Periodic Review Report No. 5
30 January 2020 – 30 January 2022
National Heatset Printing Co. Site (152140)

Town of Babylon
Suffolk County, New York

Prepared for
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway
Albany, New York 12233-7017

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Version: DRAFT
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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	Microgram(s) per liter
µg/m^3	Microgram(s) per cubic meter
amsl	Above mean sea level
AWQS	Ambient Water Quality Standard
bgs	Below ground surface
CMWP	Corrective Measures Work Plan
CVOC	Chlorinated volatile organic compound
DCE	Dichloroethene
DDC	Density driven convection
DER	Division of Environmental Remediation
EA	EA Engineering, P.C. and its affiliate EA Science and Technology
EC	Engineering control
E.I.T.	Engineer-In-Training
EN	Environmental notice
ft	Foot (feet)
FS	Feasibility study
GAC	Granular activated carbon
GHG	Greenhouse gas
H_2O	Water
HPT	Hydraulic profiling tool
IC	Institutional control
in.	Inch(es)
KO	Knock out
lb	Pound(s)
MIP	Membrane interface probe
MW	Monitoring well
NHP	National Heatset Printing Co.
No.	Number
NYSDEC	New York State Department of Environmental of Conservation
NYSDOH	New York State Department of Health

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

O&M	Operation and maintenance
PCE	Tetrachloroethene
PID	Photoionization detection
P.E.	Professional Engineer
PES	Precision Environmental Services
P.G.	Professional Geologist
PLC	Programmable logic control
ppb	Part(s) per billion
ppm	Part(s) per million
PRR	Periodic Review Report
PSE&G	Public Service Electric & Gas Company
PVC	Polyvinyl chloride
RA	Remedial action
RD	Remedial design
RI	Remedial investigation
ROD	Record of decision
RSO	Remedial system optimization
SCDHS	Suffolk County Department of Health Services
SCG	Standards, Criteria, and Guidance
Site	National Heatset Printing Co. site
SMP	Site Management Plan
SVE	Soil vapor extraction
TAGM	Technical and Administrative Guidance Memorandum
TCE	Trichloroethene
VFD	Variable frequency drive
VOC	Volatile organic compound
VP	Vapor point

ES. EXECUTIVE SUMMARY

The New York State Department of Environmental Conservation (NYSDEC) tasked EA Engineering, P.C. and its affiliate EA Science and Technology (EA) to provide site management services beginning 18 November 2021 at the National Heatset Printing Co. site ([Site] Number [No.] 152140) in Babylon, Suffolk County, New York (**Figure 1**). This Work Assignment is being conducted under NYSDEC Standby Engineering Services Contract No. D009806.

Operation, maintenance, and monitoring program activities have been conducted at the National Heatset Printing Co. site since April 2013 in accordance with the New York State Inactive Hazardous Waste Disposal Site Remedial Program and as stipulated in the Record of Decision (NYSDEC 1999) and Site Management Plan (EA 2013a) to attain identified cleanup goals. EA had previously performed site management for the site from 2013 to February 2020 under multiple contracts; Environmental Assessments and Remediation (EAR) performed site management for the site from March to December 2020.

The purpose of this Periodic Review Report (PRR) is to summarize the results of the 30 January 2020 through 30 January 2022 quarterly groundwater monitoring, system influent/effluent air monitoring, annual site inspections, and monthly operation and maintenance events; evaluate the effectiveness of the remedial actions implemented at the site; and provide sufficient documentation that the remedy remains in place, is performing properly and effectively, and is protective of public health and the environment. Specifically, this report provides the following information:

- Results of quarterly groundwater monitoring
- Evaluation of the current groundwater quality conditions
- Results of system influent/effluent air monitoring
- Results of site inspections and operation and maintenance visits
- Maintenance activities performed
- Remedial System Optimization activities conducted

This report also documents any problems or changes necessary for the site to be in compliance with the Site Management Plan including removal of Institutional Controls/Engineering Controls that are no longer applicable, modifications in monitoring requirements, as applicable, or a Corrective Action Work Plan and schedule, as necessary.

ES.1 EFFECTIVENESS OF REMEDIAL PROGRAM

Groundwater Monitoring

Groundwater sampling was completed at the on-site and off-site monitoring well networks on a quarterly basis during the 2020 and 2021 reporting periods. Groundwater concentrations of total chlorinated volatile organic compounds (CVOCs) were generally steady in on-site monitoring wells. Off-site groundwater CVOC concentrations continued to decrease in the deep monitoring wells, while concentrations in shallow monitoring wells remained constant.

System Influent/Effluent Air Monitoring

Influent/effluent system air sampling at the soil vapor extraction (SVE) system was completed on a quarterly basis. On-site Density Driven Convection (DDC) System #1 was not operational during the reporting period and therefore was not sampled. On-site DDC System #2 influent/effluent system air sampling was completed during Q2 and Q3 of 2021; the system was not operational during the other quarterly sampling events. The Off-Site System was sampled during Q1 and Q2 of 2020, as well as Q1, Q2, and Q3 of 2021. The Off-Site System was not operational during Q4 of 2021. The mass recoveries calculated using system information and laboratory air results confirm that while the systems are up and running, they continue to remove primary CVOCs and daughter compounds, but at a reduced rate from was previously observed (2017-2018).

Site Inspection and Maintenance

Site inspections and maintenance were completed on a monthly/quarterly basis during site visits associated with system operation and maintenance. A more detailed annual inspection was performed in July 2021. The fencing, locks, and access gates/doors were in good condition during each visit. Both the asphalt/concrete areas and the grassy areas were in good condition. There was no evidence of vandalism observed to the DDC wells, treatment systems, or utilities, and penetrations (including poles, posts, or stakes) were not observed.

The SVE system and surrounding areas were generally observed to be in good condition during each annual inspection. No evidence of vandalism to the SVE treatment system and outdoor manifold was observed. During the April 2021 site visit, the SVE system was found to have been manually turned off upon arrival but was able to be restarted with no issue.

The DDC system enclosures were observed to be in good condition during the annual inspection; no additional damage to the system enclosures or wellheads in either location was noted at that time. At the time of the annual inspection, gauges and meters read within acceptable levels at the systems which were in operation.

DDC Systems

The DDC systems required many troubleshooting and repair events during the reporting period. On-site DDC System #1 was not operational during the reporting period and had been shut down since March 2018. On-site DDC System #2 was operational for 19 percent of the reporting period; it had been shut down since February 2019 prior to being restarted in January 2021. The Off-site DDC System was operational for 68% of the reporting period. Downtime during the reporting period was associated with high local groundwater elevations and operational issues. The high water table caused the DDC systems to take on more water than they were designed to handle. Moisture separators and transfer pumps for both on-site DDC systems are designed to manage incidental water generated from moisture and condensate in the process lines, but they are not designed to handle large slugs (or a continuous flow) of water. Additionally, the DDC well heads rely upon a gap between the water table and the intake portion of the well head to prevent water from entering the return header lines.

On-site DDC System #1

- The system has been inoperable since March 2018 due to a malfunction of the moisture separator (noted below) and has remained off for the rest of the reporting period due to high local groundwater elevations.

- The controls associated with the moisture separator had malfunctioned prior to the March 2018 site visit; water had accumulated in both the moisture separators and the granular activated carbon (GAC) vessels.

- The system was turned off, the moisture separator and GAC vessels were drained, but the system was not able to run.

- Attempts to restart the system following replacement of the moisture separators and GAC media were unsuccessful due to issues with high groundwater elevations and systems components (i.e. malfunctioning variable frequency drive [VFD] and controls associated with transfer pumps). The system was only powered on during troubleshooting site visits throughout the reporting period, by both EA and EAR.

- A cracked polyvinyl chloride (PVC) fitting on the on-site DDC-2 well was observed during the January 2021 troubleshooting event. The PVC fitting was repaired in July 2021, but the system was still not able to run.

- High groundwater elevations were a primary factor to poor system performance.

- The system remains shut down per meetings held with NYSDEC and the Draft Corrective Measures Work Plan (CMWP) (EA 2022a).

On-site DDC System #2

- The system was shut down in February 2019 due to high local groundwater elevations and associated operational issues.

- Local groundwater elevations were continuously monitored but did not return to a level that would allow system operation during the previous reporting period.

- The system was restarted on 26 January 2021, but shut down various times throughout the reporting period due to high local groundwater elevations and associated operational issues.

- The system was shut down in November 2021 due to operational issues and remained off for the remainder of the reporting period as recommended in the Draft CWMP (EA 2022a).

Off-site DDC System

- The system was shut down in December 2018 due to high local groundwater elevations and associated operational issues.

- Local groundwater elevations were continuously monitored but did not return to a level that would allow system operation during the previous reporting period. The system was restarted during the March 2020 site visit.

- The system was shut down during the September 2021 site visit due to VFD and operational issues. The system remains off as determined during meetings held with NYSDEC and as recommended in the Draft CMWP (EA 2022a).

ES.2 COMPLIANCE

System operation during the reporting period was limited due to high groundwater table elevations and operational issues. Due to low system performance and up-time during the reporting period of 30 January 2020 through 30 January 2022, the operation of the DDC systems as an engineering control was not in compliance with respect to the major elements of the Site Management Plan.

ES.3 RECOMMENDATIONS

- Pursuant to the Engineering Controls/Institutional Controls Certification Form and Division of Environmental Remediation-10, a Draft CMWP (EA 2022a) was submitted in January 2022 and outlines DDC system issues and recommendations.

- The Site Management Plan was updated to reflect changes to the SVE system, monitoring schedule, and incorporated DDC system shut down resulting from meetings held with NYSDEC and the Draft CMWP.

- Site management tasks as defined in the current version of the SMP should continue during the next period (2022–2023).

- A new autodialer (i.e., Sensaphone) should be installed at the SVE system, incorporating a modern cellular-based setup to improve the reliability of these features.

1. SITE OVERVIEW

1.1 LOCATION

The National Heatset Printing Co. (NHP) site is currently a Class 4 site listed on the New York State Department of Environmental Conservation (NYSDEC) Registry of Inactive Hazardous Waste Sites (Number [No.] 152140). The site is located at 1 Adams Boulevard in the Hamlet of Farmingdale, Town of Babylon, Suffolk County, New York, and is identified as Block 1.00 and Lot 20.001 on the Town of Babylon Tax Map No. 132.20-1-3.2. A site location map is presented in **Figure 1**. The site is currently owned by 1 Adams Boulevard Realty Corporation, managed by Finkelstein Realty, and leased by a tenant. The site contains one industrial building and is 4.5 acres in size. The site is located in an industrial area and is bounded by railroad tracks to the north, Adams Boulevard and an industrial property to the south, an industrial property to the east, and an industrial property to the west (**Figure 2**).

NHP occupied a portion of this building from July 1983 to April 1989. Their operations consisted of lithographic tri-color printing of newspaper and periodical advertisements, and the manufacturer of lithographic printing plates. NHP had been using organic solvents at the site since 1983. An inspection by the Suffolk County Department of Health Services (SCDHS) in 1983 revealed that NHP was discharging photo-plating waste to the on-site sanitary system. In March 1986, an inspection performed by the SCDHS revealed strong evidence of dumping from staining of inks and oils on the ground. The inspection report indicated that drums were being stored improperly both inside and outside of the building.

NHP filed for bankruptcy in 1987. The SCDHS discovered that after filing for bankruptcy, NHP disposed of its chemical inventory by dumping the materials onto the soil and into a leaching pool located off the rear of the building in the northeast side of the property.

In February 1988, a water sample collected by SCDHS from the leaching pool off the northeast side of the building contained elevated levels of volatile organic compounds (VOCs) (i.e., 24,000 parts per billion [ppb] of 1,2-dichloroethene [DCE] and 1,000 ppb of p-ethyltoluene). At the request of SCDHS, the leaching pool bottom sediments were excavated to a depth of 15 feet (ft) and end-point samples were collected in November 1988. The end-point soil samples indicated that the remaining leaching pool sediment still contained elevated levels of VOCs (i.e., 13,000 parts per million (ppm) of tetrachloroethene [PCE]).

1.2 GEOLOGY AND HYDROGEOLOGY

The geologic formations that underlie Suffolk County are composed of a series of thick deposits of unconsolidated water bearing sediments of late Cretaceous and Pleistocene age. These unconsolidated deposits are underlain by crystalline bedrock of Precambrian age. The site is located approximately 4 miles north of South Oyster Bay, which is just north of Jones Beach Island and the Atlantic Ocean. The site topography and surrounding area is relatively flat.

There are three primary water bearing aquifers underlying Suffolk County. These aquifers, from shallow to deep, are the Upper Glacial, Magothy, and Lloyd. The aquifers are considered to be hydraulically connected, with the Glacial and Magothy contributing recharge for the underlying Lloyd aquifer. Together, they are a federally designated sole source of drinking water for Long Island.

During the glacial retreat, the area was covered with outwash deposits that constitute most of the Upper Glacial aquifer of Long Island. Because these sand and gravel deposits contain virtually no interstitial clay and silt, the Upper Glacial aquifer is the most permeable. The estimated average horizontal hydraulic conductivity of the outwash is from 1,000 to 1,500 gallons per day/square feet. The direction of groundwater movement through Long Island's aquifers is horizontal and is generally more rapid than the movement in the vertical direction. This arises because of an anisotropic effect; the largest dimensions of particles in the interbedded fine- and coarse-grained layers tend to be oriented horizontally.

Groundwater in the Upper Glacial aquifer flows away from two major highs on the main water table divide on Long Island. The general directions of groundwater flow of the island are north toward the Long Island Sound and south toward the Great South Bay. Groundwater has been encountered on-site at depths ranging from approximately 4 to 19 ft below ground surface (bgs). Based on site-specific data, local groundwater flow at the site moves south to southeast toward the Great South Bay with a gradient of 0.0014 ft/ft and velocity of approximately 1.34 ft/day. Overburden groundwater flow is shown on **Figures 3 and 4**.

1.3 NATURE AND EXTENT OF CONTAMINATION – PRE-REMEDIAL ACTION

A remedial investigation (RI)/feasibility study (FS) was performed at the site in 1999 to determine the nature and extent of contamination in on-site soil, determine the on-site and off-site groundwater conditions, evaluate potential qualitative risks to human health and the environment of site-related contaminants, and determine the best remedial technology to remediate soil and groundwater contamination on-site and off-site. The results of the RI are described in detail in the RI/FS Report (H2M 1999). Potential remedial alternatives for the site were identified, screened, and evaluated in the FS. The RI/FS report is summarized below:

- Six surface soil samples were obtained from 0 to 6 inches (in.) bgs at the leaching pool area and were tested for VOCs. None of the surface soils exhibited concentrations exceeding NYSDEC recommended soil cleanup objectives included in the Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels (NYSDEC 1994).

- Subsurface soil samples were collected from saturated and unsaturated soils to characterize the extent of contamination from the leaching pool. Prior to the RI, contaminated soils in the source area were excavated down to 15 ft bgs and were backfilled with clean sand under the supervision of the SCDHS. Analytical results revealed no soil contaminants in unsaturated soils, which are above 15 ft bgs. PCE was detected in the saturated soils located directly below the leaching pool at concentrations exceeding the NYSDEC recommended soil cleanup objective. The exceedances ranged from 8.2 to 7,700 ppm.

- Twelve groundwater monitoring wells were sampled including 1 upgradient, 7 on-site, and 4 downgradient wells. Seventy-four Geoprobe® groundwater samples were also obtained, including 8 upgradient, 39 on-site, and 27 downgradient:

  — Elevated concentrations of PCE, trichloroethene (TCE), and 1,2-DCE were detected in the Geoprobe® groundwater samples obtained below the on-site leaching pool. Concentrations of PCE (496–7,690 ppb), TCE (162–9,620 ppb), and 1,2-DCE (124–12,200 ppb) exceeded the NYSDEC groundwater standard of 5 ppb. Samples from shallow and deep monitoring wells below the leaching pool exhibited concentrations ranging from 210 to 330 ppb. CVOC-contaminated groundwater was observed to be migrating off-site in a southeast direction.

- In summary, the RI determined that, based on the Standards, Criteria, and Guidance (SCGs) for the site, subsurface soil and groundwater contained VOCs contamination that was to be addressed in the remedy selection.

