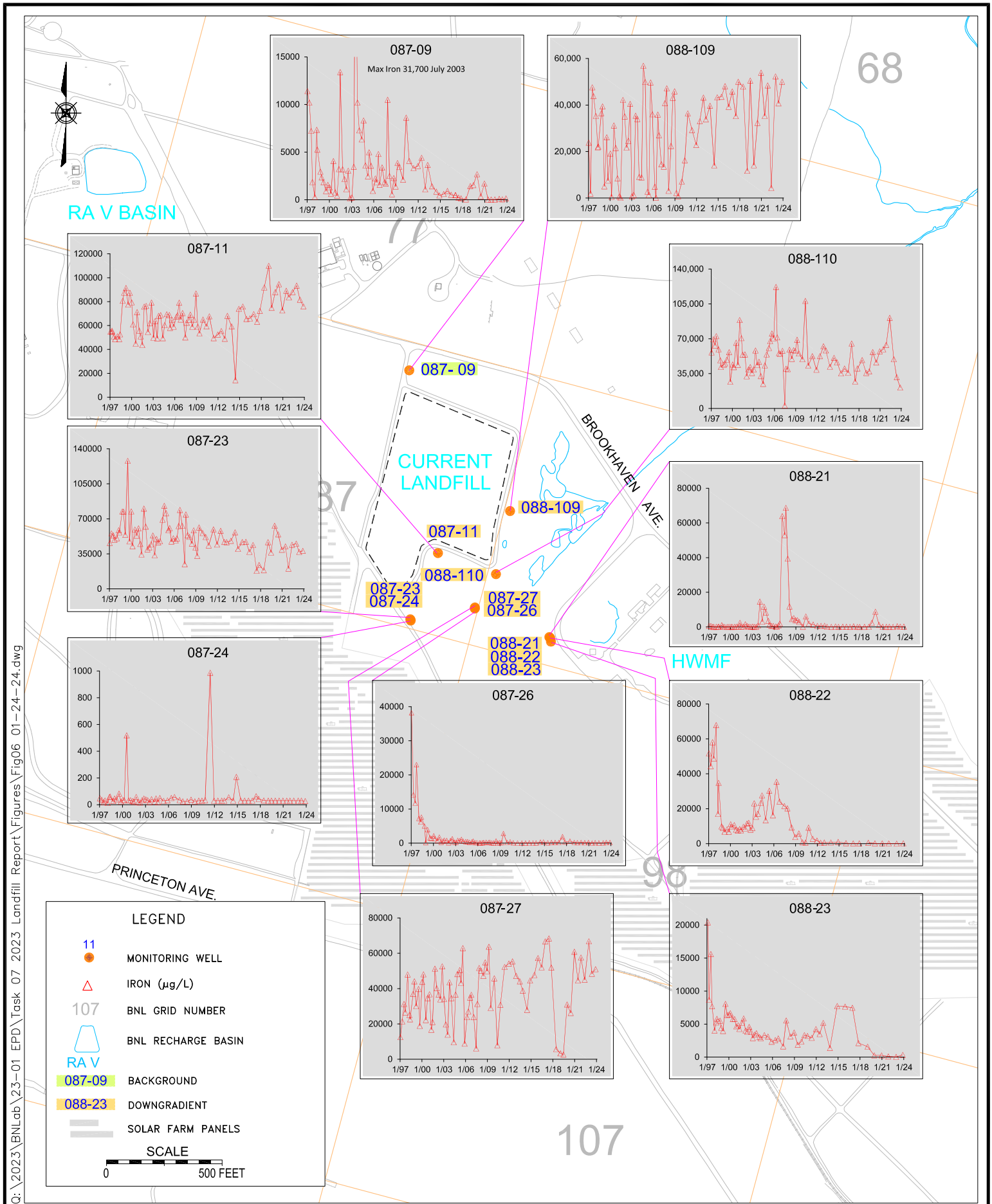
TITLE:

CURRENT LANDFILL ALKALINITY AND CHLORIDE TREND PLOTS

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 5



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

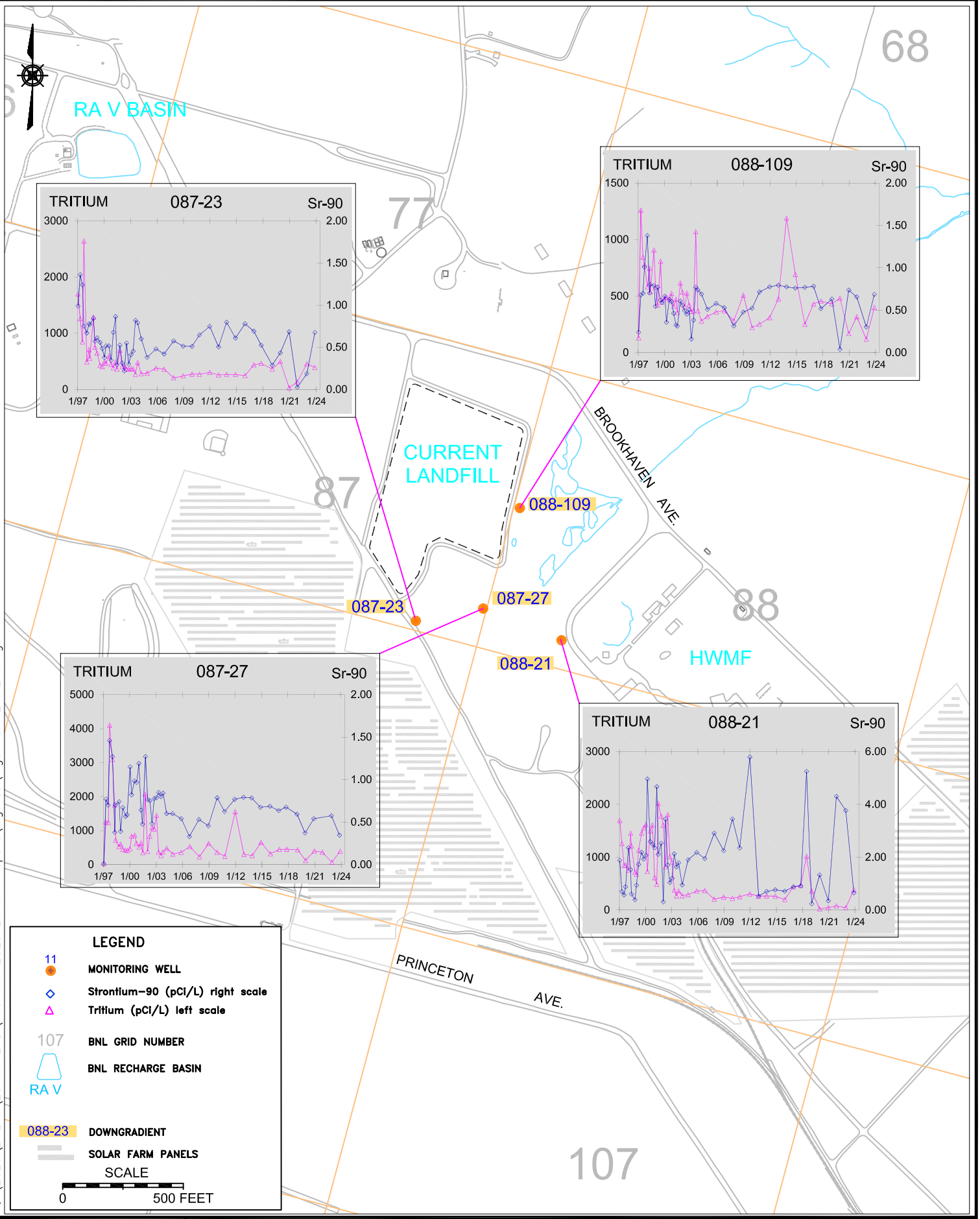
TITLE:

CURRENT LANDFILL IRON TREND PLOTS

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 6



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

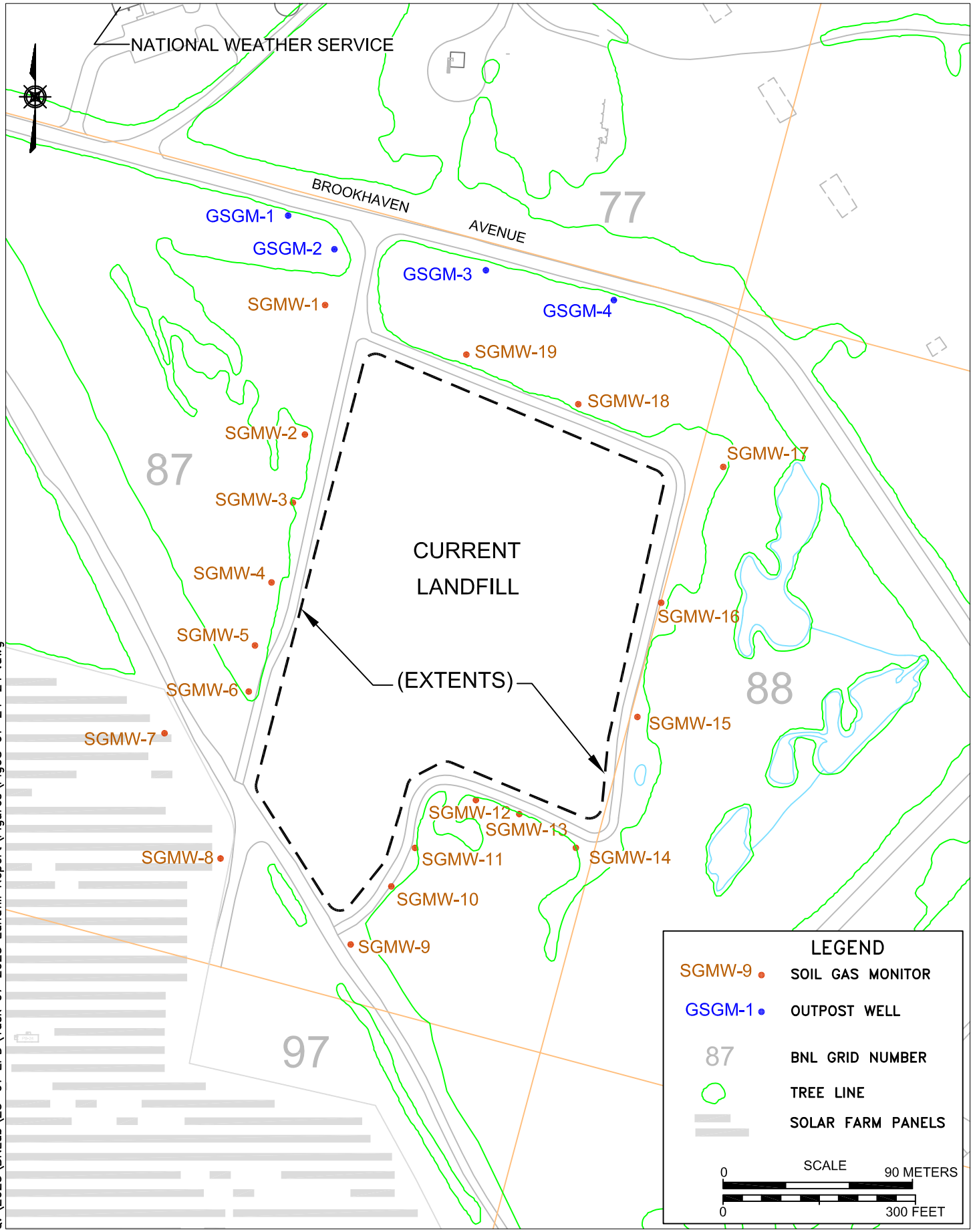
TITLE:

CURRENT LANDFILL TRITIUM AND STRONTIUM-90 TREND PLOTS

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 7



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

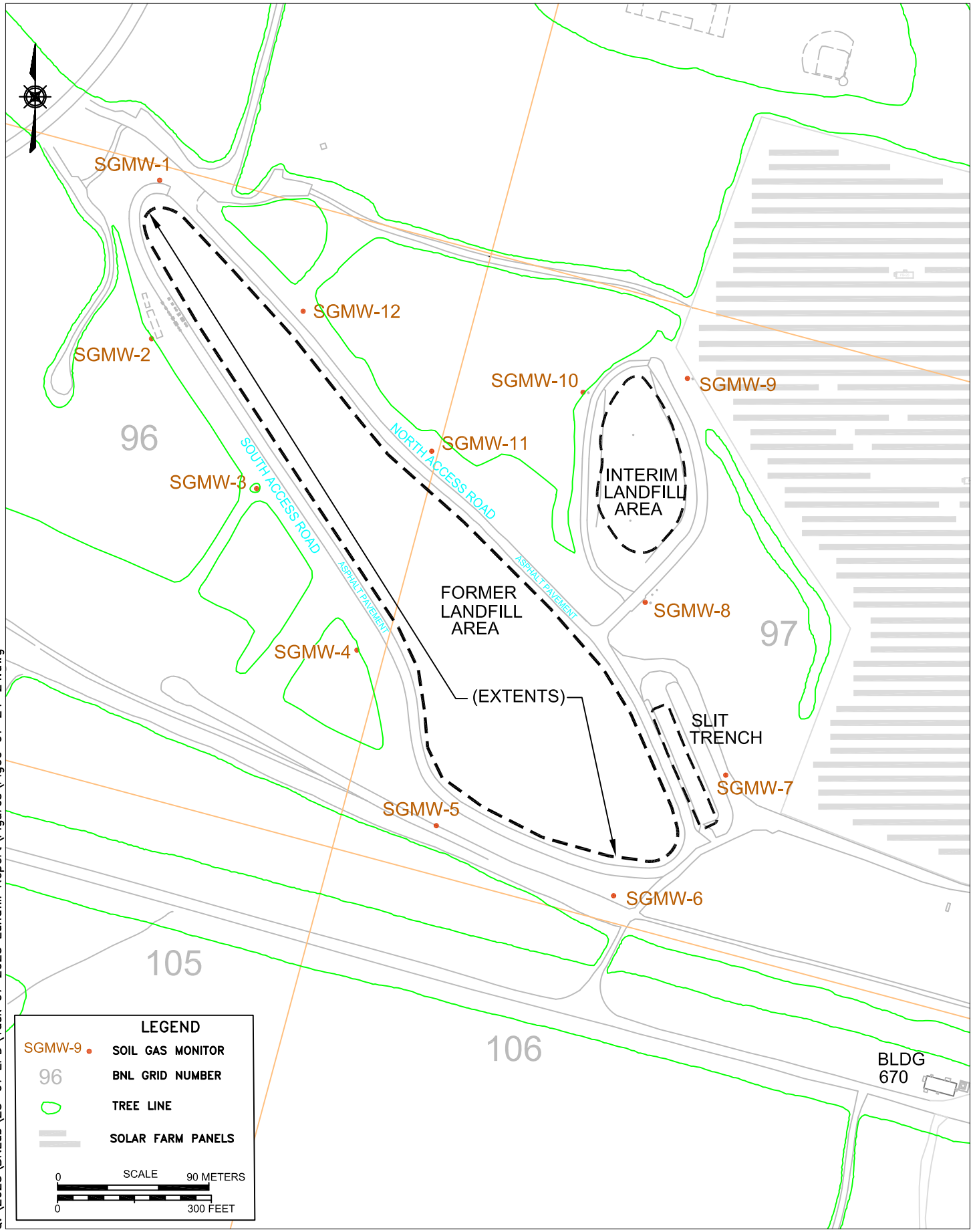
TITLE:

CURRENT LANDFILL SOIL-GAS MONITOR LOCATION MAP

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 8



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:

FORMER LANDFILL AREA SOIL-GAS MONITOR LOCATION MAP

2023 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/24/24	–
CHKD:	APPD:	REV.:	NOTES:
JM	JM	–	–