Based on the RI and FS (H2M 1999), NYSDEC issued a Record of Decision (ROD) document dated 17 June 1999 (NYSDEC 1999), which identified the selected remedy for the site, cleanup objectives/goals, and site closure criteria.

1.4 REMEDIAL ACTION OBJECTIVES

The overall remedial goal for the site is to meet all SCGs and be protective of human health and the environment.

The remedial goals for this site, as presented in the ROD, are as follows:

- Eliminate, to the extent practicable, the source area contamination by remediating the groundwater directly below the leaching pool.

- Eliminate, to the extent practicable, ingestion of groundwater affected by the site that does not attain New York State Department of Health (NYSDOH) drinking water standards.

- Eliminate, to the extent practicable, further off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria (AWQS).

1.5 SUMMARY OF REMEDIAL ACTIONS

Potential remedial alternatives for the site were identified, screened, and evaluated in the FS. Based on the RI and FS (H2M 1999), NYSDEC issued the ROD (NYSDEC 1999), which identified the selected remedy for the site. The remedy included groundwater treatment using pump and treat, or alternate technologies (i.e., in situ chemical oxidation, in-well vapor stripping) for three locations: (1) source area, (2) downgradient edge of the site, and (3) downgradient edge of the off-site plume (**Figures 5A, 5B, and 5C**). The site is being remediated in accordance with the ROD, which was implemented via two construction contracts (awarded to EnviroTrac in 2004 and

EarthTech/AECOM in 2006) and the SVE work plan (Shaw Environmental [Shaw] 2003) as described below. The following sections describe the remedial design (RD) and remedial action (RA) efforts conducted at the site.

1.5.1 On-Site Source Area

The remedy in the ROD was refined during the RD. An additional investigation performed during the RD concluded that injection of sodium and potassium permanganate would be the most effective source area remedy. Therefore, an RD and construction contract (Contract No. D005272) was prepared by Shaw for implementation of this technology. The injection was conducted in 2005 via 24 monitoring wells in 10 locations (nested pairs or trios). CVOC concentrations in groundwater collected from within the treatment area in the year following the injection activities were observed to decrease, as described in the Permanganate Injection System Remedial Action Report (O'Brien and Gere 2007).

Due to the presence of PCE in soil samples collected from beneath the on-site building's slab and indoor air samples collected during the RD (2001), NYSDEC installed a soil vapor extraction (SVE) system to remediate the contaminated soil beneath the building slab and address potential vapor intrusion. This SVE system consisted of a single monitoring well that was converted into an SVE point.

The SVE system ran from 2002 to 2014, when the vertical extraction well was converted to a buried horizontal screen to accommodate the daily operations of a new building tenant, and to improve the capacity for extraction. In February 2016, sub-slab soil and soil vapor sampling was performed at the 1 Adams Boulevard building as part of an overall Remedial System Optimization (RSO) program. Five vapor points (VPs) were installed in soil borings advanced through the building foundation based on field screening using a photoionization detector (PID) and laboratory analysis of soil samples for CVOCs. The five sub-slab soil vapor samples and indoor air samples, collected from the new VPs using 8-hour regulated Summa canisters while the SVE system was not running, contained PCE exceeding the NYSDOH Air Guidance Values (NYSDOH 2015) for PCE (30 micrograms per cubic meter [$\mu g/m^3$]); concentrations ranged from 4,600 $\mu g/m^3$ (VP-19) to 36,000 $\mu g/m^3$ (VP-16). PCE was the only contaminant of concern detected in one of the indoor air samples below the NYSDOH guidance standard of 30 $\mu g/m^3$. A full description of the sampling plan and results of the 2016 investigation was presented in the Sampling and Delineation Memorandum for 1 Adams Boulevard (EA 2016a).

The results of the 2016 investigation were incorporated into follow-on modifications to the SVE system, which included five new horizontal wells connected to the SVE system through a manifold mounted to the south side of the treatment trailer in June 2016. The system was restarted in August 2016 using all five wells simultaneously. A description of the construction activities (including as-built drawings) associated with the modification of the SVE system was presented in a Construction Completion Report (EA 2018). Operation of the horizontal well legs was adjusted periodically throughout this reporting period to target areas of high soil vapor concentrations beneath 1 Adams Boulevard.

1.5.2 Downgradient On-Site Area

Two DDC systems were installed on the downgradient edge of the on-site groundwater plume. The intent of these two on-site DDC systems was to mitigate further migration of contaminants downgradient. The intent of the Off-site DDC System was to capture contamination at the end of the plume and mitigate further migration of contaminants to the south-southeast.

The previous standby engineer, O'Brien and Gere, managed the in-well stripping pilot test performed in 2006, which was accepted by NYSDEC. Based on the pilot test data, the effectiveness of the DDC system was determined and full scale on-site DDC system construction was implemented. For the two on-site groundwater treatment systems as well as the off-site groundwater treatment system (Section 1.5.3), NYSDEC awarded Contract No. D005539 to EarthTech/AECOM in 2006 to construct in-well vapor stripping systems (**Figures 5B and 5C**). The system initially installed as part of the pilot test became known as On-site DDC System #1. In 2010, as part of EarthTech/AECOM's contract, an additional DDC well was added to the pilot study system and a second on-site system (On-site DDC System # 2) was constructed (**Figure 5B**). Both on-site treatment systems consist of two DDC wells. Detailed descriptions of the on-site remedial systems can be found in the current version of the SMP.

1.5.3 Downgradient Off-Site Area

In 2012, the Off-site DDC System was constructed by EarthTech/AECOM under Contract No. D005539 at the Suffolk County Water Authority–Albany Avenue Well Field (**Figure 5C**). The system consists of six DDC wells and two treatment trailers. Detailed descriptions of the above remedial systems can be found in the current version of the SMP.

1.5.4 Environmental Notice

NYSDEC prepared an Environmental Notice (EN) for the site, which was issued in lieu of an Environmental Easement/Deed Restriction as referenced in Division of Environmental Remediation (DER)-33. The document includes a map of the property subject to the EN, and identifies certain limitations, presented in Section 3.1.1, which apply to the cleanup of contamination disposed of at the property. The EN was prepared on 28 March 2013, recorded at the Suffolk County Clerk's Office on 16 April 2013, and provided as an attachment to the current version of the SMP.

1.5.5 Final Engineering Report

The Final Engineering Report (EA 2013b) was completed in August 2013 and details the remedial activities conducted at the NHP site.

1.6 REMAINING CONTAMINATION

Remedial work described in the on-site and off-site RA Work Plans (AECOM 2009, 2011) did not include soil removal; therefore, contamination was left in the subsurface soil and groundwater at this site, which is hereafter referred to as remaining contamination. The SMP was prepared to manage remaining contamination at the site.

1.6.1 Soil/Soil Vapor and Indoor Air

As previously mentioned, the SVE system was installed to remediate the remaining contaminated soil beneath the building slab and address potential vapor intrusion. The system has been remediating the soil and vadose zone since 2002 and was modified in 2014 and again in 2016 as described in section 1.5.1.

During the reporting period, VPs within 1 Adams Boulevard that were installed prior to SVE system modification in 2016 were screened monthly using a PID. In addition, air samples were collected from SVE influent and effluent quarterly during the reporting period. VPs had concentrations of VOCs up to 9.4 ppm. Continued concentrations of VOCs in both VPs and SVE system influent indicate remaining contamination within the vadose zone.

1.6.2 Groundwater

Groundwater contamination is present on-site and off-site. The groundwater plume extends approximately 5,700 ft downgradient of the site. Historically, the highest concentrations of PCE in groundwater have been detected at approximately 80 ft bgs. Concentrations of VOCs greater than 1,000 ppb in groundwater have been present in the 75–85 ft sampling interval approximately 4,100 ft downgradient (south-southeast) of the site.

In May 2016, groundwater plume delineation activities were completed using a membrane interface probe (MIP) and hydraulic profiling tool (HPT) as part of an RSO program. The MIP was advanced at 25 sample locations over a period of 2 weeks, via direct-push technology. Field data and observations from the MIP were used to select locations associated with the subsequent HPT sampling program. The HPT was advanced at 10 locations over the course of 4 weeks, and groundwater samples were collected and analyzed for CVOCs. Results from the plume delineation RSO were presented in a memorandum to NYSDEC issued August 2017 (EA 2017a) and concluded the following.

- Based on the results of the 2016 and previous investigations, no additional on-site or off-site sources were identified that could be contributing to groundwater contamination.

- Groundwater beneath the site is impacted with CVOCs from the water table interface encountered at 11.41 to 18.05 ft bgs in April 2016 at on-site wells to the top of the Gardiners Clay unit at approximately 80 ft bgs.

- The highest PCE, TCE, and DCE concentrations were detected in the deepest sampling intervals collected from approximately 75 to 80 ft bgs.

- A three-dimensional interpretation of the data indicated elevated concentrations of PCE, TCE, and DCE as pockets or "hot spots" of contamination, with the highest concentration of 670 ppb approximately 4,200 ft downgradient from the source area (1 Adams Boulevard).

- The Off-site DDC System appears to be limiting further downgradient migration of VOCs, with PCE, TCE, and *cis*-1,2-DCE concentrations decreasing to below the NYSDEC AWQS of 5 ppb 400 ft south of the off-site system.

- Concentrations approximately 500–700 ft northeast of the off-site DDC wells suggest a component of eastward groundwater flow and contaminant transport in this area that is beyond the influence of the off-site treatment system; and, therefore, is potentially not being addressed by the system.

Since contaminated soil, soil vapor, and groundwater remain at the on-site and off-site locations after completion of the RA, engineering controls (ECs) and institutional controls (ICs) are required to protect human health and the environment. The current version of the SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the RA, including: (1) implementation and long-term management of all ECs and ICs, (2) media monitoring, (3) operation and maintenance (O&M) of treatment, collection, containment, or recovery systems, (4) performance of periodic inspections, certification of results, and submittal of this PRR, and (5) defining criteria for termination of treatment system operations. As of December 2021, the only system currently operating at the site is the SVE system on-site.

1.7 SITE MANAGEMENT PLAN

The current version of the SMP details the future management of the NHP site. The SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the EN for contamination that remains at the site. Environmental monitoring points at the NHP site have been maintained and sampled during the monitoring period in accordance with the SMP. This included collection of groundwater and system influent/effluent air samples at various locations across the site, monthly O&M of the systems, annual inspections, and treatment system and monitoring well maintenance. Sampling locations, sampling methodology, list of analytes, analytical methods, inspection methodology, and site maintenance objectives are documented in the SMP.

The objectives of the monitoring and maintenance program are to:

- Collect representative groundwater and system influent/effluent air samples and evaluate the data to confirm that the remedy continues to be effective in protecting public health and the environment.

- Assess compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards and assess achievement of the remedial performance criteria.

- Periodically inspect the site and provide routine maintenance, as necessary.

- Document and report this information to NYSDEC.

The current version of the SMP reflects changes to operation of the treatment systems and associated monitoring.

1.8 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEM

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remediation goals identified by the ROD (NYSDEC 1999). The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

1.8.1 Soil Vapor Extraction System

The SVE system will continue to be monitored quarterly to determine whether the system remains necessary at the site or if the RA objectives were achieved. The decision to terminate operation of the SVE system will be based upon the evaluation of whether soil remediation is complete by assessing system performance/monitoring data, soil sampling results, and soil gas results. The following is a list of factors that may influence the commencement of shut down:

- System off-gas analysis:
  - Total influent or individual VOCs extracted from area of influence are not evident.
  - Total influent or individual VOCs extracted from area of influence are below regulatory requirements.
  - No rebound is observed in influent concentrations upon system restart, following reasonable system shut down period.
- Soil gas analysis:
  - Soil gas constituents collected from the remediation area indicate levels of non-detection with reasonable detection limits and concentrations.
  - Soil gas concentrations do not significantly rebound following reasonable system shut down period.
- Soil sample analysis:
  - Soil constituents collected from the area being remediated indicate concentrations below regulatory requirements or are not detected (confirmatory analyses).

The SVE system will not be discontinued unless prior written approval is granted by NYSDEC. If monitoring data indicate that the SVE system is no longer required, a proposal to discontinue the system will be submitted by the property owner.

1.8.2 Density Driven Convection Systems

The on-site and off-site DDC systems have been shut down due to high local water table and operational issues. The systems remain off as determined during meetings held with NYSDEC and as recommended in the Draft CMWP (EA 2022a).

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2. EVALUATION OF REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS

This section provides a brief evaluation of remedy performance, effectiveness, and protectiveness at the NHP site, based upon assessment of historical groundwater data, mass removal rates, and system operation. Groundwater data is presented in **Tables 1, 2A, and 2B**; and mass removal data is provided in **Tables 3A through 3F**. Additional discussions of remedy performance effectiveness in relation to groundwater data, system performance, and mass removal rates are provided in Sections 4 and 5 of this PRR.

2.1 SYSTEM OPERATION

The SVE system had downtime due to high level in the moisture separator, and once due to the system being manually turned off between site visits. Overall, the SVE system was operational 86 percent of the period. Monthly monitoring of differential pressures at VPs within 1 Adams Boulevard indicated that the system was effectively mitigating potential for soil vapor intrusion.

The DDC systems required many troubleshooting and repair events during the reporting period as described in Section 5.2 of this report. Downtime for On-site DDC System #2 was associated with high local groundwater elevations. Moisture separators and transfer pumps for both on-site and off-site DDC systems are designed to manage incidental water generated from moisture and condensate in the process lines, but they are not designed to handle large slugs of water. On-site DDC System #1 was not operational during the entire reporting period. On-site DDC System #2 was operational for 19 percent of the reporting period. The Off-site DDC System was operational for 68 percent of the reporting period.

2.2 GROUNDWATER DATA

- During this reporting period, total CVOC concentrations decreased in on-site deep groundwater monitoring wells when On-site DDC System #2 was restarted in January 2021, and then CVOC concentrations increased in October 2021 after On-site DDC System #2 was shut down.

- Concentrations in off-site nested wells (monitoring well [MW]-1S/MW-1D) upgradient from the Off-site DDC System have shown a decreasing trend since system installation in 2012. MW-1D has shown an order of magnitude decrease in total CVOCs since 2012, with values remaining consistent into 2021. PCE was detected in MW-1S in March 2020 and July 2021 but were less than the water guidance value of 5 microgram per liter (ug/L).

- Graphs showing CVOC concentration trends in site groundwater are presented in **Figures 6A, 6B, 6C, and 6D**.

2.3 MASS REMOVAL

SVE system air monitoring/sampling has been continuously performed at the site since August 2008. DDC system influent/effluent air monitoring has been continuously performed on a quarterly basis at the site since June 2010 (on-site DDC systems) and July 2012 (off-site DDC system). Summaries of the CVOC mass recovery rates for the SVE and DDC systems can be found in **Tables 3A through 3F**. During the 30 January 2020 through 30 January 2022 reporting period, the following mass removal amounts were observed:

- Approximately 1.8 pounds (lb) of PCE, 0.24 lb of TCE, and -0.01 lb of DCE have been removed from the source area via the SVE system.

- There was no CVOC removal from On-site DDC System #1 since it was not operational during the reporting period.

- Approximately 0.48 lb of PCE, 0.02 lb of TCE, and 0.06 lb of DCE have been removed from on-site groundwater by On-site DDC System #2.

- Approximately 0.03 lb of PCE, -0.002 lb of TCE, and -1.06 lb of DCE have been removed from off-site groundwater by the Off-site DDC System operating alternately with Blowers 501 and 502.

Based upon the groundwater monitoring results, it does not appear that operation of the remedial systems is reducing total CVOC concentrations in source area soil and groundwater.

Based upon the mass removal results, it appears that remedial system operation is capable of extracting CVOC mass from source area soil, as well as both on-site and off-site groundwater when the systems are operational.

- Mass recovery observed at the SVE system continues to remain consistent with previous years; recovery increased drastically when all five HSVE legs were opened. This is an indication of a remaining source of contamination.

- Mass recovery observed at On-site DDC System #2 is lower than the previous reporting period; On-site DDC System #1 was not operational during this reporting period.

- Mass recovery observed at the Off-site DDC System is lower than the previous reporting period.

3. INSTITUTIONAL CONTROLS/ENGINEERING CONTROLS PLAN COMPLIANCE REPORT

The current version of the SMP presents the following ICs/ECs.

3.1 INSTITUTIONAL CONTROLS/ENGINEERING CONTROLS REQUIREMENTS AND COMPLIANCE

Since contamination remains in on-site soil, soil vapor, and on-site and off-site groundwater, ICs and ECs are required to protect human health and the environment.

3.1.1 Institutional Controls

A series of ICs are required by the ROD (NYSDEC 1999) to: (1) implement, maintain, and monitor EC systems, (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination, and (3) limit the use and development of the site to industrial uses only. ICs consist of:

- Compliance with the current version of the SMP

- Compliance with the EN. ICs identified in the EN may not be discontinued without an amendment to or extinguishment of the EN. The site has a series of ICs in the form of site restrictions which include:

  - The property may only be used for industrial use provided that the long-term ECs and ICs are employed.

  - The property may not to be used for a higher level of use, such as unrestricted, restricted residential, or commercial uses without additional remediation and amendment of the EN, as approved by NYSDEC.

  - There shall be no disturbance or excavation of the property which threatens the integrity of the ECs or which results or may result in a significantly increased threat of harm or damage at any site as a result of exposure to soils.

  - The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use unless the user first obtains permission to do so from NYSDEC.

  - The potential for vapor intrusion must be evaluated for any buildings developed within the site boundaries, and any potential impacts that are identified must be monitored or mitigated.

  - Vegetable gardens and farming on the property are prohibited.

- — Site owner or remedial party will submit to NYSDEC a written statement that controls employed at the Controlled Property are unchanged or any changes have approval of NYSDEC.

- Development of an Excavation Work Plan (included as an appendix to the SMP), which identifies the procedures and protocols required to be implemented should any remaining contamination be breached, penetrated, or temporarily removed.

- Compliance with O&M Plan (as defined in the current version of the SMP)

- Compliance with Monitoring Plan (as defined in the current version of the SMP)

- Compliance with IC/EC Plan (as defined in the current version of the SMP)

3.1.2 Engineering Controls

ECs, which consist of a SVE system (source area) and three DDC systems (On-site DDC Systems #1 and #2, and Off-site DDC System) are in place. As of December 2021, the DDC systems have ceased operations, in accordance with meetings held with NYSDEC and the Draft CMWP (EA 2022a). A description of each EC, their objective(s), and an explanation of how the performance of each EC is evaluated is provided below.

3.1.2.1 Soil Vapor Extraction System

Objectives

The objective for the SVE system includes soil remediation. The SVE system was designed to operate continuously. Potential exposure to indoor air impacted with VOCs within the site building is mitigated by the SVE system. To achieve the remedial objectives, long-term monitoring programs are in place to monitor the effectiveness of the SVE system.

Description

The equipment associated with SVE is housed in an enclosure (20 ft long × 8 ft wide × 8 ft high) located adjacent to the north wall of the site building. Modifications to the system were made in Spring/Summer 2016. As of August 2016, five horizontal well legs were installed oriented east to west beneath the 1 Adams Boulevard building. The modified system has been in use since it was installed. The five wells are connected to the SVE system via underground piping to the manifold housed on the exterior of the system enclosure. Inside the enclosure, the 2-in. diameter SVE piping contains a ball valve and gate valve to control the airflow and vacuum, as well as sampling ports for drawing air samples and conducting flow measurements. The 2-in. piping is connected to the existing vacuum blower designed to extract a maximum of 400 cubic feet per minute of airflow from the subsurface. Vapors from the source area are extracted by applying vacuum via the blower system. A 10-horsepower regenerative blower develops a maximum vacuum of approximately

98 in. of water. Vapors extracted from below the building foundation are treated through two treatment vessels containing granular activated carbon (GAC) before being discharged to the atmosphere. In addition, the SVE system has a dial-out telemetry system to provide notification of system alarms that has not been operational during the reporting period.

Evaluation Methods

Performance monitoring data showing mass removal rates versus time will be used to evaluate trends for the source area. The SVE system is currently monitored on a monthly basis to evaluate system performance, to assure that all components are in working order, and to maintain compliance with the requirements of a NYSDEC Air Discharge Permit.

Monitoring the performance of the SVE system (i.e., off-gas samples, air concentration readings) in reducing contaminant concentrations in soils is necessary to determine the effectiveness of the SVE system. The mass removed during long-term monitoring can be calculated using vapor concentration and flow rate measurements taken at the manifold. The instantaneous and cumulative mass removal is then plotted versus time. The contaminant mass removed during an operating period can be calculated using the equation provided below.

$$M = C \times Q \times t$$

where:
- M = Cumulative mass removed
- C = Vapor concentration
- Q = Extraction flow rate
- t = Operational period

Remedial progress of SVE systems typically exhibits asymptotic behavior with respect to both vapor concentration reduction and cumulative mass removal as the contaminant mass is removed from the subsurface. At this point, the composition of the vapor should be determined and compared with soil vapor samples. This comparison will enable confirmation that there has been a shift in composition toward less volatile components. Soil vapor samples may indicate the composition and extent of the residual contamination.

If asymptotic behavior is persistent for periods greater than 6 months, and if residual levels are at or below regulatory limits, an evaluation will be performed to assess if termination of operations is appropriate.

Effectiveness

Based upon the results for mass removal, it appears that SVE system operation is continuing to remove some CVOCs from shallow source area soil. Additional discussion of SVE system monitoring and effectiveness is presented in Section 5.

Conclusions and Recommendations for Changes

It is recommended that a new dial-out unit (i.e., Sensaphone) be installed at the SVE system with a cellular-based setup to improve the reliability of these features. The Sensaphone unit for the SVE system is currently inoperable and no longer provides dial-out notifications when alarm conditions occur. This can lead to periods of system downtime in between monthly O&M visits. To maintain continuous system operation to ensure prevention of CVOC accumulation in indoor air, a new dial-out unit should be installed.

System operation was altered in 2017 to target areas of high CVOC concentrations as identified at vapor monitoring points inside 1 Adams Boulevard during RSO activities associated with the SVE system in 2016. The system operations were altered again in December 2021 to run all 5 HSVE legs.

3.1.2.2 Density Driven Convection Systems

Objectives

The remedial objectives for the DDC systems include achieving groundwater standards and preventing further off-site migration of contaminated groundwater. The DDC systems were designed to operate continuously. To achieve the remedial objectives, long-term monitoring programs are in place to monitor the effectiveness of the systems.

Description

The DDC systems consist of blowers that both extract and inject (closed-loop system) air into the wells, heat exchangers that reduce the blower discharge temperature, and carbon adsorbers for CVOC treatment before re-injection of treated air back into the wells. The systems are controlled by variable frequency drives (VFDs) for the blower speed and programmable logic controls (PLCs) for automation of the systems.

The DDC wells have two screened intervals, a lower screen collocated with the highest dissolved CVOC impacts and an upper screen that intercepts the water table. An air pipe is installed within the well that injects pressurized air from the blower approximately 80 ft bgs. The injected air within the well serves two purposes. First the buoyancy forces associated with the air bubbles lift water within the well upwards, which exits the upper screen. This process is air-lift pumping. The water that exits the upper screen is replaced with (contaminated) water entering the well via the lower screen. Secondly, the water to air contact strips VOCs from the water, with the goal of discharging uncontaminated water through the upper screen. The wellhead is connected to the blower intake, and VOC-laden air is conveyed to the equipment unit where it is treated via activated carbon.

The air exiting the water table creates a turbulent condition (depending on air flow rate) and creates a resulting “spray”. The technology requires a significant off-set between the water table and well-head to prevent this spray from being pulled into the header. Additionally, if the air/water contact is not sufficient for complete stripping of VOCs, the potential exists for contaminated water to reenter the aquifer through the upper screen. All supplied equipment is housed in ventilated and insulated shipping containers.

Evaluation Methods

Performance monitoring data showing mass removal rates (as well as changes in groundwater concentrations) versus time will be used to evaluate trends for the source area and downgradient area. System up-time also indicates overall system performance. The DDC systems were monitored on a monthly/quarterly basis to evaluate system performance and to help assure that all components are in working order. However, system repair coupled with troubleshooting issues and limited system operation due to high local groundwater elevation caused significant periods of downtime during this reporting period (30 January 2020 through 30 January 2022).

Monitoring the performance of the DDC systems (i.e., off-gas samples, air concentration readings, and groundwater sampling data) in reducing contaminant concentrations in groundwater is necessary to determine the effectiveness of the DDC systems. Similar to the SVE system, the mass removed during long-term monitoring can be calculated using vapor concentration and flow rate measurements taken at each DDC system.

Effectiveness

Based upon the results for system mass removal, it appears that DDC system operation is not removing CVOCs from both on-site and off-site groundwater effectively enough to warrant continued operation of the systems, as discussed in the Draft CMWP (EA 2022a).

Conclusions and Recommendations for Changes

After careful review of data and discussions with NYSDEC, it was determined that the DDC systems are to remain off, while alternative remedial approaches are evaluated. The SVE system will continue to be operated using all five HSVE legs, with quarterly monitoring.

3.1.3 Institutional Controls/Engineering Controls Compliance

Prior to this PRR, the recommendation was made to discontinue operation of the DDC systems associated with the NHP Site in a Draft CMWP (EA 2022a); this recommendation was accepted by NYSDEC, and the SMP was updated to reflect the change in operations. The IC/EC certification has been modified to reflect the accepted change.

3.2 INSTITUTIONAL CONTROLS/ENGINEERING CONTROLS CERTIFICATION

The IC/EC certification form has been included as **Appendix A** of this PRR. It has been revised to reflect the changes in site operations, as approved by NYSDEC. EC/ICs are able to be certified based on the approved changes in site operations. A Draft CMWP was prepared and submitted in 2022; as a result, alternative remediation technologies are being evaluated for the source area, as part of an RSO.

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4. MONITORING PLAN COMPLIANCE REPORT

This PRR assesses whether the NHP site is being remediated and managed as set forth in the current version of the SMP and ROD (NYSDEC 1999). The Monitoring Plan includes a description of the methods and rationale to be used for assessing the remedy effectiveness, and addresses the following elements:

- Sampling and analysis of all appropriate media (e.g., groundwater, SVE, and DDC system influent/effluent air)
- Assessing compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards
- Assessing achievement of the remedial performance criteria
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

Sampling and analysis of SVE and DDC system influent/effluent air is presented and discussed in Section 5 of this PRR.

4.1 GROUNDWATER MONITORING AND SAMPLING

Groundwater monitoring and sampling has been performed quarterly in the vicinity of the on-site system since June 2010, as well as in the vicinity of the off-site system since July 2012. During the reporting period (30 January 2020 through 30 January 2022), seven groundwater monitoring and sampling events were completed. Prior to groundwater sampling activities, monitoring wells were gauged to measure depth to groundwater, determine potentiometric surface elevations, and evaluate groundwater flow paths.

The following table identifies the monitoring well network that is included in the monitoring plan for the site. All monitoring wells identified in this table were sampled during each quarterly sampling event for this reporting period. Quarterly sampling events took place in March, June, August, and December 2020; and January, April, July, and October 2021. Quarterly groundwater sampling was not performed in January 2022 because the current version of the SMP has changed the sampling interval to every 5 quarters.

Monitoring Plan – Monitoring Wells

On-Site System	Well Status/Notes	Off-Site System	Well Status/Notes
DDC-2-PD	Good	DDC-5-PD	Good
DDC-2-PS	Good	DDC-5-PS	Good
DDC-4-PD	Good	DDC-6-PD	Good
DDC-4-PS	No well cap	DDC-6-PS	Good
MW-14D	Good	DDC-7-PD	Good
MW-14S	Good	DDC-7-PS	Good
MW-15D	Good	DDC-8-PD	Good
MW-15S	Good	DDC-8-PS	Good
MW-1D	Good	DDC-9-PD	Good
MW-1S	Good	DDC-9-PS	Good
MW-2A	Good	DDC-10-PD	Good
MW-2AD	Good	DDC-10-PS	Good
MW-3D	Good	MW-1D	Good
MW-3S	Good	MW-1S	Good
MW-5D	Good	MW-2D	Good
MW-5S	Good	MW-2S	Good
MW-6S	Good	MW-3D	Good
		MW-3S	No bolts for well cap, broken J-plug

Local groundwater flow direction based on groundwater elevation data collected both historically and during the reporting period is generally in a south-southeast direction towards the Great South Bay. Interpreted groundwater contour maps illustrating the direction of groundwater flow for the latest on-site and off-site groundwater gauging event (October 2021) are shown in **Figures 3 and 4**, respectively. A summary of groundwater gauging data for all 12 sampling events is provided in **Table 1**.

Groundwater depth at the site could potentially be influenced by temporal changes and seasonal precipitation events. Groundwater elevations changed within individual on-site shallow monitoring wells across the reporting period an average 1.99 ft. Groundwater elevations changed within individual off-site shallow monitoring wells across the reporting period an average 2.53 ft. A copy of the field forms completed during monitoring and sampling activities are provided in quarterly reports submitted to NYSDEC.

4.1.1 Chlorinated Volatile Organic Compounds

The CVOCs detected in on-site monitoring wells and DDC piezometers exceeding their respective NYSDEC AWQS at least once during the reporting period include *cis*-1,2-DCE, TCE, and PCE. PCE was detected exceeding its AWQS of 5 µg/L consistently within at least 5 of the 17 on-site monitoring wells and DDC piezometers during each quarter throughout the reporting period. *Cis*-1,2-DCE was detected in at least one on-site monitoring well exceeding its AWQS of 5 µg/L during each of the groundwater sampling events during the reporting period. TCE was detected exceeding its AWQS of 5 µg/L during 4 of the 8 quarters in deep monitoring wells.

Off-site monitoring wells and DDC piezometers consistently contained concentrations of *cis*-1,2-DCE, TCE, and PCE exceeding their respective AWQS. PCE and *cis*-1,2-DCE were detected exceeding their respective AWQS of 5 µg/L consistently within at least 1 of the 18 off-site monitoring wells and DDC piezometers during each quarter throughout the reporting period. Exceedances of CVOCs were generally consistent throughout the reporting period. A summary of VOCs detected in groundwater samples collected from site monitoring wells and DDC piezometers is provided in **Tables 2A and 2B**. Trend graphs summarizing CVOC concentrations at each monitoring location and including historical data are presented on **Figures 6A through 6D**. Full laboratory reports from quarterly groundwater sampling are provided in the quarterly reports submitted to NYSDEC.

4.1.1.1 On-Site Monitoring Wells

The concentration of PCE exceeded the AWQS of 5 µg/L in on-site monitoring wells consistently throughout the reporting period. Exceedances were recorded in both shallow and deep monitoring wells, with the higher concentrations in the deep monitoring wells. PCE concentrations ranged from 5 µg/L in MW-3D during the first quarter of 2021 to 4,400 µg/L in MW-2D during the third quarter of 2020.

The concentration of c*is*-1,2-DCE exceeded the AWQS of 5 µg/L in deep on-site monitoring wells, with concentrations ranging from 5.6 µg/L in MW-2AD during the second quarter of 2020 to 15 µg/L in MW-5D during the third quarter of 2020. The concentration of c*is*-1,2-DCE did not exceed the AWQS in shallow monitoring wells or DDC piezometers during the reporting period.

The concentration of TCE exceeded the AWQS of 5 µg/L only in deep monitoring wells, with concentrations ranging from 5.5 µg/L in MW-2AD during the second quarter of 2021 to 15 µg/L in MW-5D during the third quarter of 2020.

Concentrations of CVOCs in the DDC piezometers increased throughout the reporting period, with PCE exceeding the AWQS each quarter. Concentrations increased in DDC piezometers in 2021, with the concentration of PCE in DDC-2-PD reaching 1,100 µg/L during the third quarter.

Trend graphs for on-site shallow and deep monitoring wells and DDC piezometers are provided in **Figures 6A and 6B**. System operation is discussed further in Section 5.

4.1.1.2 Off-Site Monitoring Wells

The concentration of PCE exceeded the AWQS of 5 µg/L in only deep monitoring wells and DDC piezometers consistently throughout the reporting period. MW-1D and MW-3D typically contained the highest concentrations, reaching 78 µg/L during the second quarter of 2020. The concentration of TCE exceeded the AWQS of 5 µg/L consistently in MW-1D and MW-3D for seven of the eight quarters during the reporting period with concentrations reaching 35 µg/L during the second quarter of 2020.