FIGURE NO.: 9

Appendix A

Soil-gas Sampling Field Notes

JF 12/28/22 CLF continued

CH4%	LEL%	H2S	time/com.
0	0	0	1324
0	0	0	1331
0	0	0	1343
0	0	0	1351
0	0	0	1358
0	0	0	1409
0	0	0	1417
0	0	0	1424
0	0	0	1433
0	0	0	1442

JF 12/28/22

Rel. Humidity=46%
Temp.=33.4°F, Sun
1022.1mb

JF 3/20/23

41

Location	Well ID	CH4%	LEL%	H2S	Time/Comments
SGM1A	087-62	7.1	>100 142	2	1006
1B	087-78	6.2	>100 124	1	1015
1C	087-79	5.1	>100 102	0	1025
2A	087-63	33.4	>100 669	0	1032
2B	087-80	30.2	>100 604	35	1040
2C	087-81	32.0	>100 640	3	1051
3A	087-64	4.7	95	1	1059
3B	087-82	40.0	>100 800	17	1107
3C	087-83	35.3	>100 706	0	1117
4A	087-65	29.3	>100 586	0	1124
4B	087-84	29.8	>100 596	2	1132
4C	087-85	21.8	>100 436	1	1142
5A	087-66	0	0	0	1148
5B	087-86	19.3	>100 386	0	1155
5C	087-87	16.7	>100 334	0	1205
6A	087-67	0.1	2	0	1328
6B	087-88	24.5	>100 490	1	1337
6C	087-89	22.3	>100 446	1	1347
7A	087-68	0	0	0	1404
7B	087-90	0	0	0	1411
7C	087-91	0	0	0	1421
8A	087-69	0	0	0	1428
8B	087-92	0	0	0	1435
8C	087-93	0	0	0	1445

Rite in the Rain

36°F, Sun
Rel. Humidity = 71%, 1023.7mb

JF 3/21/23

GSGM	Well ID	CH4%	LEL %	H2S	Time / Comments
9A	087-70	0	0	0	0840
9B	087-94	0	0	0	0846
9C	087-95	0	0	0	0857
10A	087-71	0	0	0	0904
10B	087-96	2.1	43	0	0912
10C	087-97	3.3	76	3	0922
11A	087-72	2.3	47	4	0929
11B	087-98	0.2	5	0	0936
12A	087-73	26.3	>100 (526, 434)	0	0943
12B	087-99	21.7	>100	1	0951
13A	087-74	0	0	0	0957
13B	087-100	16.9	>100 (339)	0	1005
14A	087-75	0	0	0	1011
14B	087-101	0	0	0	1018
15A	088-111	0	0	0	1026
15B	088-114	17.8	>100 (356)	31	1033
16A	088-112	0	0	0	1039
16B	088-115	0	0	0	1047 water
17A	088-113	0	0	0	1055 water
17B	088-116	0	0	0	1102 water
18A	087-76	0	0	0	1109 water
18B	087-102	0	0	0	1116 water
19A	087-[illegible] JF 3/21/23	0	0	0	1123
19B	087-103	0.3	6	0	1132

JF 3/21/23

GSGM	Well ID	CH4%	L
1A	NA	0	
1B		0	
1C		0	
2A		0	
2B		0	
2C		0	
3A		0	
3B		0	
4A		0	
4B		0	

JF 3/

JF 3/21/23

GSGM	Well ID	CH4%	LEL%	H2S	Time/Comments
1A	JF 3/21/23 NA	0	0	0	1145
B		0	0	0	1153
C		0	0	0	1203
2A		0	0	0	1318
2B		0	0	0	1226
2C		0	0	0	1336
3A		0	0	0	1345
3B		0	0	0	1353
4A		0	0	0	1401
4B		0	0	0	1409

JF 3/21/23

Return to Start

CLF — Sun, 80°F — Rel. Humidity = 94% — JF 6/1/23

1017 mb

Location	well ID	CH4 %	LEL %	H2S	Time / Comments
SCM 1A	087-62	6.2	124 >100	2	0920
1B	087-76	6.1	122 >100	1	0928
1C	087-79	5.0	100	0	0938
2A	087-63	36.4	>100 725	3	0946
2B	087-80	36.7	>100 734	12	0953
2C	087-81	36.4	>100 725	4	1003
3A	087-64	23.1	>100 462	5	1127
3B	087-82	42.0	>100 840	21	1135
3C	087-83	41.9	>100 838	23	1145
4A	087-65	35.0	>100 700	3	1151
4B	087-84	33.2	>100 664	4	1158
4C	087-85	25.7	>100 514	4	1208
5A	087-66	14.0	>100 280	0	1319
5B	087-86	23.4	>100 468	3	1325
5C	087-87	17.5	>100 350	0	1335
6A	087-67	0	0	0	1343
6B	087-88	25.5	>100 510	4	1350
6C	087-89	23.0	>100 460	2	1405
7A	087-68	0	0	0	1420
7B	087-90	0	0	0	1427
7C	087-91	0	0	0	1437
8A	087-69	0	0	0	1443
8B	087-92	0	0	0	1450
8C	087-93	0	0	0	1500

CLF — Sun, 70°F — Rel. Humidity = 7% — JF 6/2/23

1024 mb

Location	well ID	CH4 %	LEL %	H2S	Time / Comments
SCM 9A	087-70	0	0	0	0904
9B	087-94	0	0	0	0910
9C	087-95	0	0	0	0920
10A	087-71	7.4	>100 148	1	0925
10B	087-96	11.6	>100 232	4	0934
10C	087-97	10.1	>100 202	3	0944
11A	087-72	10.3	>100 206	16	0950
11B	087-98	10.1	>100 202	2	0957
12A	087-73	33.1	>100 662	34	1004
12B	087-99	26.8	>100 536	2	1011
13A	087-74	24.0	>100 480	4	1019
13B	087-100	23.8	>100 476	1	1026
14A	087-75	0	0	0	1033
14B	087-101	0	0	0	1040
15A	088-111	0	0	0	1047
15B	088-114	25.0	>100 500	142	1054
16A	088-112	0	0	0	1110
16B	088-115	0	0	0	1117 water
17A	088-113	0	0	0	1122
17B	088-116	0	0	0	1129 water
18A	087-76	0	0	0	1136
18B	087-102	0	0	0	1145
19A	087-77	3.3	69	0	1335
19B	087-103	13.2	>100 264	0	1345

CLF continued

JF 6/2/23

Location	Well ID	CH4%	LEL%	H2S	Time/ Comments
GSMW	NA	0	0	0	1355
1B		0	0	0	1401
1C		0	0	0	1412
2A		0	0	0	1421
2B		0	0	0	1428
2C		0	0	0	1438
3A		0	0	0	1447
3B		0	0	0	1454
4A		0	0	0	1501
4B		0	0	0	1513

JF 6/2/23

GEM 5000 Former Landfill 69.8°F
1015 mb
95% Rel. Humidity
JF 8/28/23

Location	Well ID	CH4%	LEL%	H2S (PPM)	Time	Comments
SGM 1A	096-41	0	0	0	1103	
1B	096-42	0	0	0	1112	
2A	096-43	0	0	0	1117	
2B	096-44	0	0	0	1126	
3A	096-45	0	0	0	1131	
3B	096-46	0	0	0	1140	
4A	096-47	0	0	0	1145	
4B	096-48	0	0	0	1153	
5A	097-50	0	0	0	1320	
5B	097-51	0	0	0	1329	
6A	097-52	0	0	0	1346	
6B	097-53	0	0	0	1353	
7A	097-54	0	0	0	1405	
7B	097-55	0	0	0	1412	
8A	097-56	0	0	0	1421	
8B	097-57	0	0	0	1427	
9A	097-58	0	0	0	1434	
9B	097-59	0	0	0	1441	
10A	097-60	0	0	0	1451	
10B	097-61	0	0	0	1458	
11A	097-62	0	0	0	1503	
11B	097-63	0	0	0	1510	
12A	096-49	0	0	0	1522	
12B	096-50	0	0	0	1529	

JF 8/29/23

CLF Overcast, 60°F Rel. Humidity = 92% Atmospheric Pressure = 1000.23mb JF 9/26/23