TCE concentrations did not exceed the AWQS of 5 µg/L in any of the deep or shallow DDC piezometers during the reporting period. The concentration of *cis*-1,2-DCE exceeded the AWQS of 5 µg/L in one to two of the three deep monitoring wells throughout the reporting period, with concentrations ranging from 5.8 µg/L in MW-3D to 26.7 µg/L in MW-1D during the reporting period.

The concentration of *cis*-1,2-DCE exceeded the AWQS of 5 µg/L in up to six of the shallow and up to four of the deep DDC piezometers during the reporting period. Concentrations ranged from 5.0 µg/L in DDC-6-PS during the second quarter of 2021 to 17 µg/L in DDC-5-PS during the second quarter of 2020.

Trend graphs for off-site shallow and deep monitoring wells and DDC piezometers are provided in **Figures 6C and 6D**. Concentrations of CVOCs did not increase dramatically following shutdown of the Off-site DDC System in September 2021. Exceedances of the AWQS criteria remained constant, even after the shutdown of the system. System operation is discussed further in Section 5.

4.2 CONFIRM COMPLIANCE WITH MONITORING PLAN

The following table identifies the SMP requirements on an annual basis and demonstrates that compliance with the monitoring plan has been achieved prior to the end of January 2022.

	Required Frequency*		
Monitoring Program Activity	**Quarterly**	**Monthly**	**Compliance Dates**
Groundwater monitoring/sampling	x		30 January 2020 through 30 January 2022
*The frequency of events will be conducted as specified until otherwise approved by NYSDEC.			

4.3 CONFIRM THAT PERFORMANCE STANDARDS ARE BEING MET

As described in Section 2, groundwater data is one of three metrics utilized to evaluate remedy performance. The groundwater monitoring plan provides measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site and all affected site media. Groundwater monitoring was performed quarterly throughout the reporting period; **Tables 2A and 2B** provide a summary of groundwater results for the reporting periods.

In 2021, on-site deep groundwater monitoring data showed a general decreasing trend in CVOC concentrations while On-site DDC System #2 was operational; however, CVOC concentrations rebounded back to 2010 baseline concentrations within onsite deep groundwater. CVOC concentrations in shallow monitoring wells fluctuated throughout the reporting period. On-site groundwater concentration trends are detailed in Section 4.1 and shown on **Figures 6A and 6B**.

Off-site concentrations of individual CVOCs in shallow groundwater wells have remained at or below concentrations previously seen in the wells during previous reporting periods. *Cis*-1,2-DCE was also detected consistently in off-site deep monitoring wells and both deep and shallow DDC piezometers. CVOC concentrations in MW-1S and MW-1D, immediately upgradient of the Off-site DDC System, continued to decrease, suggesting that the high baseline CVOC concentrations seen in MW-1S/1D in 2012 have migrated downgradient toward the offsite DDC treatment wells.

Offsite shallow and deep wells continue to have a total CVOC mass below the baseline CVOC concentrations on-site at 1 Adams Boulevard.

4.4 CONCLUSIONS AND RECOMMEDATIONS FOR CHANGES

Overall, on-site and off-site groundwater CVOC concentrations still exceed NYSDEC AWQS.

Considering the trends in groundwater analytical data and reduction in system up-time, the DDC systems were not effectively or efficiently removing site-related contaminants from the groundwater. The on-site and off-site DDC systems were shut down and remain shut down as recommended in the Draft CMWP (EA 2022a) and based on meetings held with NYSDEC. Groundwater sampling frequency will be reduced to every 5 quarters while RSO activities are conducted on-site.

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5. OPERATION AND MAINTENANCE PLAN COMPLIANCE REPORT

The O&M Plan describes the measures necessary to operate, monitor, and maintain the mechanical components of the remedy in place at the site, and includes the following elements:

- The steps necessary to allow individuals unfamiliar with the site to operate and maintain the SVE and DDC systems

- An O&M Contingency Plan

The O&M Plan will be updated periodically to reflect changes in site conditions or the manner in which the systems are operated and maintained.

5.1 SITE INSPECTION

The condition of the overall site and individual systems was noted during all monthly O&M visits as well as during quarterly groundwater/air monitoring and sampling events. A detailed annual site-wide inspection was completed on 20 July 2021.

5.1.1 Soil Vapor Extraction Treatment System

The SVE system and surrounding areas were generally observed to be in good condition during the annual inspection (**Appendix B**). There was no new evidence of vandalism to the SVE treatment system and new outdoor manifold. Inside the building, vapor-monitoring points sustain continual wear and tear due to the daily operations of the tenant.

5.1.2 On-Site and Off-Site Density Driven Convection Treatment Systems

The DDC systems were observed to be in good condition during the annual inspections; no additional damage to the system enclosures or wellheads in either location was noted during the inspections. At the time of the annual inspection, all gauges and meters read within acceptable levels on the operating systems. Remote communication equipment was not functional for any of the on-site or off-site systems during the reporting period.

5.2 SUMMARY OF OPERATION AND MAINTENANCE COMPLETED DURING REPORTING PERIOD

Over the reporting period, 24 months (8 quarters) of O&M were performed between January 2020 and January 2022. Most system operating parameters were checked monthly for each system in operation; system air samples were collected quarterly from each system in operation during that quarter.

For the SVE system, these operating parameters include:

- Temperature

- Vacuum
- Influent, midpoint, and effluent air CVOC concentrations (laboratory samples collected quarterly for influent and effluent) air flow rates
- Hour meter
- VP PID and differential pressure readings

For the DDC systems, operating parameters include:

- Temperature
- Pressure/vacuum
- Blower operating frequency
- Total system injection and extraction rates
- Individual injection and extraction rates for each DDC well
- CVOC concentrations in system process air (laboratory samples collected quarterly)
- Hours of operations per blower
- Differential groundwater elevation between piezometers (i.e., air space available in DDC wellhead)
- Observations at each DDC wellhead (evaluating churning/bubbling of water column)

The average runtimes for the NHP systems over the 8 quarters were 86 percent for the SVE system, 0 percent for the On-site DDC System #1, 27 percent for the On-site DDC System #2, 11 percent for Blower B-501, and 61 percent for Blower B-502 at the Off-site DDC System. A detailed description of site visits is presented in **Exhibit 1**. Summaries of system run-times are presented in **Table 3A**.

On-site DDC System #1

On-site DDC System #1 has been inoperable since March 2018. The controls associated with the moisture separators had malfunctioned between the February 2018 and March 2018 monthly O&M visits. The system was shut down upon arrival in March 2018 due to water accumulation in the moisture separators and the GAC vessels. Following system shut down, the moisture separators and GAC vessels were drained, but the system could not be restarted until the controls associated with the moisture separators were repaired and GAC was replaced. Attempts to restart the system following replacement of the moisture separators and GAC media were unsuccessful due to issues with the control panel logic and functionality of the variable frequency drive. High groundwater elevations were suspected to be a primary factor to system performance and inability to restart. The system will remain off as recommended in the Draft CMWP (EA 2022a) and determined during meetings with NYSDEC.

On-site DDC System #2

On-site DDC System #2 was shut down prior to the reporting period for repairs to the blower. The system remained off until it was restarted during a site visit on 26 January 2021. On-site DDC System #2 was shut down for brief periods in 2021 due to high local groundwater elevations and associated operational issues. The system was shut down during the 18 November 2021 site visit pending repairs and remains off as recommended in the Draft CMWP (EA 2022a) and determined during meetings with NYSDEC.

Off-site DDC System

The Off-site DDC System was shut down for brief periods due to VFD faults and operational issues. The system was shut down during the 22 September 2021 site visit for operational issues and remains shut down as recommended in the Draft CMWP (EA 2022a) and determined during meetings with NYSDEC.

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Exhibit 1. National Heatset Site Visits and Maintenance

Date	System	Purpose
3/2/20	On-Site and Off-Site	EAR restarted systems following O&M transition from EA.
3/13/20	On-Site	EAR assesses VFD and blower operation at On-Site DDC #1 and On-Site DDC #2.
3/18/20 – 3/20/20	On-Site and Off-Site	EAR conducts quarterly gauging and groundwater sampling.
3/24/20	On-Site and Off-Site	EAR conducts monthly O&M and quarterly air sampling of SVE and off-site systems.
3/27/20	On-Site	EAR met with electrical contractor to discuss system status and history.
4/14/20	On-Site and Off-Site	EAR performs monthly O&M and continues troubleshooting On-Site DDC #1.
4/16/20	On-Site	EAR continues troubleshooting On-Site DDC #1 and dismantles KO tanks.
4/29/20	On-Site	EAR repairs flex hose at off-site System.
5/6/20	On-Site	EAR reassembles KO tanks at On-Site DDC #1, replaces sump pump at DDC-2 and continues troubleshooting.
5/7/20	On-Site and Off-Site	EAR performs monthly O&M and attempts PLC connection at On-Site DDC #1.
5/27/20	On-Site	EAR re-attempts PLC connection at On-Site DDC #1.
6/1/20 – 6/3/20	On-Site and Off-Site	EAR performs quarterly groundwater gauging and sampling.
6/4/20	On-Site and Off-Site	EAR performs monthly O&M and collects quarterly air samples from the SVE System and Off-Site System.
6/8/20	On-site	EAR on-site for troubleshooting of On-Site DDC #1. Pulled PLC unit for manufacturer evaluation and repair.
6/30/20	On-site	EAR reinstalls PLC unit at On-Site DDC #1.
7/9/20	On-Site and Off-Site	EAR monthly O&M visit at SVE and off-site systems. Continue troubleshooting On-Site DDC #1.
8/3/20	On-Site and Off-Site	EAR monthly O&M visit at SVE and off-site systems. Continue troubleshooting On-Site DDC #1.
8/12/20	On-Site	EAR continues troubleshooting On-site DDC #1.
11/11/20	On-Site and Off-Site	EA performs site check of on-site and off-site systems during transition of O&M from EAR.
12/3/20, 12/7/20 – 12/8/20	On-Site and Off-Site	EAR conducts quarterly groundwater gauging and sampling.
1/25/21 – 1/27/21	On-Site and Off-Site	EA conducts quarterly groundwater gauging and sampling of on-site and off-site wells. EA collects quarterly air samples from SVE System. Performs monthly O&M.
2/24/21	On-Site and Off-Site	EA performs monthly O&M on SVE and Off-Site Systems. Restarted SVE and On-Site DDC #2.
3/25/21	On-Site and Off-Site	EA performs monthly O&M on SVE and Off-Site Systems. Restarted SVE and On-Site DDC #2.
4/19/21 – 4/20/21	On-Site and Off-Site	EA performs quarterly groundwater gauging and sampling of on-site and off-site wells. Performed monthly O&M. Restarted SVE System. Collected quarterly air samples from SVE, On-Site DDC #2, and Off-Site Systems.
5/19/21	On-Site and Off-Site	EA conducts monthly O&M. Restarted On-Site DDC #2 and Off-Site Systems.
6/15/21	On-Site and Off-Site	EA conducts monthly O&M. Restarted On-Site DDC #2.
7/7/21 – 7/8/21	On-Site	EA replaces cracked PVC fitting at well number DDC-2 for On-Site DDC #1. On-Site DDC#1 left off pending repairs.
7/19/21 – 7/21/21	On-Site and Off-Site	EA performs quarterly groundwater gauging and sampling of on-site and off-site wells. Collects quarterly air samples from SVE, On-Site DDC #2, and Off-Site Systems. Perform monthly O&M. Restarted SVE System.
8/18/21	On-Site and Off-Site	EA performs monthly O&M. Restarted On-Site DDC #2 and Off-Site Systems.
9/22/21	On-Site and Off-Site	EA performs monthly O&M. Restarted On-Site DDC #2 and Off-Site Systems. Off-Site System ran for 9 hours before shutting down due to multiple alarms and remained off pending repairs. On-Site DDC #2 ran for less than 24 hours before shutting down again due to high groundwater elevation. On-Site DDC #2 System was left off.
10/19/21 – 10/21/21	On-Site and Off-Site	EA on-site to perform quarterly groundwater gauging and sampling of on-site and off-site wells. Conducts monthly O&M. Restarted On-Site DDC #2. Collected quarterly air samples from SVE system.
11/18/21	On-Site and Off-Site	EA conducts monthly O&M at SVE System. On-Site DDC #2 System was shut down upon arrival and remains off pending repairs.
12/14/21	On-Site and Off-Site	EA conducts monthly O&M on SVE System. On-Site DDC #1, #2, and Off-Site System are all off pending repairs.
1/18/22	On-Site and Off-Site	EA conducts monthly O&M on SVE System. On-Site DDC #1, #2, and Off-Site Systems still off pending repairs. PSE&G replaces meter at Off-Site System.

Exhibit 1. National Heatset Site Visits and Maintenance

Date	System	Purpose

Notes:

DDC = Density driven convection

$H_2 0$ = Water

KO = Knock out

O&M = Operation and maintenance

PES = Precision Environmental Services

PSE&G = Public Service Electric & Gas Company

SVE = Soil vapor extraction

VFD = Variable frequency drive

5.2.1 Detailed On-Site System Maintenance

5.2.1.1 First Quarter Maintenance (January- March 2020)

Soil Vapor Extraction System

In January 2020, the SVE system was not in operation upon arrival. The system was found to have a high float alarm tripped and a full knock out (KO) tank. The KO tank was subsequently drained and restarted.

On-Site Density Driven Convection System

On-site DDC System #1 was not operational during the reporting period. EAR evaluated On-site DDC System #2 on 13 March 2020. At that time, the system could be operated, and blower operation appeared normal. EAR recommends restarting this system, perhaps for a trial period with weekly drive-by site visits to check system operation.

5.2.1.2 Second Quarter Maintenance (April–June 2020)

Soil Vapor Extraction System

The SVE system was operational throughout the reporting period. Total system runtime for the reporting period is estimated at >60 percent.

On-Site Density Driven Convection System

On-site DDC System #1 was not operational during the reporting period. EAR has conducted troubleshooting activities at this system on several dates. Troubleshooting activities have included blower and VFD assessment, disassembly, inspection, reassembly of the KO tanks, extraction well sump pump replacement, and PLC troubleshooting. A significant issue is the inability to run the system in “Auto” mode. EAR is presently trying to communicate locally with the PLC (which is difficult due to the age of the unit) so that any alarm signals can be identified and the current program evaluated.

On-site DDC System #2 was not operational during the reporting period. EAR evaluated the system on 13 March 2020. At that time, the system could be operated and blower operation appeared normal. EAR recommends restarting this system, perhaps for a trial period with weekly drive-by site visits to check system operation.

5.2.1.3 Third Quarter Maintenance (July–September 2020)

Soil Vapor Extraction System

The SVE system was operational throughout the reporting period. Total system runtime for the reporting period is estimated at 100 percent.

On-Site Density Driven Convection System

EAR conducted troubleshooting activities at On-site DDC System #1 on several dates. Troubleshooting activates included PLC assessment and repairs by the PLC manufacturer (EOS Research). PLC issues were resolved, but there remains an issue with the VFD/VFD relay and PLC unit. On-site DDC System #2 remains off, and EAR recommends restarting the system, perhaps for a trial period with weekly drive-by site visits to check system operation.

5.2.1.4 Fourth Quarter Maintenance (October–December 2020)

Soil Vapor Extraction System

The SVE system was operational throughout the reporting period. EAR performed system checks while O&M transitioned to EA.

On-Site Density Driven Convection System

Both on-site DDC systems were off during this time period.

5.2.1.5 First Quarter Maintenance (January–March 2021)

Soil Vapor Extraction System

The SVE system was operational for a total of 1,575 hours out of an available 2,574 hours (61 percent of the total available) from January to March 2021. The SVE system was shut down upon arrival due to a high water table level during the 24 February and 25 March 2021 site visits. The SVE system was restarted during both site visits.

On-Site Density Driven Convection System

EAR performed an assessment of On-site DDC System #2 in March 2020 and identified no issues with the system. The system was restarted on 26 January 2021. During the 24 February 2021 site visit, On-site DDC System #2 was shut down upon arrival due to a high water table level. On-site DDC System #2 was also down upon arrival for the 25 March 2021 site visit due to a power failure. On-site DDC System #2 was restarted both times. On-site DDC System #2 ran for a total of 715 out of 2,573 hours (28 percent of the total available hours). On-site DDC System #1 remains shut down.

5.2.1.6 Second Quarter Maintenance (April–June 2021)

Soil Vapor Extraction System

The SVE system was operational for a total of 1,946 hours out of an available 1,966 hours (99 percent of the total available) from April to June 2021. The SVE system was shut down upon arrival due to the system manually being turned off prior to the 19 April 2021 site visit. The SVE system was restarted during the site visit.

On-Site Density Driven Convection System

The Off-site DDC System was running during the April and June 2021 O&M visits. It was shut down upon arrival during the May 2021 O&M visit. The system was restarted upon arrival.

Blower B-501 was not operated due to the touch screen issues with the PLC panel that occurred when restarting the system during the January 2021 quarterly sampling event. The Off-site DDC System was operational for a total of 1,458 hours out of an available 1,971.25 hours (74 percent of total available).

5.2.1.7 Third Quarter Maintenance (July–September 2021)

Soil Vapor Extraction System

The SVE System was operational for a total of 2,382 hours out of an available 2,383 hours (100 percent of the total available) from July to September 2021.

On-Site Density Driven Convection System

On-site DDC System #1 was not operational during the reporting period (shut down since March 2018). On-site DDC System #2 was shut down upon arrival upon arrival of the reporting period due to a full moisture separator. On-site DDC System #2 remains shut down due to the high water table. On-site DDC System #2 ran for a total of 1,405 out of 2,376 hours (59 percent of the total available hours) during the third quarter of 2021.

5.2.1.8 Fourth Quarter Maintenance (October–December 2021)

Soil Vapor Extraction System

The SVE System was operational for a total of 1,985 out of an available 1,986 hours (100 percent of the total available hours) during the fourth quarter of 2021.

On-Site Density Driven Convection System

On-site DDC System #1 was not operational during the reporting period (shut down since March 2018). On-site DDC System #2 was shut down upon arrival in October 2021 after being shut down in September 2021. The system was restarted in October but was shut down again due to a full moisture separator upon arrival on 18 November 2021 and remains off. On-site DDC System #2 ran for a total of 166 out of 1,987 hours (8 percent of the total available hours) during the fourth quarter of 2021.

5.2.2 Detailed Off-Site System Maintenance

5.2.2.1 First Quarter Maintenance (January–March 2020)

The Off-site DDC System was restarted in March 2020 after being shut down since early 2019 due to high ground water.

5.2.2.2 Second Quarter Maintenance (April–June 2020)

Following system restart on 2 March 2020, the Off-site DDC System was operational throughout the reporting period with the exception of temporary shutdowns for system maintenance and/or repairs. Total system runtime for the reporting period is estimated at >90 percent. During the March 2020 site visit, EAR identified a tear in a flex hose connection at the B-501 dedicated carbon adsorber vessel array. The tear prevented quarterly alternation of the blowers. EAR repaired the hose connection on 29 April 2020. Blower operation was alternated from B-502 to B-501 during the 7 May 2020 site visit.

5.2.2.3 Third Quarter Maintenance (July–September 2020)

The Off-site DDC System was operational throughout the reporting period. On 9 July 2020, EAR found the system off upon arrival to the site as the drive belts had broken at the operating blower (B-501). EAR rotated blower operation (to B-502) and restarted the system. The system was operating upon departure from the site. On 3 August 2020, EAR again found the system off upon arrival to the site. No alarms were indicated, and the system was able to be restarted without issue. The system was operating upon departure from the site. Total system runtime for the reporting period is estimated at 75 percent.

5.2.2.4 Fourth Quarter Maintenance (October–December 2020)

There was no maintenance performed during this time period while the O&M transitioned from EAR to EA Engineering.

5.2.2.5 First Quarter Maintenance (January–March 2021)

During the January 2021 quarterly sampling event, the system was down upon arrival for a VFD overload alarm. The system was restarted, but touch controls of the PLC screen were not functioning.

The Off-site DDC System operated using Blower B-502 during this operational period. Blower B-501 was not operated due to the touch screen issues with the PLC panel. The Off-site DDC System was operational for a total of 2,154 hours out of an available 2,572 hours (84 percent of total available).

5.2.2.6 Second Quarter Maintenance (April–June 2021)

The Off-site DDC System was running during the April and June 2021 O&M visits. It was shut down upon arrival during the May 2021 O&M visit. The system was restarted upon arrival.

The Off-site DDC System operated using Blower B-502 during this operational period. Blower B-501 was not operated due to the touch screen issues with the programmable logic control panel that occurred when restarting the system during the January 2021 quarterly sampling event. The Off-site DDC System was operational for a total of 1,458 hours out of an available 1,971.25 hours (74 percent of total available).

5.2.2.7 Third Quarter Maintenance (July–September 2021)

The Off-site DDC System was running during the July 2021 O&M visit. It was shut down upon arrival during the August and September 2021 O&M visits. The system was restarted upon arrival each time; however, during the September O&M visit, the system was shut down again with multiple alarms after running for only 9 hours. Due to the touch screen issues with the PLC panel, the alarms were not able to be cleared. The Off-site DDC System remains shut down.

The Off-site DDC System operated using Blower B-502 during this operational period. Blower B-501 was not operated due to the touch screen issues with the PLC panel that occurred when restarting the system during the January 2021 quarterly sampling event. The Off-site DDC System was operational for a total of 1,292 hours out of an available 2,376 hours (54 percent of total available).

5.2.2.8 Fourth Quarter Maintenance (October–December 2021)

The Off-site DDC System was shut down during the September 2021 O&M visit and remains off pending repairs to the PLC panel. The system was not operational during the fourth quarter of 2021.

5.3 EVALUATION OF REMEDIAL SYSTEMS

SVE system air monitoring and sampling has been continuously performed at the NHP site since August 2008 to assure that all components are in working order and to maintain compliance with the requirements of a NYSDEC Air Discharge Permit. SVE system sampling switched from monthly to quarterly during the second quarter of 2019. DDC influent/effluent air monitoring has been continuously performed on a quarterly basis since June 2010 (On-site DDC systems) and July 2012 (Off-site DDC System). During the reporting period (30 January 2020 through 30 January 2022), 8 air monitoring and sampling events were completed at the site. Air samples were only collected from systems that were operational during the time of sampling.

Exhibit 2. Treatment System Sampling Summary

Location Identification	Sampling Date										
	Quarter 1		Quarter 2			Quarter 3			Quarter 4		
	Feb. 2020	March 2020	April 2020	May 2020	June 2020	July 2020	Aug. 2020	Sept. 2020	Oct. 2020	Nov. 2020	Dec. 2020
SVE Influent		X			X			X			
SVE Effluent		X			X			X			
Treatment System #1 Influent											
Treatment System #1 Mid GAC											
Treatment System #1 Effluent											
Treatment System #2 Influent #1											
Treatment System #2 Influent #2											
Treatment System #2 Effluent											
B-501 Influent (VI-401B)					X						
B-501 Intermediate #1 (VI-403B)					X						
B-501 Intermediate #2 (VI-401A)					X						
B-501 Effluent (VI-501)					X						
B-502 Influent (VI-402B)		X						X			
B-502 Intermediate #1 (VI-403A)		X						X			
B-502 Intermediate #2 (VI-402A)		X						X			
B-502 Effluent (VI-502)		X						X			

Note: “X” indicates that the location was sampled.

Exhibit 2. Treatment System Sampling Summary

Location Identification	Sampling Date												
	Quarter 1			Quarter 2			Quarter 3			Quarter 4			Quarter 1
	Jan. 2021	Feb. 2021	March 2021	April 2021	May 2021	June 2021	July 2021	Aug. 2021	Sept. 2021	Oct. 2021	Nov. 2021	Dec. 2021	Jan. 2022
SVE Influent	X			X			X			X			X
SVE Effluent	X			X			X			X			X
Treatment System #1 Influent													
Treatment System #1 Mid GAC													
Treatment System #1 Effluent													
Treatment System #2 Influent #1				X			X						
Treatment System #2 Influent #2				X			X						
Treatment System #2 Effluent				X			X						
B-501 Influent (VI-401B)													
B-501 Intermediate #1 (VI-403B)													
B-501 Intermediate #2 (VI-401A)													
B-501 Effluent (VI-501)													
B-502 Influent (VI-402B)	X			X			X						
B-502 Intermediate #1 (VI-403A)				X			X						
B-502 Intermediate #2 (VI-402A)				X			X						
B-502 Effluent (VI-502)	X			X			X						

Note: "X" indicates that the location was sampled.

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5.3.1 Soil Vapor Extraction System

A summary of the field monitoring results, air discharge analytical laboratory results, and estimated mass recovery are presented in **Table 3B**; the laboratory data reports are presented in the quarterly reports submitted to NYSDEC.

Based on the difference between the influent and effluent sampling results, an estimated 1.82 lb of PCE, 0.24 lb of TCE, and -0.01 lb of DCE have been removed from the source area during the reporting period. Using effluent sampling results, it was determined an estimated 0.057 lb of PCE was discharged during the reporting period of 30 January 2020 through 30 January 2022 toward the permitted annual discharge limit of 270 lb. An estimated total of 0.008 lb of TCE has been discharged during the reporting period toward the permitted annual discharge limit of 120 lb. An estimated total of 0.13 lb of DCE has been discharged during the reporting period (the annual discharge limit is 5,510 lb).

5.3.2 On-Site Density Driven Convection Systems

A summary of the field monitoring results, laboratory air discharge analytical results, and estimated mass recovery are presented in **Tables 3C and 3D**; the laboratory data reports are provided in the quarterly reports.

Based on the difference between the influent and effluent sampling results, an estimated total of 0.48 lb of PCE was recovered from the subsurface in the vicinity of the source area from On-site DDC System #2 during the reporting period. An estimated total of 0.02 lb of TCE was recovered from the subsurface in the vicinity of the source area during the reporting period. An estimated total 0.06 lb of DCE was recovered from the subsurface in the vicinity of the on-site DDC wells during the reporting period. There was no recovery from On-site DDC System #1 during the reporting period due to the system being shut down.

Mass recovery continues to be observed at the on-site DDC systems when they are running; however, the mass removed during this reporting period was less than during a similar amount of operational time in 2018, when the systems were last operating continuously.

5.3.3 Off-Site Density Driven Convection System

A summary of the field monitoring results, laboratory air discharge analytical results, and estimated mass recovery are presented in **Tables 3E and 3F**; the laboratory data reports are presented in the quarterly reports.

Based on the difference between the influent and effluent sampling results, an estimated total of 0.029 lb (off-site DDC Blower B-502) of PCE was recovered from the subsurface in the vicinity of the off-site DDC wells during the reporting period. An estimated total of 0.008 lb (off-site DDC Blower B-502) of TCE was recovered from the subsurface in the vicinity of the off-site DDC wells during the reporting period. An estimated total of -1.161 lb (off-site DDC Blower B-502) of DCE was recovered from the subsurface in the vicinity of the off-site DDC wells during the reporting period.

Mass recovery continues to be observed at the Off-site DDC System when it is running; however, the system is currently shut down as recommended in the Draft CMWP (EA 2022a) and determined during meetings held with NYSDEC.

5.4 CONFIRM COMPLIANCE WITH OPERATION & MAINTENANCE PLAN

The following table (**Exhibit 3**) identifies the O&M Plan (EA 2013a) requirements on an annual basis and demonstrates that compliance with the monitoring plan was achieved during the reporting period.

Exhibit 3. Treatment System Sampling Schedule

Monitoring Program Activity	Required Frequency*		Compliance Dates
	Quarterly	Monthly	
SVE Influent/Effluent Air Sampling	X		30 January 2020 through 30 January 2022
DDC Systems Air Sampling	X		30 January 2020 through 30 January 2022
System O&M		X	30 January 2020 through 30 January 2022

*The frequency of events will be conducted as specified until otherwise approved by NYSDEC.
Air sampling was performed as specified when systems were operational. Please see **Exhibit 2** for a summary of air sampling events completed during the reporting period.

The DDC systems required many troubleshooting and repair events during the reporting period as described in Section 5.2. On-site DDC System #1 was not operational during the reporting period and remains shut down. On-site DDC System #2 was operational for 17 percent of the period. The Off-site DDC System was operational for 68 percent of the operational period. The off-site system remains shut down.

Various periods of downtime during the reporting period were associated with high local groundwater elevations. The high water table caused the systems to take on more water than they were designed to handle. Moisture separators and transfer pumps for both on-site and off-site DDC systems are designed to manage incidental water generated from moisture and condensate in the process lines, but they are not designed to handle large slugs of water. During periods of high local groundwater elevations, water was entering the system at rates faster than the transfer pump rates; therefore, water accumulated quickly within the moisture separators, causing the system to shut down. Additionally, the air stripping mechanism of CVOC removal from within the DDC well heads rely upon a gap between the water table and the intake portion of the well head.

5.5 CONFIRM THAT PERFORMANCE STANDARDS ARE BEING MET

System performance standards for the SVE system are being met when the system is operating as designed and effectively removing contaminant mass from the subsurface. System performance standards for the DDC systems are not being met due to periods of downtime for operational issues and high local water table. System operational performance is evaluated based on operating parameters described in Section 5.2.

Tables 3A through **3E** provide a summary of the influent/effluent system air sampling results for the SVE and DDC systems during the reporting period. The mass removed during long-term monitoring can be calculated using vapor concentration and flow rate measurements taken at the systems. The mass recoveries shown in these tables confirm that while the treatment systems are operational, they continue to remove primary CVOCs and daughter compounds.

Monthly and quarterly SVE system monitoring (i.e., off-gas samples, system air samples) is conducted to evaluate the effectiveness of the SVE system. As indicated in **Table 3B**, the SVE system continues to remove CVOCs from the vadose zone beneath 1 Adams Boulevard. It is also evident that CVOCs are treated through the SVE system's GAC units; discharge of CVOCs to the atmosphere is consistently below permit requirements, and often close to 0 lbs discharged. Monthly monitoring of VPs inside the building also indicates that the system is achieving the goal of soil vapor intrusion mitigation by maintaining negative pressures beneath the building slab.

Monthly and quarterly DDC system monitoring (i.e., off-gas samples, system air samples, and groundwater sampling data) is conducted to evaluate the effectiveness of the DDC systems in reducing contaminant concentrations in groundwater. The mass recoveries shown in **Tables 3B through 3E** show that while the treatment systems are operational, they continue to remove primary CVOCs and daughter compounds, but at a lower recovery rate than prior periods. It is expected that some additional CVOC mass will be removed from the on-site and off-site groundwater system through both the operation of the treatment systems and natural attenuation. Groundwater sampling data is discussed in Section 4. The mass recoveries and lower concentrations of contaminants in deep groundwater observed during system operation suggest that functioning treatment systems may suppress the migration of the CVOCs. In addition, the DDC systems can only operate under specific conditions (i.e., favorable water table elevations), which has limited system runtime during this reporting period. Frequent system downtime due to high local groundwater table and operational issues has led to the on-site and off-site DDC systems being shut down. Contaminant concentration rebound observed in deep groundwater during DDC system downtime indicates that the systems are not having a large impact on contaminant mass removal.

5.6 CONCLUSIONS AND RECOMMENDATIONS FOR IMPROVEMENT

System influent/effluent air monitoring should continue on a quarterly basis at the SVE system. The SVE system is operating as designed, removing CVOCs from beneath 1 Adams Boulevard, treating extracted air through GAC, and discharging to the environment. The DDC systems are not operating as designed. Not only were they designed to operate continuously, but mass removal has not been adequate to effectively reduce contaminant mass within site groundwater. On-site DDC #1 was shut down the entire reporting period, and On-site DDC #2 was shut down regularly due to a high water table. Even though mass removal calculations during operational periods of the DDC systems demonstrate some mass removal, contaminant rebound indicates that the systems are not removing enough mass to cut off contaminant migration. A Draft CMWP has been submitted to evaluate operational issues and recommendations. As recommended, on-site and off-site DDC systems have been shut down and the groundwater sampling interval has changed from quarterly sampling events to every 5 quarters. An RSO will be conducted to evaluate alternative technologies to more effectively remediate site groundwater.

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6. COST EVALUATION

Total costs for reporting and site management services, including groundwater monitoring and sampling, site inspection, and system air sampling, was $372,621 for the reporting period. A breakdown of major costs is provided in Exhibit 4.