Location	Well ID	CH_4 %	LEL %	H_2S	Time/Comments
SGM: 1A	087-62	3.4	68	7	0929
1B	087-78	1.5	30	1	0936
1C	087-79	3.0	60	1	0947
2A	087-63	41.5	>100 830	0	0954
2B	087-80	42.6	>100 852	15	1001
2C	087-81	41.6	>100 832	4	1011
3A	087-64	39.8	>100 796	13	1018
3B	087-82	44.2	>100 884	22	1027
3C	087-83	42.1	>100 842	5	1037
4A	087-65	33.7	>100 674	4	1050
4B	087-84	30.5	>100 610	6	1057
4C	087-85	22.4	>100 448	2	1108
5A	087-66	5.7	>100 114	3	1116
5B	087-86	18.2	>100 364	0	1122
5C	087-87	15.1	>100 302	1	1131
6A	087-67	0	0	0	1139
6B	087-88	24.1	>100 482	2	1146
6C	087-89	21.6	>100 432	1	1158
7A	087-68	0	0	0	0926
7B	087-90	0	0	0	0933
7C	087-91	0	0	0	0943
8A	087-69	0	0	0	0950
8B	087-92	0	0	0	0956
8C	087-93	0	0	0	1006

9/27

JF 56°F 1034 mb Rel. Humidity 82% 9/27/23

CLF	Well ID	CH_4%	LEL%	H_2S	Time/ Comments
GSGM-9A	087-76 JF 9/27/23	0	0	0	1015
-9B	087-94	0	0	0	1022
-9C	087-95	0	0	0	1032
-10A	087-71	0	0	0	1040
-10B	087-96	11.6	>100 232	9	1048
-10C	087-97	9.8	>100 196	6	1058
-11A	087-72	14.2	>100 284	19	1105
-11B	087-98	11.3	>100 226	1	1112
-12A	087-73	33.1	>100 662	10	1118
-12B	087-99	31.5	>100 630	2	1126
-13A	087-74	0.2	4	0	1133
-13B	087-100	24.0	>100 480	1	1139
-14A	087-75	0	0	0	1146
-14B	087-101	0	0	0	1154
-15A	088-111	0	0	0	1354
-15B	088-114	25.4	>100 508	14	~~1501~~ 1503 1459
-16A	088-112	0	0	0	1409
-16B	088-115	0	0	0	1416 W
-7A	088-113	0	0	0	1424
-7B	088-116	0	0	0	1431 W
-8A	087-76	0	0	0	1435 W
-8B	087-102	0	0	0	1443 W
-9A	087-77	0	0	0	1450
-9B	087-103	5.2	>100 104	7	1457

CLF 57°F, 1023 mb, Relative Humidity = 94% JF 9/28/23

Location	Well ID	CH_4%	LEL%	H_2S	Time/ Comments
GSGM-1A	NA	0	0	0	0930
-1B		0	0	0	0938
-1C		0	0	0	0948
-2A		0	0	0	0957
-2B		0	0	0	1005
-2C		0	0	0	1015
-3A		0	0	0	1023
-3B		0	0	0	1031
-4A		0	0	0	1039
-4B		0	0	0	1046

JF 9/28/23

Rel Humidity 96% MJ 12/26/23

Cloudy 45° Baro: 29.97 "

Location	Well ID	CH_4 %	LEL %		H_2S	Time/ comments
SGM 1A	087-62	6.8	136	>100	3	1028
1B	087-78	6.5	130	>100	1	1037
1C	087-79	5.8	116	>100	1	1047
2A	087-65	43.6	872	>100	0	1052
2B	087-80	35.0	700	>100	8	1100
2C	087-81	36.5	730	>100	4	1110
3A	087-64	18.0	360	>100	0	1117
3B	087-82	40.2	804	>100	9	1123
3C	087-83	37.3	746	>100	22	1133
4A	087-65	32.2	644	>100	0	1322
4B	087-84	29.2	584	>100	3	1329
4C	087-85	20.9	418	>100	4	1339
5A	087-66	7.4	148	>100	0	1345
5B	087-86	19.8	396	>100	2	1351
5C	087-87	14.4	288	>100	1	1401
6A	087-67	11.8	236	>100	0	1406
6B	087-88	25.1	502	>100	3	1413
6C	087-89	22.3	446	>100	2	1422
7A	087-68	~~1.70~~			~~0~~	MJ ~~1430~~ 1356
7B	087-90	0	0		0	1403
7C	087-91	0	0		0	1412
8A	087-69	0	0		0	1423
8B	087-92	0	0		0	1430
8C	087-93	0	0		0	1440

12/26/23 → 12/28/23

MJ 12/28/23 Baro. 29.55 "Hg

Misty ≈50° Rel Humidity 96%

Location	Well ID	CH_4 %	LEL %		H_2S	Time/ comment
SGM 9A	087-70	0	0		0	1115
9B	087-94	0	0		0	1122
9C	087-95	0	0		0	1132
10A	087-71	1.3	26		0	1331
10B	087-96	8.6	172	>100	9	1338
10C	087-97	7.5	150	>100	9	1448
11A	087-72	6.5	130	>100	7	1453
11B	087-98	4.1	82		1	1459
12A	087-73	35.8	716	>100	22	1405
12B	087-99	23.6	472	>100	2	1411
13A	087-74	0	0		0	1418
13B	087-100	17.6	352	>100	1	1425
14A	087-75	0	0		0	1429
14B	087-101	0	0		0	1436
15A	088-111	0	0		0	1442
15B	088-114	20.7	414	>100	23	1449
16A	088-112	1.6	32		0	1505
16B	088-115	1.7	34		0	1517
17A	088-113	1.6	32		0	1457
17B	088-116	1.6	32		0	1500 tfom finished
18A	087-76	1.6	32		0	1443
18B	087-102	2.7	54		0	1450
19A	087-77	1.7	34		0	1430
19B	087-103	5.2	104	>100	0	1437

12/27/23 → 12/28/23

Rain on the Rain

12/27/23 Misty 45° Humidity 96%

52 Baro: 30.05" Hg MJ

Location	WELLID	CH_4%	LEL%	H_2S	Time/comment
GSGM-1A	NA	0	0	0	1048
1B		0	0	0	1055
1C		0	0	0	1105
2A		0	0	0	1024
2B		0	0	0	1032
2C		0	0	0	1041
3A		0	0	0	1010
3B		0	0	0	1018
4A		0	0	0	0957
4B		0	0	0	1004

MJ 12/27/23

Appendix B

Monthly Landfill Site Inspection Forms and Photos

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim milligan

Date of Inspection: 1/30/2023

Purpose of Inspection: ☒ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0910

Time off Site: 1000

Weather Conditions: 35° overcast

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	NA				✓
	Recharge Areas		X			✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	NA				

B. Description of Further Action Requirements:

1. Location: CLF.

Observed Conditions: Grass on Cap ok. No Active Burrows Noted. Photos Taken. Woodchips Spread around wells for Weed Control.

Recommendations: NA

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 3/30/23

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1010

Time off Site: 1235

Weather Conditions: 35° overcast.

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: FLF.

Observed Conditions: Grass on Cap OK. No Burrows noted. Wood Chips spread around wells for weed control. Photos Taken.

Recommendations: NA


HW

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 2/16/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1430

Time off Site: 1510

Weather Conditions: 70°F overcast

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	NA				X
	Recharge Areas	X	X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road	NA				X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap OK. No Active Burrows noted. Photos Taken.

Recommendations: NA

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 2/16/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1519

Time off Site: 1619

Weather Conditions: 70°F overcast Drizzle

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: FL1²

Observed Conditions: Grass on Cap in Good Condition. No Burrows Present. Photos taken.

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Mitnick

Date of Inspection: 3/29/23

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0900

Time off Site: 0940

Weather Conditions: Sunny Clear 30°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X N/A				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road	N/A				

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap OK. No Active Burrows noted

Photos Taken

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Mills

Date of Inspection: 3/20/23

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0940

Time off Site: 1020

Weather Conditions: Sunny Clear 30°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass on Cap in good condition. No Burrows present.

Photos Taken

Recommendations: NA

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 4/13/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 3 PM

Time off Site: 4 PM

Weather Conditions: Clear Sunny 80°F

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road	NA				X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap ok. One possible Active burrow on North Side Filled in with Soil.

Photos Taken

Recommendations: NA.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 4/13/2023

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 4pm

Time off Site: 4:30 pm

Weather Conditions: Sunny Clear 80°F

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road		✓			

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass on Cap in good condition. No Burrows present. Photos Taken.

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Tim Milligan

Date of Inspection: 5/8/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0830

Time off Site: 0900

Weather Conditions: Clear Sunny 65°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road	NA				

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap OK. Three Active Burrows Filled in with Soil. Photos Taken.

Recommendations: NA.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 5/8/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0900

Time off Site: 0925

Weather Conditions: Sunny clear 68°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			

B. Description of Further Action Requirements:

1. Location: FLP

Observed Conditions: Grass on cap is good coverage. No Burrows noted. Photos Taken.

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
LTRA SITE INSPECTION FORM

Location (AOC): Current Landfill – Wooded Wetland
Date of Inspection: 06/08/2023
Name of Inspector(s): R. Howe, J. Milligan, B. Barth, V Racaniello
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass was recently cut.	X
Soil (Cap/Cover/Fill)		X			2 burrows, filled.	X
Other: _____						
2. Drainage Structures:						
Standing Water	X				None observed.	X
Toe Drain	X					X
Drainage Channels		X			Some growth in channel.	X
French Drains/Outfalls				X		X
Subsurface Drainage Pipes/Outfalls		X				X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Significant growth.	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X				Grass was recently cut.	X
Groundwater Wells	X				Recent cut, locked.	X
Gas Vents	X				All in good condition.	X
Other: __						
4. Site Access:						
Asphalt Access Road		X			Sig. growth, cracked.	
Crushed-concrete Access Road				X		X
Fence	X					X
Gates/locks	X				Good cond./locked.	X
LUIC Signs	X					X
Other: Stairs access to cap	X				All in place.	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _ _____

B. Description of Other Observations

Observed Conditions/Recommendations: The grass on the cap and around monitoring wells was recently cut. Two observed animal burrows were filled. All three points of contact signs are in place and the gates locked. The asphalt road was observed to have significant grown along the edges and through cracks, accelerating deterioration. The growth along the roadway should be cut/removed and the road sealed to minimize damage. The wooded wetland was significantly vegetated and dry. LUIC Factsheet Changes: No changes needed.


2023/06/08


2023/06/08


2023/06/08


2023/06/08

BROOKHAVEN NATIONAL LABORATORY
SITE INSPECTION FORM

Location (AOC): Former Landfill Area (includes the former and interim landfills and slit trench)
Date of Inspection: 05/31/2023 (June inspection)
Name of Inspector(s): R. Howe, J. Milligan, W. Dorsch, V. Racaniello, B. Barth
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Needs to be cut.	
Soil (Cap/Cover/Fill)	X				No erosion observed.	X
Other: _____						
2. Drainage Structures:						
Standing Water	X				None observed.	X
Toe Drain	X					X
Drainage Channels	X				Some veg. growth.	X
French Drains/Outfalls	X					X
Subsurface Drainage Pipes/Outfalls	X					X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Overgrown.	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X					X
Groundwater Wells	X					X
Gas Vents	X					X
Other: _____						
4. Site Access:						
Asphalt Access Road		X			Some wear/tear/growth.	X
Crushed-concrete Access Road		X				X
Fence				X		X
Gates/locks				X		X
Radiological Postings				X		X
Other: LUIC Signs	X				All signs in place.	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _____
_____

B. Description of Other Observations

Observed Conditions/Recommendations: Former and Interim Landfills, and the Slit Trench were observed to be in good condition with no evidence of erosion and good vegetative growth. The grass on the former landfill is overgrown and needs to be cut. No animal burrows were observed. Some vegetative growth in the drainage channels. The asphalt paved roadway was generally in good condition with minimal wear and tear, and some growth in minor cracked areas. LUIC Factsheet Changes: No changes needed.


AREA UNDER LAND USE AND
INSTITUTIONAL CONTROLS
-RESTRICTED USE-
PRIOR TO ANY WORK ACTIVITIES
PLEASE CONTACT:
Environmental Protection Division
Long Term Stewardship
X-2828
2023/05/31


2023/05/31


2023/05/31

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 7/13/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0819

Time off Site: 1000

Weather Conditions: 85° or Sunny.

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X	X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road					X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap OK. One Active Burrow Filled in. Grass Sprayed for Herbicide along Road.

Recommendations: Crack Seal Asphalt Roadway.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 7/13/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1000

Time off Site: 1040

Weather Conditions: 85° F Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass cut in June. No burrows noted. Photos Taken.

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 8/24/23

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1400

Time off Site: 1450

Weather Conditions: 72°F Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road	NA				X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass growing on Cap one Area Brown Filled in on South Side of Landfill.

Recommendations: Tar Cracks on Asphalt Roadway Perimeter Road.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Miller

Date of Inspection: 8/24/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1300

Time off Site: 1340

Weather Conditions: Sunny 72°F

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass growing on Cap. No Animal Burrows noted. No photos Taken

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 9/12/2023
Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident
Time on Site: 1050
Time off Site: 1150
Weather Conditions: Sunny 83°F

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				
	Drainage Channels	X				
	French Drains/Outfalls	X				
	Subsurface Drainage Pipes/Outfalls	X				
	Manholes	X				
	Recharge Areas	X				
3.0	**Monitoring System:**					
	Soil Gas Wells	X				
	Groundwater Wells	X				
4.0	**Site Access:**					
	Asphalt Access Road		X			
	Crushed-Concrete Access Road	NA				

B. Description of Further Action Requirements:

1. Location: CL #2
Observed Conditions: Grass growing on cap. One animal burrow found on South side of Landfill.

Recommendations: Fill Cracks on Asphalt roadway with HAS.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 9/12/2023 9/12/23

Purpose of Inspection: Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1155

Time off Site: RH 5

Weather Conditions: Sunny 83° F

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass growing on Cap. No animal burrows noted. Photos Taken.

Recommendations: NA

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 10/26/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1400

Time off Site: 1430

Weather Conditions: 75° Sunny and Clear

A. Inspection Checklist

	Component	Observed Condition: Excellent	Fair	Poor	Further Action Required: Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X	X (*)			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass mowed first week of October. Asphalt road was brushed with power broom and cracks filled in with tar. One Borrow filled in. Photos Taken

Recommendations: NRM

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 10/26/23

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1405

Time off Site: 1510

Weather Conditions: 75° Sunny Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas		✓			✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road		✓			✓

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass mowed first week of october. Ruts created by mowing operations were filled in with Top Soil and Seeded. photos Taken. No damage to Liner. Photos taken.

Recommendations: None

BROOKHAVEN NATIONAL LABORATORY
LTRA SITE INSPECTION FORM

Location (AOC): Current Landfill – Wooded Wetland
Date of Inspection: 11/9/2023
Name of Inspector(s): R. Howe, J. Milligan, B. Barth, V Racaniello
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass was recently cut.	X
Soil (Cap/Cover/Fill)		X			2 burrows, filled.	X
Other: _____						
2. Drainage Structures:						
Standing Water	X				None observed.	X
Toe Drain	X					X
Drainage Channels		X			Some growth in channel.	X
French Drains/Outfalls				X		X
Subsurface Drainage Pipes/Outfalls		X				X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Significant growth.	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X				Grass was recently cut.	X
Groundwater Wells	X				Recent cut, locked.	X
Gas Vents	X				All in good condition.	X
Other: __						
4. Site Access:						
Asphalt Access Road		X			Sig. growth, cracked.	
Crushed-concrete Access Road				X		X
Fence	X					X
Gates/locks	X				Good cond./locked.	X
LUIC Signs	X					X
Other: Stairs access to cap	X				All in place.	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _ _____

B. Description of Other Observations

Observed Conditions/Recommendations: The grass on the cap and around monitoring wells was recently cut. Two observed animal burrows were filled. All three points of contact signs are in place and the gates locked. The asphalt road was observed to have significant grown along the edges and through cracks, accelerating deterioration. The growth along the roadway should be cut/removed and the road sealed to minimize damage. The wooded wetland was significantly vegetated and dry. LUIC Factsheet Changes: No changes needed.