Exhibit 4. Costs Incurred for Current Reporting Period

EA Site Management Activity	Cost Incurred for the period of 30 January 2020 – 30 January 2022
1. EAR 2020 Monitoring, Sampling, Inspection, Oversight, Supplies/Equipment, Travel, and Reporting	$73,566
2.EA 2021/January 2022 Monitoring, Sampling, Inspection, Oversight, Supplies/Equipment, Travel, and Reporting	$175,515
3. 2021/January 2022 Analytical Laboratory (Chemtech Consulting Group, Inc.)	$16,033
4. 2021 O&M Field Support (Preferred Environmental Services)	$1,304
5. Site Management Plan	$8,538
6. PRRs	$30,461
7. Corrective Measures Work Plan and Remedial Site Optimization Planning	$42,366
8. Utilities (through 17 August 2021)	$24,838
TOTAL	$372,621

EA and EAR's site management activities include monitoring, sampling, inspection, and reporting for 2020. The monitoring, sampling, inspection, oversight, and reporting costs, which are billed by EA, include costs associated with project management, quality assurance, and periodic reporting throughout the reporting period. These monitoring and reporting costs are based on fiscal data generated and tracked by an EA internal financial management system and includes travel expenses, equipment/supply costs, and other direct charges. The analytical costs, billed by Chemtech Consulting Group, Inc. of Mountainside, New Jersey, covered quarterly groundwater and system air analyses for 2021 and January 2022. The activities included in items 1 through 6 are primarily reflective of the typical site management services; item number 7 is the cost of preparation of the CMWP and Remedial Site Optimization planning efforts.

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7. GREEN REMEDIATION

7.1 METRICS FOR SITE MANAGEMENT

NYSDEC DER-31, Green Remediation (NYSDEC 2011 [January]) provides concepts and techniques of green remediation and guidance on how to apply them to DER's remedial program and applies to all phases of the site cleanup process from investigation through completion of remediation. It is intended to be a holistic approach, which improves the sustainability of the cleanups by promoting the use of more sustainable practices and technologies. Such practices and technologies are, for example, less disruptive to the environment, generate less waste, increase reuse and recycling, and emit fewer pollutants, including greenhouse gases (GHGs), to the atmosphere.

As with prior PRRs, EA prepared a summary table, which presents green remediation metrics for site management (**Appendix C**). These metrics include energy usage, solid waste generation, transportation/shipping, water usage, and land use/ecosystems. This table is intended to be used to track the quantities established for each metric over time, with the goal of minimizing energy consumption, reducing GHG emissions, and conserving natural resources. This table will be updated in conjunction with future PRR revisions and revised accordingly.

In this PRR, the quantity of electricity utilized by the SVE and DDC systems was obtained from Public Service Electric & Gas Company (PSE&G) utility bills provided by NYSDEC. Only utility bills from 24 February 2020 through 17 August 2021 were available for the preparation of this PRR. The electricity usage during this reporting period through 17 August 2021 was 124,000 kilowatt hours.

Metrics for transportation were primarily associated with travel to and from the site for the performance of the system, groundwater sampling, and monthly O&M. During the reporting period, there was one additional site visit to perform system repairs/maintenance outside of the regularly scheduled monthly/quarterly visits. Using the site visit and maintenance log presented in Section 5.2, EA estimated the number of miles accrued by EA and local subcontractors during site visits for a total of 10,715 miles.

The majority of emissions derived during this reporting period involved GHG emissions, totaling approximately 58 metric tons. Metrics for transportation associated with the monitoring activities was calculated by estimating round trip mileage for the subcontractors and EA staff, totaling 10,131 miles.

7.2 ENVIRONMENTAL FOOTPRINT

In previous PRRs (PRR No. 1 [EA 2015], PRR No. 2 [EA 2016b], PRR No. 3 [EA 2017b], and PRR No. 4 [EA 2021], EA also evaluated the environmental impact of the NHP treatment systems and green remediation techniques that could be applied to the site. EA utilized SiteWise™ Tool for Green and Sustainable Remediation, developed by the U.S. Navy, U.S. Army Corps of Engineers, and Battelle, to calculate the environmental footprint of the overall remedial approach. The tool consists of a series of spreadsheets, which provide a baseline assessment of several quantifiable sustainability metrics including: GHG emissions, energy usage, and electricity usage from renewable and non-renewable sources; criteria air pollutants that include sulfur oxides, oxides of nitrogen, and particulate matter; water usage; resource consumption; and accident risk (Battelle et. al. 2013).

For this reporting period, EA modeled the environmental footprint of routine site management activities conducted during the reporting period. Activities accounted for in the calculation of the environmental footprint include the type of treatment media used on-site (Regenerated GAC), transportation to/from the site, energy sources, and waste generation. The model was developed using run time hours for each system from 30 January 2020 through 30 January 2022. Appendix C includes the exported table and figures depicting the impact of site management activities conducted at NHP. EA also modeled the environmental footprint of electricity usage on-site during quarterly groundwater sampling and laboratory analysis.

8. OVERALL PERIODIC REVIEW REPORT CONCLUSIONS AND RECOMMENDATIONS

8.1 SITE INSPECTION AND MAINTENANCE

The SVE system and surrounding areas were observed to be in good condition with no major problems noted. The fencing, locks, and access gates/doors were in good condition during each visit. Both the asphalt/concrete areas and the grassy areas were in good condition. There was no evidence of vandalism observed to the DDC wells, treatment systems, or utilities, and penetrations (including poles, posts, or stakes) were not observed. The SVE system and surrounding areas were generally observed to be in good condition during each annual inspection.

Site inspection and maintenance of the SVE system will be conducted quarterly to complete O&M. A more detailed inspection will continue to be performed on an annual basis.

8.2 PERFORMANCE AND EFFECTIVENESS OF REMEDY

Remedy performance and effectiveness was evaluated through implementation of the Monitoring Plan, discussed in Section 4, and the O&M Plan, discussed in Section 5. The SVE system had an uptime of 68 percent for the reporting period. Based on monthly and quarterly system air monitoring results, the SVE system has been operating as designed, removing VOCs from beneath 1 Adams Boulevard and effectively treating VOCs in the air stream before discharge to the environment. System operation has also resulted in negative differential pressures between the ambient air of 1 Adams Boulevard and the sub-slab environment, meeting the stated goal of the SVE system to mitigate risk of vapor intrusion.

The DDC systems are not performing as designed because they are not operating continuously; however, when the on-site and off-site DDC systems are operating as designed, their effectiveness is still limited. While CVOC concentrations in deep on-site and off-site groundwater are reduced during system operation, CVOC concentrations in deep groundwater rebounded to baseline (2010) when the DDC systems were shut down for an extended period of time. The following includes a further discussion of the ways in which the DDC systems are not meeting expected performance and effectiveness:

- Monthly mass recovery observed at the on-site DDC systems was much lower than previous reporting periods.

- Mass recovery at the off-site system has consistently been lower than at the on-site DDC systems.

- The on-site and off-site DDC systems were unable to meet the design goal of continuous operation due to high water table and failure of system components preventing proper system operation/performance.

- The EN is sufficient to prevent exposure to remaining contamination by limiting access to contaminated groundwater.

8.3 SUMMARY OF RECOMMENDATIONS

The following actions are recommended for future site management activities at the NHP site:

- Additional sampling should be performed to further evaluate existing contamination beneath the site building. In addition, new permanent monitoring wells should be installed to augment the existing well network to further refine plume delineation efforts at the site. The conceptual site model should then be refined using the additional data obtained from these efforts.

- Depending on the outcome of additional groundwater plume delineation efforts, enhancement of the remedial approach may be warranted through the use of complementary technologies such as in situ bioremediation or chemical oxidation in order to reduce the overall remedial timeframe and achieve remedial action objectives.

8.3.1 Soil Vapor Extraction System

- EA recommends continuing operation at the SVE system. System operation should be evaluated to determine whether operations should change to different legs to maximize mass recovery.

8.3.2 Density Driven Convection Systems

- The DDC systems should remain off. EA is conducting an RSO to identify alternative alternatives to more effectively address contamination onsiteplans to prepare a corrective measures study to do a full evaluation of the DDC systems based on the run time and operational issues documented over the course of the reporting period. EA recommends a re-evaluation of the groundwater table prior to restarting the on-site DDC systems and is working to address the touch screen issues at the off-site DDC system.

8.4 FUTURE PERIODIC REVIEW REPORT SUBMITTALS

Future PRRs should continue to be prepared and submitted annually until further notice to evaluate the effectiveness of the remedial actions implemented at the site; to provide sufficient documentation that the remedy remains in place, is performing properly and effectively, and is protective of public health and the environment; and to capture proposed/planned follow-on activities at the site.

9. REFERENCES

AECOM. 2009. *Onsite Remedial Action Work Plan.* July.

———. 2011. *Offsite Remedial Action Work Plan.* August.

Battelle, U.S. Navy, and USACE. 2013. *SiteWise ™ Tool for Green and Sustainable Remediation*. July.

EA Engineering, P.C. and its affiliate EA Science and Technology (EA). 2013a. *Site Management Plan. Final – Revision No.1 National Heatset Printing Site, Babylon, Suffolk County, New York.* June.

———. 2013b. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Final Engineering Report. NYSDEC Site No. 152140.* August.

———. 2015. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Periodic Review Report No. 1. October 2013 – December 2014.* December.

———. 2016a. *Sampling and Delineation Memorandum; 1 Adams Boulevard.* May.

———. 2016b. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Periodic Review Report No. 2. January 2015 – December 2015.* May.

———. 2017a. *Groundwater Sampling and Delineation; National Heatset Printing Site.* 25 August.

———. 2017b. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Periodic Review Report No. 3. January 2016 – December 2016.* December.

———. 2021. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Periodic Review Report No. 4. January 2017 – January 2020. June*.

———. 2022a. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Draft Corrective Measures Work Plan. January*.

———. 2022b. *National Heatset Printing Co. State Superfund Site. Suffolk County, Babylon, New York. Draft Site Management Plan Revision 1. January*.

Earth Tech. 2006. *Sampling and Analysis Plan.* April.

H2M. 1999. *Remedial Investigation/Feasibility Study Report.*

New York State Department of Environmental Conservation (NYSDEC). 1994. *TAGM 4046: Determination of Soil Cleanup Objectives and Cleanup Levels.* Note: The soil cleanup objectives in TAGM 4046 have since been replaced by 6 NYCRR Part 375.

———. 1999. *Record of Decision, National Heatset Printing Site, Babylon, Suffolk County, Site Number 152140*. June.

———. 2011. *Final Program Policy DER-31*. 20 January 2011.

New York State Department of Health (NYDOH). 2015. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* August.

O'Brien and Gere. 2007. *Permanganate Injection System Remedial Action Report.* July.

Shaw. 2003. *Soil Vapor Extraction Operation & Maintenance Manual*. October.

Tables

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Table 1. Monitoring and DDC Well Groundwater Elevations

	Mar-2020	Jun-2020	Dec-2020	Jan-2021	Apr-2021	Jul-2021	Oct-2021
Onsite Shallow Monitoring Wells (ft amsl)							
MW-1S	--	--	41.69	42.71	43.67	43.36	43.10
MW-2A	42.91	43	41.82	42.85	43.87	43.32	42.85
MW-3S	42.99	43.11	41.59	42.85	43.71	43.38	42.93
MW-5S	42.81	42.94	41.86	42.67	43.54	43.36	41.69
MW-6S	43.31	43.05	41.43	42.82	43.67	43.31	57.64*
MW-14S	42.90	42.7	41.7	42.45	43.58	43.23	42.8
MW-15S	42.45	42.54	41.52	42.32	43.19	43.3	42.63
Onsite Deep Monitoring Wells (ft amsl)							
MW-1D	--	--	41.72	43.25	NS	43.75	43.12
MW-2AD	42.69	43.29	41.77	42.53	43.43	43.29	43.85
MW-3D	43.05	43.25	41.74	42.82	43.73	43.39	42.93
MW-5D	42.9	43.09	41.91	42.76	43.65	43.39	41.08
MW-14D	43	43.02	41.94	42.74	43.31	43.43	43.01
MW-15D	42.43	42.53	38.99	42.3	43.1	42.99	42.54
Onsite DDC Wells (ft amsl)							
DDC-2-PS	44.11	43.88	42.05	43.62	44.5	43.44	42.98
DDC-2-PD	43.97	43.85	41.65	43.52	44.37	43.21	42.73
DDC-4-PS	--	41.96	41.27	43.71	--	42.95	42.6
DDC-4-PD	43.83	41.96	41.17	43.6	43.7	43.19	42.65
Offsite Shallow Monitoring Wells (ft amsl)							
MW-1S	29.93	28.47	28.99	29.98	30.64	29.86	29.37
MW-2S	25.21	25.10	--	29.15	29.84	28.91	--
MW-3S	28.26	28.16	27.90	28.59	28.50	28.54	28.13
Offsite Deep Monitoring Wells (ft amsl)							
MW-1D	--	--	29.01	29.24	29.80	29.54	28.90
MW-2D	--	--	--	29.11	29.74	28.84	--
MW-3D	--	--	27.76	28.52	29.07	28.33	28.02
Offsite DDC Wells (ft amsl)							
DDC-5-PS	--	--	32.25	25.25	27.72	30.12	28.23
DDC-5-PD	--	--	32.03	25.22	25.06	28.14	28.23
DDC-6-PS	--	--	25.45	28.87	29.47	28.55	28.13
DDC-6-PD	--	--	22.82	28.83	29.34	28.47	28.14
DDC-7-PS	--	--	29.12	31.05	31.55	30.01	28.51
DDC-7-PD	--	--	27.82	29.28	29.77	28.74	28.49
DDC-8-PS	--	--	30.70	32.66	33.04	32.03	28.66
DDC-8-PD	--	--	26.37	27.94	28.51	26.82	28.56
DDC-9-PS	--	--	30.93	32.76	33.44	32.09	--
DDC-9-PD	--	--	26.26	28.65	30.24	28.64	--
DDC-10-PS	--	--	30.39	31.61	32.56	31.47	28.79
DDC-10-PD	--	--	29.35	31.88	31.89	32.09	28.79

Notes:

* Groundwater depth recorded for MW-6S in October 2021 is inconsistent with prior readings and is likely due to

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Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

March 2020

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD	DDC-2-PS	DDC-4-PD	DDC-4-PS	MW-2AD	MW-2A	MW-2D	MW-2S	MW-3D	NYSDEC AWQS (µg/L)
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	
	Sample Date	3/19/2020	3/19/2020	3/18/2020	3/18/2020	3/18/2020	3/18/2020	3/19/2020	3/19/2020	3/18/2020	
cis - 1,2-Dichloroethene	(µg/L)	(<1) U	3.0	(<1) U	0.58 J	**5.6**	1.2	(<1) U	1.3	(<1) U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	5 (s)
Trichloroethene	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	4.8	(<1) U	(<1) U	(<1) U	(<1) U	5 (s)
Tetrachloroethene	(µg/L)	**35**	1.6	**7.3**	**14**	**18**	0.61 J	**43** U	2.5	**21**	5 (s)
Vinyl Chloride	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	5 (s)

Parameters List EPA Method 8260B	Sample ID	MW-3S	MW-5D	MW-5S	MW-6S	MW-14D	MW-14S	MW-15D	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
	Sample Date	3/18/2020	3/18/2020	3/18/2020	3/20/2020	3/20/2020	3/20/2020	3/18/2020	3/18/2020		
cis - 1,2-Dichloroethene	(µg/L)	(<1) U	0.32 J	4.8	(<1) U	(<1) U	0.36 J	0.72 J	(<1) U		5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U		5 (s)
Trichloroethene	(µg/L)	(<1) U	0.98 J	0.78 J	(<1) U	(<1) U	0.54 J	1.5	0.42 J		5 (s)
Tetrachloroethene	(µg/L)	1.1	**6.3**	3.1	0.51 J	**6.7**	**110**	**380**	3.1		5 (s)
Vinyl Chloride	(µg/L)	(<1) U	(<1) U	0.58 J	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U		5 (s)

June 2020

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD	DDC-2-PS	DDC-4-PD	DDC-4-PS	MW-2AD	MW-2A	MW-2D	MW-2S	MW-3D	NYSDEC AWQS (µg/L)
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	
	Sample Date	6/1/2020	6/1/2020	6/1/2020	6/1/2020	6/1/2020	6/1/2020	6/1/2020	6/1/2020	6/2/2020	
cis - 1,2-Dichloroethene	(µg/L)	(<1) U	0.61 J	(<1) U	0.37 J	**11**	(<1) U	(<10) U	1.8	(<1) U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<10) U	(<1) U	(<1) U	5 (s)
Trichloroethene	(µg/L)	0.97 J	(<1) U	(<1) U	(<1) U	**10**	(<1) U	(<10) U	0.48 J	(<1) U	5 (s)
Tetrachloroethene	(µg/L)	**63**	**21**	4.8	**20**	**20**	0.36 J	**1,700**	2.8	**9.9**	5 (s)
Vinyl Chloride	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<10) U	(<1) U	(<1) U	5 (s)

Parameters List EPA Method 8260B	Sample ID	MW-3S	MW-5D	MW-5S	MW-6S	MW-14D	MW-14S	MW-15D	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
	Sample Date	6/2/2020	6/1/2020	6/1/2020	6/3/2020	6/2/2020	6/2/2020	6/3/2020	6/3/2020		
cis - 1,2-Dichloroethene	(µg/L)	0.58 J	**15**	1.0	(<1) U	0.27 J	(<1) U	0.28 J	0.6 J		5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U		5 (s)
Trichloroethene	(µg/L)	(<1) U	**15**	(<1) U	(<1) U	1.4	0.59 J	0.39 J	0.35 J		5 (s)
Tetrachloroethene	(µg/L)	2.2	**340**	0.98 J	1.8	**31**	**6.2**	**50**	**21**		5 (s)
Vinyl Chloride	(µg/L)	(<1) U	(<1) U	0.21 J	(<1) U	(<1) U	(<1) U	(<1) U	(<1) U		5 (s)

Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

August 2020

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-2AD		MW-2A		MW-2D		MW-2S		MW-3D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	**9.4**		(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	1		(<1)	U	1		(<1)	U	**9.2**		(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**61**		**12**		**240**		3.2		**31**		(<1)	U	**4,400**		2.5		**15**		5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)

Parameters List EPA Method 8260B	Sample ID	MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	8/31/2020		9/1/2020		8/31/2020		8/31/2020		9/1/2020		9/1/2020		8/31/2020		8/31/2020		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	2.7		2		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	**6.5**		(<1)	U	(<1)	U	1.2		(<1)	U	1.5		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	2.7		**960**		(<1)	U	(<1)	U	**48**		1.8		**390**		3.1		5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

December 2020

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-2AD		MW-2A		MW-2D		MW-2S		MW-3D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/7/2020		12/7/2020		12/3/2020		12/3/2020		12/7/2020		12/7/2020		12/3/2020		12/3/2020		12/3/2020		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3.4		(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	J	(<1)	U	(<1)	U	(<1)	U	2.7		(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**15**		**5.6**		**8.5**		2		**61**		(<1)	U	**3,100**		1.3		**5.5**		5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<10)	U	(<1)	U	(<1)	U	5 (s)

Parameters List EPA Method 8260B	Sample ID	MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/3/2020		12/8/2020		12/8/2020		12/3/2020		12/7/2020		12/7/2020		12/7/2020		12/7/2020		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	3.3		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	**7.2**		(<1)	U	(<1)	U	1.6		(<1)	U	1.6		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	3.1		**350**		(<1)	U	1.9		**180**		**16**		**280**		1.7		5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

January 2021

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-1D		MW-1S		MW-2AD		MW-2A		MW-2D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Duplicate		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	1/27/2021		1/27/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	4.5		(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	0.9	J	(<1)	U	0.49	J	(<1)	U	1.1		(<1)	U	3		(<1)	U	1.2		5 (s)
Tetrachloroethene	(µg/L)	**490**	E	3.4		4.5		**9**		**9**		(<1)	U	2.2		(<1)	U	**140**		5 (s)
sec-Butylbenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.37	J,*	(<1)	U	(<1)	U	5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.66		5 (s)
Hexachloroethane	(µg/L)	**26.9**	J,*	(<1)	U	0.6	J,*	4	J,*	(<1)	U	(<1)	U	(<1)	U	(<1)	U	**8.1**	J,*	5 (s)
Chloroform	(µg/L)	0.38	J	(<1)	U	(<1)	U	0.26	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.24	J	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-2S		MW-3D		MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	1/26/2021		1/26/2021		1/26/2021		1/27/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		1/26/2021		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	1.2		0.67	J	(<1)	U	**7.3**		(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	0.8	J	(<1)	U	2.1		(<1)	U	(<1)	U	2.8		(<1)	U	1		5 (s)
Tetrachloroethene	(µg/L)	0.57	J	**5**		0.8	J	**120**		0.65	J	0.79	J	**41.3**		1.2		**33.6**		5 (s)
sec-Butylbenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.26	J,*	0.54	J,*	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Hexachloroethane	(µg/L)	(<1)	U	(<1)	U	(<1)	U	1.5	J,*	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.75	J,*	5 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.36	J	(<1)	U	(<1)	U	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		
	Sample Date	1/26/2021		
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	1.8		5 (s)
sec-Butylbenzene	(µg/L)	(<1)	U	5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	5 (s)
Hexachloroethane	(µg/L)	(<1)	U	5 (s)
Chloroform	(µg/L)	0.5	J	7 (s)

Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

April 2021

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-1D		MW-1S		MW-2AD		MW-2A		MW-2D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Duplicate		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		
Acetone	(µg/L)	(<5)	U	3.60	J	(<5)	U	(<5)	U	4.00	J	2.60	J	4.70	J	3.80	J	4.10	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	**11.1**		1.1		(<1)	U	5 (s)
Trichloroethene	(µg/L)	1.3		(<1)	U	(<1)	U	(<1)	U	1.3		(<1)	U	**5.5**		(<1)	U	1.3		5 (s)
Tetrachloroethene	(µg/L)	**800**	**E**	1.7		2.3		4.5		1.2		0.7	J	4.8		0.93	J	**20.2**		5 (s)
Carbon Tetrachloride	(µg/L)	1.4		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	1.3		(<1)	U	3 (s)
Chloroform	(µg/L)	0.76	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-2S		MW-3D		MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	4/20/2021		4/20/2021		4/19/2021		4/20/2021		4/20/2021		4/19/2021		4/20/2021		4/20/2021		4/20/2021		
Acetone	(µg/L)	3.40	J	(<5)	U	(<5)	U	4.40	J	4.90	J	(<5)	U	(<5)	U	(<5)	U	(<5)	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	2		(<1)	U	(<1)	U	(<1)	U	0.35	J	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	0.29	J	2.5		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	1.7		2.5		1.1		**90.2**		0.84	J	0.62	J	0.45	J	**27.3**		**52.5**		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.53	J	0.55	J	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		
	Sample Date	4/20/2021		
Acetone	(µg/L)	2.80	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**31.7**		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	3(s)
Chloroform	(µg/L)	0.66	J	7 (s)

Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

July 2021

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-1D		MW-1S		MW-2AD		MW-2A		MW-2D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Duplicate		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		
Acetone	(µg/L)	3.30	J	2.70	J	2.90	J	2.80	J	2.40	J	2.70	J	3.40	J	2.70	J	2.50	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.63	J	(<1)	U	(<1)	U	**11.5**		(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	1.5		(<1)	U	(<1)	U	(<1)	U	1.6		(<1)	U	**5.9**		(<1)	U	0.91	J	5 (s)
Tetrachloroethene	(µg/L)	**1100**	**D**	1.1		1.7		**5.5**		1.2		0.43	J	**11.3**		0.62	J	**10.6**		5 (s)
Carbon Tetrachloride	(µg/L)	1.4		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3 (s)
Chloroform	(µg/L)	0.84	J	(<1)	U	0.43	J	0.67	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-2S		MW-3D		MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		7/21/2021		
Acetone	(µg/L)	2.80	J	3.90	J	2.70	J	2.90	J	3.10	J	3.20	J	3.60	J	3.10	J	2.80	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	0.45	J	3.8		(<1)	U	(<1)	U	(<1)	U	0.48	J	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	1.5		0.55	J	2.8		(<1)	U	(<1)	U	0.45	J	(<1)	U	0.3	U	5 (s)
Tetrachloroethene	(µg/L)	1.4		1.0		1.3		**53**		0.44	J	0.65	J	0.41	J	**44.2**		**38.8**		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.78	J	0.84	J	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		
	Sample Date	7/21/2021		
Acetone	(µg/L)	3.20	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**29.8**		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	3(s)
Chloroform	(µg/L)	0.7	J	7 (s)

Table 2A. Summary of Detected Volatile Organic Compounds in On-Site Groundwater Samples (Quarterly Sampling Events, 2020 - 2021)

October 2021

Parameters List EPA Method 8260B	Sample ID	DDC-2-PD		DDC-2-PS		DDC-4-PD		DDC-4-PS		MW-1D		MW-1S		MW-2AD		MW-2A		MW-2D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	10/20/2021		10/20/2021		10/21/2021		10/21/2021		10/21/2021		10/21/2021		10/20/2021		10/20/2021		10/20/2021		
Acetone	(µg/L)	(<50)	U	(<5)	U	(<5)	U	(<5)	U	1.9	J	(<5)	U	(<5)	U	1.7	J	(<5)	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<10)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	**5.9**		(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<10)	U	(<1)	U	(<1)	U	(<1)	U	0.7	J	(<1)	U	4.4		(<1)	U	3.0		5 (s)
Tetrachloroethene	(µg/L)	**660**		4.4		0.64	J	**6.2**		1.1		1.4		**17.5**		0.53	J	**2900**	**D**	5 (s)
Carbon Tetrachloride	(µg/L)	(<10)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	**13.1**		5 (s)
1,4-Dichlorobenzene	(µg/L)	(<10)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3 (s)
Chloroform	(µg/L)	(<10)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	6.1		7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-2S		MW-3D		MW-3S		MW-5D		MW-5S		MW-6S		MW-14D		MW-14S		MW-15D		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/21/2021		10/21/2021		10/21/2021		
Acetone	(µg/L)	1.7	J	(<5)	U	(<5)	U	2.5	J	(<5)	U	3.2	J	2.5	J	2.3	J	2.8	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	0.71	J	(<1)	U	2.3		0.35	J	(<1)	U	0.51	J	0.3	J	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	0.82	J	1.8		0.52	J	**110**		(<1)	U	0.5	J	0.96	J	**68.4**		3.5		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	3 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.5	J	0.54	J	7 (s)

Parameters List EPA Method 8260B	Sample ID	MW-15S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		
	Sample Date	10/21/2021		
Acetone	(µg/L)	2.8	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**12.1**		5 (s)
Carbon Tetrachloride	(µg/L)	(<1)	U	5 (s)
1,4-Dichlorobenzene	(µg/L)	(<1)	U	3 (s)
Chloroform	(µg/L)	1.1		7 (s)

Notes:
EPA = U.S. Environmental Protection Agency
ID = Identification
NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Microgram(s) per liter (parts per billion)
U = Analyte not detected at the listed laboratory reporting limit.
J = Estimated Value
D = The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded The calibration range.
E = Value exceeds calibration range
* = Values outside of QC limits
152140-FD-02 was a blind field duplicate quality assurance/quality control sample of on-site sample MW-2D (Onsite) for this sampling event.
Bold values indicate that the analyte was detected greater than the NYSDEC AWQS.

Table 2B. Summary of Detected Volatile Organic Compounds in Off-Site Groundwater Samples (Quarterly Sampling Events, 2020-2021)

March 2020

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	3/18/2020		3/18/2020		3/18/2020		3/18/2020		3/18/2020		3/18/2020		3/18/2020		3/18/2020		3/19/2020		
cis - 1,2-Dichloroethene	(µg/L)	4.4		4.5		**6.6**		**6.2**		4.6		**5.2**		3.7		4.2		2.0	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	0.77	J	0.58	J	1.9		0.61	J	0.52	J	0.35	J	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	1.1		0.76	J	1.2		0.5	J	3.4		0.69	J	0.51	J	0.34	J	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	3/19/2020		3/19/2020		3/19/2020		3/20/2020		3/20/2020		3/18/2020		3/18/2020		
cis - 1,2-Dichloroethene	(µg/L)	2.7		1.0	U	2.3		**25**		(<1)	U	**83**		(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.82	J	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**7.5**		(<1)	U	**30**		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**43**		0.55	J	**30**		(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

June 2020

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	6/2/2020		6/2/2020		6/2/2020		6/2/2020		6/3/2020		6/3/2020		6/3/2020		6/3/2020		6/3/2020		
cis - 1,2-Dichloroethene	(µg/L)	**14**		**17**		**16**		**16**		**3.6**		**13**		**12**		**12**		**10**		5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	0.45	J	0.40	J	0.93	J	(<1)	U	(<1)	U	0.38	J	0.46	J	5 (s)
Tetrachloroethene	(µg/L)	1.1		1.2		0.52	J	(<1)	U	1.6		0.34	J	(<1)	U	(<1)	U	0.26	J	5 (s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	6/3/2020		6/3/2020		6/3/2020		6/3/2020		6/3/2020		6/2/2020		6/2/2020		
cis - 1,2-Dichloroethene	(µg/L)	**6.1**		2.2		**9.6**		**25**		(<1)	U	**78**		(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.41	J	(<1)	U	0.75	J	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**6.8**		(<1)	U	**35**		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	0.45	J	(<1)	U	**32**		(<1)	U	**33**		(<1)	U	5 (s)

Table 2B. Summary of Detected Volatile Organic Compounds in Off-Site Groundwater Samples (Quarterly Sampling Events, 2020-2021)

September 2020

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	9/1/2020		9/1/2020		9/4/2020		9/4/2020		9/1/2020		9/1/2020		9/1/2020		9/1/2020		9/1/2020		
cis - 1,2-Dichloroethene	(µg/L)	**8**		1.5		3.9		3		4.5		3.5		3.7		3.2		3		5 (s)
trans -1,2-Dichloroethen	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	1.3		(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	**12**		(<1)	U	(<1)	U	(<1)	U	2.7		(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	9/1/2020		8/31/2020		8/31/2020		9/1/2020		9/1/2020		9/1/2020		9/1/2020		
cis - 1,2-Dichloroethene	(µg/L)	3.1		(<1)	U	2.2		**5.5**		(<1)	U	**41**		(<1)	U	5 (s)
trans -1,2-Dichloroethen	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	2.4		(<1)	U	**15**		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**12**		(<1)	U	**19**		(<1)	U	5 (s)

December 2020

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/8/2020		12/8/2020		12/8/2020		12/8/2020		12/7/2020		12/7/2020		12/7/2020		12/7/2020		12/7/2020		
cis - 1,2-Dichloroethene	(µg/L)	**5.6**		3.9		4.6		4.9		2.8		4.1		3.9		3.7		3.4		5 (s)
trans -1,2-Dichloroethen	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	1.0		(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	2.4		1.9		2.2		(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/7/2020		12/7/2020		12/7/2020		12/8/2020		12/8/2020		12/8/2020		12/8/2020		
cis - 1,2-Dichloroethene	(µg/L)	3.2		(<1)	U	2.6		**36**		(<1)	U	**20**		(<1)	U	5 (s)
trans -1,2-Dichloroethen	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Vinyl Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**8.9**		(<1)	U	**5.7**		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**40**		(<1)	U	**14**		(<1)	U	5 (s)

Table 2B. Summary of Detected Volatile Organic Compounds in Off-Site Groundwater Samples (Quarterly Sampling Events, 2020-2021)