2023/11/09


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BROOKHAVEN NATIONAL LABORATORY
SITE INSPECTION FORM

Location (AOC): Former Landfill Area (includes the former and interim landfills and slit trench)
Date of Inspection: 11/14/2023
Name of Inspector(s): B. Barth, E. Kramer
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Needs to be cut.	
Soil (Cap/Cover/Fill)	X				No erosion observed.	X
Other: _____						
2. Drainage Structures:						
Standing Water	X				None observed.	X
Toe Drain	X					X
Drainage Channels	X				Some veg. growth.	X
French Drains/Outfalls	X					X
Subsurface Drainage Pipes/Outfalls	X					X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Overgrown.	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X					X
Groundwater Wells	X					X
Gas Vents	X					X
Other: _____						
4. Site Access:						
Asphalt Access Road		X			Some wear/tear/growth.	X
Crushed-concrete Access Road		X				X
Fence				X		X
Gates/locks				X		X
Radiological Postings				X		X
Other: LUIC Signs	X				All signs in place.	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _____
_____

B. Description of Other Observations

Observed Conditions/Recommendations: Former and Interim Landfills, and the Slit Trench were observed to be in good condition with no evidence of erosion and good vegetative growth. The grass on the former landfill is overgrown and needs to be cut. No animal burrows were observed. Some vegetative growth in the drainage channels. The asphalt paved roadway was generally in good condition with minimal wear and tear, and some growth in minor cracked areas. LUIC Factsheet Changes: No changes needed.


2023/11/14


2023/11/14


2023/11/14

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 12/8/2023

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1400

Time off Site: 1440

Weather Conditions: Clear Sunny 45° F

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: CLF

Observed Conditions: Grass on Cap OK. Asphalt Road OK. 2 Animal Burrows Not Active on Cap. Photo Taken

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 12/8/2023

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1300

Time off Site: 1400

Weather Conditions: Clear Sunny 45°F

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas		✓			✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	✓				✓

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Grass mowed recently. Cap and Vents OK.
Photos Taken.

Recommendations: None

Appendix C

Groundwater Sample Logs

Attachment 1 - BNL Groundwater Sample Log

088-109

Sample ID : 44885-001 **Well ID :** ~~BD-1~~ **Date :** 03/03/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 14.80 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 13.05 **One Casing Volume (liter) :** 36.48

Pump Start Time : 1050 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.12

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1054	2.00	221	2.22	5.98	6.4	
1056	3.00	222	2.10	5.98	5.9	
1058	4.00	221	2.00	5.97	5.8	

Final Water Temperature (C) : 12.00

Sample Collect Times : 1059

Notes :

Purge Water Disposition : Carbon treat 5L

Comments : Ms/msd BD-1 44885-003, FB-1 44885-004 @1100, odor coming from water

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : My Date : 3/10/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44885-002 **Well ID :** 098-99 **Date :** 03/03/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 14.64 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 12.53 **One Casing Volume (liter) :** 109.68

Pump Start Time : 1141 **Pumping Rate (lpm) :** .25

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 27.42

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1149	2.00	263	2.19	6.28	2.7	
1151	2.50	263	2.02	6.28	9.0	
1153	3.00	263	2.06	6.28	4.5	

Final Water Temperature (C) : 11.70

Sample Collect Times : 1154

Notes :

Purge Water Disposition : Carbon treat 3L

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 3/10/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44885-003 **Well ID :** BD-1 **Date :** 03/03/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 14.80 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 13.05 **One Casing Volume (liter) :** 36.48

Pump Start Time : 1050 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.12

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1054	2.00	221	2.22	5.98	6.4	
1056	3.00	222	2.10	5.98	5.9	
1058	4.00	221	2.00	5.97	5.8	

Final Water Temperature (C) : 12.00

Sample Collect Times : 0000

Notes :

Purge Water Disposition : Carbon treat 5L

Comments : BD-1 for : 088-109

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : MJ Date : 3/10/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-001 **Well ID :** 087-09 **Date :** 05/22/2023

Sampling Personnel : NS & AC **Project :** SITEWD-CLF

Well Depth (ft) : 34 **Screen Interval (ft) :** 24 - 34

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 25 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 29.03 **Casing Stickup :** 2

Depth to Water from LS (ft) : 27.03 **One Casing Volume (liter) :** 18.2

Pump Start Time : 1046 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.68 **Maximum Purge Volume (liter) :** 4.55

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1048	2.00	244	7.53	5.55	2.7	
1050	4.00	241	7.53	5.55	2.3	
1052	6.00	242	7.54	5.54	3.4	

Final Water Temperature (C) : 13.50

Sample Collect Times : 1053

Notes :

Purge Water Disposition : On ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-002 **Well ID :** ~~BD-1~~ 088-109 NS 5/25/23 **Date :** 05/22/2023

Sampling Personnel : NS & AC **Project :** SITEWD-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 25 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 14.06 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 12.31 **One Casing Volume (liter) :** 38.36

Pump Start Time : 1125 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1127	2.00	268	1.63	5.80	17.8	
1129	4.00	203	1.46	5.80	20.5	
1131	6.00	273	1.28	5.78	19.0	

Final Water Temperature (C) : 12.10

Sample Collect Times : 1133

Notes :

Purge Water Disposition : Carbon treated

Comments : MS/MSD: BD-1 = 45162-003, FB-1 = 45162-004 @ 1140. NaOH turned green.

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-003 **Well ID :** BD-1 **Date :** 05/22/2023

Sampling Personnel : NS & AC **Project :** SITEWD-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 25 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 14.06 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 12.31 **One Casing Volume (liter) :** 38.36

Pump Start Time : 1125 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1127	2.00	268	1.63	5.80	17.8	
1129	4.00	203	1.46	5.80	20.5	
1131	6.00	273	1.28	5.78	19.0	

Final Water Temperature (C) : 12.10

Sample Collect Times : 0000

Notes :

Purge Water Disposition : Carbon treated

Comments : BD-1 for : 088-109

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-005 **Well ID :** 088-110 **Date :** 05/22/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 35 **Screen Interval (ft) :** 10 - 25

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 16.29 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 14.25 **One Casing Volume (liter) :** 54.24

Pump Start Time : 1032 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.87 **Maximum Purge Volume (liter) :** 13.56

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1036	2.00	319	1.89	5.99	11.5	
1038	3.00	318	1.79	5.98	11.6	
1040	4.00	320	1.84	5.97	12.4	

Final Water Temperature (C) : 12.00

Sample Collect Times : 1041

Notes :

Purge Water Disposition : On ground 20'away

Comments : Naoh bottle water turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-006 **Well ID :** 087-26 **Date :** 05/22/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 15.92 **Casing Stickup :** 2.06

Depth to Water from LS (ft) : 13.86 **One Casing Volume (liter) :** 185.84

Pump Start Time : 1103 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 46.46

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1117	7.00	245	7.13	6.55	3.8	
1119	8.00	246	7.13	6.54	2.8	
1121	9.00	244	7.10	6.54	4.6	

Final Water Temperature (C) : 12.90

Sample Collect Times : 1122

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 8/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45162-007 **Well ID :** 087-27 **Date :** 05/22/2023

Sampling Personnel : My **Project :** Sitewd-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 16.06 **Casing Stickup :** 2.05

Depth to Water from LS (ft) : 14.01 **One Casing Volume (liter) :** 28.76

Pump Start Time : 1138 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 7.19

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1144	3.00	435	2.07	6.00	7.8	
1146	4.00	437	2.17	6.00	6.5	
1148	5.00	432	2.27	6.00	11.8	

Final Water Temperature (C) : 11.00

Sample Collect Times : 1149

Notes :

Purge Water Disposition : Carbon treat 6L

Comments : Naoh bottle water turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45163-001 **Well ID :** 087-11 **Date :** 05/24/2023

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 21 **Screen Interval (ft) :** 11 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 16.96 **Casing Stickup :** 2

Depth to Water from LS (ft) : 14.96 **One Casing Volume (liter) :** 15.8

Pump Start Time : 1115 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.8 **Maximum Purge Volume (liter) :** 3.95

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1119	2.00	409	1.52	5.82	4.0	
1121	3.00	402	1.54	5.80	3.8	
1123	4.00	408	1.53	5.80	13.8	

Final Water Temperature (C) : 11.90

Sample Collect Times : 1124

Notes :

Purge Water Disposition : Carbon treat 5L

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45163-002 **Well ID :** 087-23 **Date :** 05/24/2023

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 45 **Screen Interval (ft) :** 25 - 40

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 35.27 **Casing Stickup :** 1.83

Depth to Water from LS (ft) : 33.44 **One Casing Volume (liter) :** 30.24

Pump Start Time : 1043 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 3.65 **Maximum Purge Volume (liter) :** 7.56

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1047	4.00	172	2.19	5.66	7.4	
1049	6.00	173	1.98	5.67	12.0	
1051	8.00	169	1.75	5.71	10.6	

Final Water Temperature (C) : 12.90

Sample Collect Times : 1052

Notes :

Purge Water Disposition :

Comments : Naoh bottle water turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45163-003 **Well ID :** 087-24 **Date :** 05/24/2023

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 35.30 **Casing Stickup :** 1.92

Depth to Water from LS (ft) : 33.38 **One Casing Volume (liter) :** 134.88

Pump Start Time : 1056 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 33.72

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1103	7.00	396	9.79	6.17	12.5	
1105	9.00	396	9.79	6.17	12.4	
1107	11.00	394	9.78	6.18	9.0	

Final Water Temperature (C) : 12.60

Sample Collect Times : 1108

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45163-004 **Well ID :** 088-21 **Date :** 05/24/2023

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 10.82 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 8.78 **One Casing Volume (liter) :** 42.36

Pump Start Time : 1141 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 10.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1144	3.00	438	7.84	5.56	2.8	
1146	5.00	437	7.84	5.56	3.1	
1148	7.00	438	7.85	5.56	2.9	

Final Water Temperature (C) : 11.20

Sample Collect Times : 1149

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redo Measurements, stabilization = +/- 10mv

(b) Fo low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

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Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45163-005 **Well ID :** 098-99 **Date :** 05/24/2023

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 2.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 23 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 13.96 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 11.85 **One Casing Volume (liter) :** 27.68

Pump Start Time : 1159 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 6.92

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1203	2.00	299	2.54	6.15	1.6	
1205	3.00	298	2.62	6.16	11.2	
1207	4.00	299	2.59	6.15	1.5	

Final Water Temperature (C) : 12.90

Sample Collect Times : 1208

Notes :

Purge Water Disposition : Carbon treat 5L

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/25/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45555-004 **Well ID :** 098-99 **Date :** 09/14/2023

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 25 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 15.30 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 13.19 **One Casing Volume (liter) :** 107.96

Pump Start Time : 1013 **Pumping Rate (lpm) :** 0.5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 26.99

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1017	2.00	279	0.40	6.16	53.8	94.40
1019	3.00	279	0.45	6.16	58.2	95.10
1021	4.00	279	0.47	6.16	59.0	95.60

Final Water Temperature (C) : 12.40

Sample Collect Times : 1022

Notes :

Purge Water Disposition : Carbon treated

Comments : Other = ORP

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 9/29/23

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 45555-005 **Well ID :** ~~BD-1~~ 088-109 NS 9/29/23 **Date :** 09/14/2023

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 25 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 15.43 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 13.68 **One Casing Volume (liter) :** 34.84

Pump Start Time : 0940 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 8.71

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
0942	2.00	512	0.56	6.19	3.0	-62.50
0944	4.00	512	0.58	6.19	3.2	-62.70
0946	6.00	511	0.59	6.20	2.8	-62.70

Final Water Temperature (C) : 14.50

Sample Collect Times : 0947

Notes :

Purge Water Disposition : Carbon treated

Comments : Other = ORP. MS/MSD: BD-1=003, FB-1=002 @ 0950. Water smelled like methane.

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 9/29/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45743-001 **Well ID :** 087-09 **Date :** 11/14/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 34 **Screen Interval (ft BLS) :** 24 - 34 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.25000

Depth to Water from MP (ft) : 31.38 **Casing Stickup :** 1 **DTW Meter Serial # :** 6783

Depth to Water from LS (ft) : 30.38 **One Casing Volume (liter) :** 9.44

Pump Start Time : 0932 **Pumping Rate (L/min) :** .25

Minimum Purge Volume (liter) : 1.68 **Maximum Purge Volume (liter):** 2.36

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 0945 Notes :
0940	2	325.4	8.85	5.96	13.3	199.1	13.9	31.4	
0942	2.5	325.5	8.86	5.96	2.6	196.9	13.9	31.4	
0944	3	325.4	8.87	5.97	2.8	197.2	13.8	31.4	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : Pump moved into water

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

Sampled By : MJ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45743-002 **Well ID :** 088-109 **Date :** 11/14/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 27 **Screen Interval (ft BLS) :** 6 - 21 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.37500

Depth to Water from MP (ft) : 16.29 **Casing Stickup :** 1.75 **DTW Meter Serial #** 6783

Depth to Water from LS (ft) : 14.54 **One Casing Volume (liter) :** 32.6

Pump Start Time : 1026 **Pumping Rate (L/min) :** .25

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter):** 8.15

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1039 Notes :
1034	2	462	1.09	6.22	3.1	-125.8	13.6	16.3	
1036	2.5	460.7	1.04	6.22	3.8	-121.8	13.9	16.3	
1038	3	464.9	1.01	6.22	9.8	-122.2	13.9	16.3	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : Ms/msd 8D1 45743-003 FB1 45743-004@1130/ water turned naoh bottle green/ pump moved into water

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : _____ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-002 **Well ID :** 088-110 **Date :** 11/15/2023

Sampling Personnel : NS **Project :** SITEWD-CLF **WQ Inst# :** 24

Well Depth (ft BLS) : 35 **Screen Interval (ft BLS) :** 10 - 25 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.37500

Depth to Water from MP (ft) : 18.40 **Casing Stickup :** 2.04 **DTW Meter Serial # :** 1434

Depth to Water from LS (ft) : 16.36 **One Casing Volume (liter) :** 48.68

Pump Start Time : 1104 **Pumping Rate (L/min) :** 1

Minimum Purge Volume (liter) : 1.87 **Maximum Purge Volume (liter):** 12.17

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1111 Notes :
1106	2	277.7	1.47	6.17	6.8	-27.9	14	18.4	
1108	4	277.5	1.3	6.17	6.6	-28.5	13.9	18.4	
1110	6	277.8	1.3	6.17	6.5	-29.1	13.9	18.4	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : NaOH turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : Nancy Nunn Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-003 **Well ID :** 087-26 **Date :** 11/15/2023

Sampling Personnel : NS **Project :** SITEWD-CLF **WQ Inst# :** 24

Well Depth (ft BLS) : 85 **Screen Interval (ft BLS) :** 70 - 80 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.50000

Depth to Water from MP (ft) : 18.02 **Casing Stickup :** 2.06 **DTW Meter Serial # :** 1434

Depth to Water from LS (ft) : 15.96 **One Casing Volume (liter) :** 180.32

Pump Start Time : 1005 **Pumping Rate (L/min) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter):** 45.08

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1017 Notes :
1012	7	352	8.94	6.46	3.6	320.1	11.8	18.02	
1014	9	352.5	9	6.48	3.5	320.7	11.8	18.02	
1016	11	353	8.83	6.48	3.9	320.6	11.8	18.02	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube		X		Discharge tube has hole in it and leaks
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : Nancy Thum Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-004 **Well ID :** 098-99 **Date :** 11/15/2023

Sampling Personnel : NS **Project :** SITEWD-CLF **WQ Inst# :** 24

Well Depth (ft BLS) : 54.5 **Screen Interval (ft BLS) :** 39.5-49.5 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.25000

Depth to Water from MP (ft) : 16.02 **Casing Stickup :** 2.11 **DTW Meter Serial # :** 1434

Depth to Water from LS (ft) : 13.91 **One Casing Volume (liter) :** 106.08

Pump Start Time : 1142 **Pumping Rate (L/min) :** 0.5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter):** 26.52

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1151 Notes :
1146	2	258.9	1.01	6.14	1.6	140.4	12	16.02	
1148	3	258.9	.94	6.14	1.6	141.6	12	16.02	
1150	4	259	.88	6.14	1.5	142.3	12	16.02	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : _____ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-005 **Well ID :** 087-11 **Date :** 11/15/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 21 **Screen Interval (ft BLS) :** 11 - 21 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.37500

Depth to Water from MP (ft) : 19.12 **Casing Stickup :** 2 **DTW Meter Serial # :** 6783

Depth to Water from LS (ft) : 17.12 **One Casing Volume (liter) :** 10.12

Pump Start Time : 1142 **Pumping Rate (L/min) :** .25

Minimum Purge Volume (liter) : 1.8 **Maximum Purge Volume (liter):** 2.53

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1155 Notes :
1150	2	398.5	3.25	6.07	9	-26.5	14.7	19.13	
1152	2.5	398	3.53	6.05	12	-26.2	14.8	19.13	
1154	3	396.9	3.36	6.07	10.1	-26.6	14.8	19.13	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : Water smells like sulfer/ naoh bottle turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : MJ Johnson Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-006	**Well ID : 087-23**	**Date : 11/15/2023**
Sampling Personnel : MJ	**Project : Sitewd-CLF**	**WQ Inst# : 21**
Well Depth (ft BLS) : 45	**Screen Interval (ft BLS) : 25 - 40**	**Well Diameter (in) : 4**
Sampling Device : ☑ **Bladder Pump**	☐ **Other :**	**Discharge Tubing Size : 0.50000**
Depth to Water from MP (ft) : 37.36	**Casing Stickup : 1.83**	**DTW Meter Serial # : 6783**
Depth to Water from LS (ft) : 35.53	**One Casing Volume (liter) : 24.72**	
Pump Start Time : 1004	**Pumping Rate (L/min) : .5**	
Minimum Purge Volume (liter) : 3.65	**Maximum Purge Volume (liter): 6.18**	

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1017 Notes :
1012	4	179.9	2.65	5.82	29.5	39	12.9	37.37	
1014	5	185.5	2.68	5.79	37.5	41.6	12.9	37.37	
1016	6	185.9	2.8	5.78	35.2	42.1	12.9	37.37	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : Pump moved into water/ naoh bottle water turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

Sampled By : M Justman Date : 12/26/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45753-007 **Well ID :** 087-24 **Date :** 11/15/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 85 **Screen Interval (ft BLS) :** 70 - 80 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.50000

Depth to Water from MP (ft) : 37.38 **Casing Stickup :** 1.92 **DTW Meter Serial # :** 6783

Depth to Water from LS (ft) : 35.46 **One Casing Volume (liter) :** 129.44

Pump Start Time : 1034 **Pumping Rate (L/min) :** .5

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter):** 32.36

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1053 Notes :
1048	7	266.5	8.7	6.56	1.6	177	12.7	37.38	
1050	8	268.8	8.76	6.56	1.5	178.3	12.6	37.38	
1052	9	268.3	8.77	6.56	1.5	178.5	12.6	37.38	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : MJ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45755-001 **Well ID :** 088-21 **Date :** 11/16/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 25 **Screen Interval (ft BLS) :** 5 - 20 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.50000

Depth to Water from MP (ft) : 13.04 **Casing Stickup :** 2.04 **DTW Meter Serial # :** 6783

Depth to Water from LS (ft) : 11.00 **One Casing Volume (liter) :** 36.56

Pump Start Time : 1116 **Pumping Rate (L/min) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter):** 9.14

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1124 Notes :
1119	3	206.4	6.39	5.87	2	230.5	13.3	13.08	
1121	5	203.5	6.64	5.86	5	231.7	13.3	13.08	
1123	7	204.9	6.64	5.86	2.8	232.1	13.3	13.08	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : _____ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45755-002 **Well ID :** 088-22 **Date :** 11/16/2023

Sampling Personnel : MJ **Project :** Sitewd-CLF **WQ Inst# :** 21

Well Depth (ft BLS) : 85 **Screen Interval (ft BLS) :** 70 - 80 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.50000

Depth to Water from MP (ft) : 13.11 **Casing Stickup :** 2.05 **DTW Meter Serial # :** 6783

Depth to Water from LS (ft) : 11.06 **One Casing Volume (liter) :** 193.12

Pump Start Time : 1139 **Pumping Rate (L/min) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter):** 48.28

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1151 Notes :
1146	7	259.9	6.92	6.37	6	227.9	12.3	13.11	
1148	9	259.7	6.92	6.37	5.1	227.9	12.3	13.11	
1150	11	259.2	6.96	6.37	6.1	227.9	12.3	13.11	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : MJustman Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45755-003 **Well ID :** 088-23 **Date :** 11/16/2023

Sampling Personnel : NS **Project :** SITEWD-CLF **WQ Inst# :** 24

Well Depth (ft BLS) : 150 **Screen Interval (ft BLS) :** 120 - 130 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.50000

Depth to Water from MP (ft) : 13.06 **Casing Stickup :** 2.21 **DTW Meter Serial # :** 1434

Depth to Water from LS (ft) : 10.85 **One Casing Volume (liter) :** 363.48

Pump Start Time : 1130 **Pumping Rate (L/min) :** 1

Minimum Purge Volume (liter) : 10.85 **Maximum Purge Volume (liter):** 90.87

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1147 Notes :
1142	12	153.8	7.52	6.74	3.6	202.5	12.3	13.06	
1144	14	154.6	7.51	6.75	6.4	203.6	12.4	13.06	
1146	16	155.8	7.49	6.75	4.4	204.4	12.4	13.06	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : _____

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : _____ Date : 11/16/23

Groundwater Sample Log

Sample ID (COC# -UID) : 45755-004 **Well ID :** 087-27 **Date :** 11/16/2023

Sampling Personnel : MJ **Project :** SITEWD-CLF **WQ Inst# :** 24

Well Depth (ft BLS) : 25 **Screen Interval (ft BLS) :** 5 - 20 **Well Diameter (in) :** 4

Sampling Device : ☑ Bladder Pump ☐ Other : **Discharge Tubing Size :** 0.25000

Depth to Water from MP (ft) : 18.19 **Casing Stickup :** 2.05 **DTW Meter Serial # :** 1434

Depth to Water from LS (ft) : 16.14 **One Casing Volume (liter) :** 23.2

Pump Start Time : 1047 **Pumping Rate (L/min) :** 0.25

Minimum Purge Volume (liter) : 1.35 **Maximum Purge Volume (liter):** 5.8

Time	Volume Purged (L)	Cond (µS/cm) ± 3%	DO (mg/L) ± 10%	pH (SU) ± 0.1	Turb (NTU) ± 10% (a)	ORP (mV) ± 10mV (b)	Temp (°C)	DTW (ft)	Sample Collection Time : 1100 Notes :
1055	2	533	3.43	6.11	10.5	-9.5	13.1	18.19	
1057	2.5	536	3.03	6.1	9.2	-8.5	13	18.19	
1059	3	536	3.17	6.11	11.7	-8.6	13	18.19	

Purge Water Disposition : ☑ Ground ☐ Carbon Treat ☐ Contains Sr-90 ☐ Contains Tritium ☐ Other :

Comments : NaOH turned green. PI @ 20'

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag			X	screen on label is incorrect
Discharge Tube	X			
Fittings	X			
Sample Pump	X			

(a) For low turbidity conditions, stabilization is reached when three consecutive measurements are <10 NTU

(b) For Redox Measurements, stabilization = ± 10mv

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Sampled By : MJ Date : 11/16/23