January 2021

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	1/25/2021		1/25/2021		1/25/2021		1/25/2021		1/27/2021		1/27/2021		1/27/2021		1/27/2021		1/27/2021		
cis - 1,2-Dichloroethene	(µg/L)	**6.6**		**6.4**		0.99	J	(<1)	U	2.1		2.8		1.1		2.2		0.31	J	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Acetone	(µg/L)	(<5)	U	1.6	J	(<5)	U	2	J	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	50 (s)
Trichloroethene	(µg/L)	0.53	J	(<1)	U	(<1)	U	(<1)	U	0.29	J	(<1)	U	0.32	J	0.4	J	0.74	J	5 (s)
Tetrachloroethene	(µg/L)	4.6		1.3		(<1)	U	(<1)	U	0.36	J	0.23	J	0.21	J	0.32	J	0.41	J	5 (s)
Methylene Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.33	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Chloroform	(µg/L)	0.44	J	0.35	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.35	J	0.45	J	(<1)	U	7 (s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-2D		MW-2S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	1/27/2021		1/27/2021		1/27/2021		1/25/2021		1/26/2021		1/25/2021		1/25/2021		1/25/2021		1/25/2021		
cis - 1,2-Dichloroethene	(µg/L)	1.5		(<1)	U	1.6		**36.5**		(<1)	U	1.2		2.1		**20.8**		(<1)	U	5 (s)
trans -1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.43	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Acetone	(µg/L)	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	50 (s)
Trichloroethene	(µg/L)	0.46	J	0.39	J	(<1)	U	**9**		(<1)	U	(<1)	U	0.29	J	**5**		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**24.8**		(<1)	U	(<1)	U	(<1)	U	**9.4**		(<1)	U	5 (s)
Methylene Chloride	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Chloroform	(µg/L)	(<1)	U	0.33	J	(<1)	U	0.55	J	0.32	J	0.52	J	0.23	J	0.48	J	(<1)	U	7 (s)

April 2021

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		
Acetone	(µg/L)	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	2.6	J	(<5)	U	(<5)	U	(<5)	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	3.2		4.3		4.2		**5**		1.7		4		3		3.3		(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	1		1.4		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.29	J	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5(s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-2D		MW-2S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		4/19/2021		
Acetone	(µg/L)	(<5)	U	(<5)	U	(<5)	U	2.6	J	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	3		(<1)	U	2.9		**17.6**		(<1)	U	3		1.6		**13.6**		(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	J	(<1)	U	**6**		(<1)	U	(<1)		(<1)	U	3.9		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**18.9**		(<1)	U	(<1)		(<1)	U	**7.7**		(<1)	U	5 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.28	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.42	J	5(s)

Table 2B. Summary of Detected Volatile Organic Compounds in Off-Site Groundwater Samples (Quarterly Sampling Events, 2020-2021)

July 2021

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	7/19/2021		7/19/2021		7/19/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/19/2021		7/20/2021		
Acetone	(µg/L)	2.9	J	2.5	J	2.5	J	2.6	J	3.4	J	(<5)	U	2.8	J	3.5	J	5.7		50 (s)
cis - 1,2-Dichloroethene	(µg/L)	1.5		4.9		6.0		**5.4**		0.8	J	4.7		4.4		4.9		(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.31	J	0.48	J	5 (s)
Tetrachloroethene	(µg/L)	4.7		1.9		(<1)	U	(<1)	U	0.68	J	(<1)	U	0.45	J	0.28	J	0.32	J	5 (s)
Chloroform	(µg/L)	0.49	J	0.36	J	(<1)	U	(<1)	U	(<1)	U	0.34	J	0.47	J	0.44	J	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5(s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-2D		MW-2S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		7/20/2021		
Acetone	(µg/L)	1.9	J	3.0	J	2.8	J	2.0	J	3.7	J	3.2	J	(<5)	U	2.4	J	2.2	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	4.2		(<1)	U	4		**26.7**		(<1)	U	2.4		3.4		**19.4**		(<1)	U	5 (s)
Trichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**7.5**		(<1)	U	(<1)	U	(<1)	U	4.8		(<1)	U	5 (s)
Tetrachloroethene	(µg/L)	(<1)	U	0.45	J	(<1)	U	**16.4**		0.25	J	(<1)	U	(<1)	U	**8.0**		(<1)	U	5 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	(<1)	U	0.44	J	(<1)	U	(<1)	U	(<1)	U	0.44	J	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5(s)

October 2021

Parameters List EPA Method 8260B	Sample ID	DDC-5-PD		DDC-5-PS		DDC-6-PD		DDC-6-PS		DDC-7-PD		DDC-7-PS		DDC-8-PD		DDC-8-PS		DDC-9-PD		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	10/19/2021		10/19/2021		10/19/2021		10/19/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		
Acetone	(µg/L)	2.6	J	2.3	J	2.6	J	1.9	J	2.0	J	1.9	J	2.1	J	1.8	J	2.2	J	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	1.4		(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	2.6		(<1)	U	(<1)	U	5 (s)
Trichloroethene (TCE)	(µg/L)	0.28	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	1.1		(<1)	U	(<1)	U	5 (s)
Tetrachloroethene (PCE)	(µg/L)	**5.7**		(<1)	U	2.5		(<1)	U	0.42	J	(<1)	U	2.3		(<1)	U	(<1)	U	5 (s)
Chloroform	(µg/L)	0.37	J	(<1)	U	0.3	J	(<1)	U	(<1)	U	(<1)	U	0.65	J	0.59	J	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5(s)

Parameters List EPA Method 8260B	Sample ID	DDC-9-PS		DDC-10-PD		DDC-10-PS		MW-1D		MW-1S		MW-2D		MW-2S		MW-3D		MW-3S		NYSDEC AWQS (µg/L)
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/20/2021		10/19/2021		10/19/2021		
Acetone	(µg/L)	(<5)	U	(<5)	U	1.7	J	(<5)	U	2.1	J	1.7	J	1.9	J	(<5)	U	(<5)	U	50 (s)
cis - 1,2-Dichloroethene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**11.8**		(<1)	U	(<1)	U	0.47	J	**5.8**		(<1)	U	5 (s)
Trichloroethene (TCE)	(µg/L)	(<1)	U	(<1)	U	(<1)	U	3.9		(<1)	U	(<1)	U	(<1)	U	1.3		(<1)	U	5 (s)
Tetrachloroethene (PCE)	(µg/L)	(<1)	U	(<1)	U	(<1)	U	**10.6**		(<1)	U	(<1)	U	(<1)	U	3.4		(<1)	U	5 (s)
Chloroform	(µg/L)	(<1)	U	(<1)	U	0.32	J	(<1)	U	(<1)	U	(<1)	U	(<1)	U	0.32	J	(<1)	U	7 (s)
Toluene	(µg/L)	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	(<1)	U	5(s)

Notes:
EPA = U.S. Environmental Protection Agency
ID = Identification
NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Microgram(s) per liter (parts per billion)
U = Analyte not detected at the listed laboratory reporting limit.
J = Estimated Value
152140-FD-01 was a blind field duplicate quality assurance/quality control sample of on-site sample DDC-10-PS for this sampling event.
Bold values indicate that the analyte was detected greater than the NYSDEC AWQS.

Table 3A. Treatment System Runtime

System Readings

		SVE System					Onsite DDC Treatment System										Offsite DDC Treatment System									
		SVE Blower					System #1					System #2					Blower B-501					Blower B-502				
Date	**Notes**	**Meter Reading (Hrs)**	**Time**	**Elapsed Runtime (Hrs)**	**Elapsed Available (Hrs)**	**Runtime (%)**	**Meter Reading (Hrs)**	**Time**	**Elapsed Runtime (Hrs)**	**Elapsed Available (Hrs)**	**Runtime (%)**	**Meter Reading (Hrs)**	**Time**	**Elapsed Runtime (Hrs)**	**Elapsed Available (Hrs)**	**Runtime (%)**	**Meter Reading (Hrs)**	**Time**	**Elapsed Runtime (Hrs)**	**Elapsed Available (Hrs)**	**Runtime (%)**	**Meter Reading (Hrs)**	**Time**	**Elapsed Runtime (Hrs)**	**Elapsed Available (Hrs)**	**Runtime (%)**
01/15/20	C, D, F	44902.63	14:00	707	991	100	49939.22	14:00	0	991	0	60507.80	14:00	0	991	0	31511.10	14:00	0	991	0	25714.88	14:00	0	991	0
02/25/20	C, D, F	44902.63	9:00	0	979	0	49939.22	9:00	0	979	0	60507.80	9:00	0	979	0	31511.10	9:00	0	979	0	25714.88	9:00	0	979	0
03/24/20	C, D, F	45453.10	11:15	550	674	82	49939.22	7:30	0	671	0	60507.80	7:30	0	671	0	31511.80	7:30	1	671	0	27280.50	7:30	1566	671	233
Quarterly Run-Time				**1258**	**2644**	**47.58**			**0**	**2640**	**0**			**0**	**2640**	**0**			**1**	**2640**	**0**			**1566**	**2640**	**59**
04/14/20	C, D, F	45954.60	9:56	502	3146	100	49939.22	9:56	0	3146	0	60507.80	9:56	0	3146	0	31511.80	11:50	1	3148	0	27784.60	11:50	2070	508	407
05/07/20	C, D, F	46016.36	8:08	62	550	11	49939.22	8:08	0	550	0	60507.80	8:08	0	550	0	31512.10	9:00	0	549	0	28335.10	9:00	551	549	100
06/04/20	C, D, F	46687.59	7:27	671	671	100	49939.22	7:27	0	671	0	60507.80	7:27	0	671	0	32182.10	7:30	670	671	100	28335.10	7:30	0	671	0
Quarterly Run-Time				**1234**	**4368**	**28.25**			**0**	**4368**	**0**			**0**	**4368**	**0**			**671**	**4368**	**15**			**2620**	**1728**	**152**
07/09/20	C, D, F	47529.34	9:12	842	842	100	49939.22	9:12	0	842	0	60507.80	9:12	0	842	0	33023.50	11:50	841	844	100	28335.10	11:50	0	844	0
08/03/20	C, D, F	48128.62	9:00	599	600	100	49939.22	9:00	0	600	0	60507.80	9:00	0	600	0	33023.60	9:00	0	597	0	28598.00	9:00	263	597	44
09/02/20	C, D, F	48851.66	11:00	723	722	100	49939.22	11:00	0	722	0	60507.80	11:00	0	722	0	33023.60	7:30	0	719	0	29320.30	7:30	722	719	101
Quarterly Run-Time				**2164**	**2164**	**100**			**0**	**2164**	**0**			**0**	**2164**	**0**			**842**	**2160**	**39**			**985**	**2160**	**46**
10/06/20	C, D, F	49664.08	7:57	812	813	100	49939.22	7:57	0	813	0	60507.80	7:57	0	813	0	33640.00	11:50	616	820	75	29323.40	11:50	3	820	0
11/04/20	C, D, F	49922.50	9:00	258	697	37	49939.22	9:00	0	697	0	60507.80	9:00	0	697	0	33831.40	9:00	191	693	28	29829.40	9:00	506	693	73
12/08/20	C, D, F	49973.59	8:13	51	815	6	49939.22	8:13	0	815	0	60507.80	8:13	0	815	0	33831.40	7:30	0	815	0	30644.10	7:30	815	815	100
Quarterly Run-Time				**1122**	**2326**	**48**			**0**	**2325**	**0**			**0**	**2325**	**0**			**808**	**2328**	**35**			**1324**	**2328**	**57**
01/25/21	C, D	50472.90	8:00	499	1152	43	49951.90	8:00	13	1152	1	*63396.60*	8:00	*0*	1152	0	33831.40	12:00	0	1157	0	31406.80	12:00	763	1157	66
02/24/21	C, E, H	51046.81	12:00	574	724	79	49951.90	12:00	0	724	0	63756.50	12:00	360	724	50	33831.40	15:55	0	724	0	32107.70	15:55	701	724	97
03/25/21	C, E, G	51548.12	13:33	501	698	72	49951.90	13:33	0	698	0	64111.40	13:56	355	698	51	33831.40	11:50	0	692	0	32798.10	11:50	690	692	100
Quarterly Run-Time[1]				**1575**	**2574**	**61**			**13**	**2573**	**0**			**715**	**2574**	**28**			**0**	**2572**	**0**			**2154**	**2572**	**84**
04/19/21	C, E	52126.32	11:27	578	598	97	49951.90	10:40	0	597	0	64739.50	10:48	*597*	597	100	33831.40	12:40	0	601	0	33398.40	12:40	600	601	100
05/19/21	C, H	52845.88	11:01	720	720	100	49951.90	11:40	0	721	0	65165.10	12:05	426	721	59	33831.40	14:15	0	722	0	34068.30	14:15	670	722	93
06/15/21	C, H	53493.89	11:00	648	648	100	49951.90	15:43	0	652	0	65477.50	12:28	312	648	48	33831.40	15:00	0	649	0	34256.00	15:00	188	649	29
Quarterly Run-Time[2]				**1946**	**1966**	**99**			**0**	**1970**	**0**			**1335**	**1967**	**68**			**0**	**1971**	**0**			**1458**	**1971**	**74**
07/20/21	C,E	54335.73	11:27	842	840	100	49951.90	13:15	0	838	0	66073.70	9:03	*597*	837	71	33831.40	7:55	0	833	0	35089.00	7:55	833	833	100
08/18/21	C,D	55030.79	12:00	695	697	100	49951.90	11:48	0	695	0	66772.20	11:30	699	698	100	33831.40	14:50	0	703	0	35113.00	14:50	24	703	3
09/22/21	C,D,H	55876.33	17:32	846	846	100	49954.10	15:43	2	844	0	66881.80	12:28	110	841	13	33831.40	15:00	0	840	0	35548.20	15:00	435	840	52
Quarterly Run-Time[2]				**2382**	**2383**	**100.0**			**2**	**2376**	**0**			**1405**	**2376**	**59**			**0**	**2376**	**0**			**1292**	**2376**	**54**
10/20/21	C,D,H	56544.17	13:23	668	667.85	100	49954.10	12:35	0.00	668.87	0.00	66887.00	14:38	5	674	100	33831.40	15:00	0.00	672.00	0.00	35551.10	15:00	2.90	672.00	0.43
11/18/21	C,D,H	57236.03	8:14	692	690.85	100	49954.10	7:58	0.00	691.38	0.00	67048.40	7:51	161	689	23	33831.40	10:00	0.00	691.00	0.00	35551.10	10:00	0.00	691.00	0.00
12/14/21	C,D,I	57863.23	12:02	627	627.80	100	49954.10	13:10	0.00	629.20	0.00	67048.40	13:00	0	629	0	33831.40	13:15	0.00	627.25	0.00	35551.10	13:15	0.00	627.25	0.00
Quarterly Run-Time				**1987**	**1986**	**100**			**0**	**1989**	**0**			**167**	**1993**	**8**			**0**	**1990**	**0**			**3**	**1990**	**0**
01/18/22	C,D,I	58700.35	9:06	837	837.07	100	49954.10	9:45	0.00	836.58	0	67048.40	10:30	0	838	0	33831.40	10:45	0	837	0	35551.10	10:45	0	837	0
Quarterly Run-Time				**837**	**837**	**100**			**0**	**837**	**0**			**0**	**838**	**0**			**0**	**837**	**0**			**0**	**837**	**0**

Notes:
- A = SVE System down, Hour reading only parameter collected
- B = Onsite DDC System #2 down in January, was not restarted until February
- C = Onsite DDC System #1 down upon arrival, remains off pending repairs
- D = Offsite System shut down
- E = SVE System down upon arrival; High high water level alarm
- F = Onsite DDC System #2 down upon arrival, remained off pending repairs. Run clock hours estimated.
- G = Onsite DDC System #2 down upon arrival due to MOM Power Loss
- H = Onsite DDC System #2 down upon arrival due to High Level KO Tank.
- I = Onsite DDC System #2 shut down

No O&M events took place February 2020 during transition from EA to EAR - System was shut off between January and March 2020 events - Dates/Times/Hours during this period are assumptions used as place holders

Table 3B. Summary of Estimated Recovery Rate via Soil Vapor Extraction System

	Field/System Data				Laboratory Results						Mass Discharged						Recovery based on Laboratory Results					
					SYS INFLUENT			SYS EFFLUENT														
Date	SVE Blower Flow Rate (cfm)	Applied Vacuum (in. H_20)	System Discharge VOC Concentration (ppmv)	Elapsed Run-Time (day)	PCE (mg/m^3)	TCE (mg/m^3)	*cis*-1,2-DCE (mg/m^3)	PCE (mg/m3)	TCE (mg/m3)	*cis*-1,2-DCE (mg/m3)	PCE Discharge During Period: lb/hr	PCE Discharge During Period (lb)	TCE Discharge During Period (lb/hr)	TCE Discharge During Period (lb)	*cis*-1,2-DCE Discharge During Period (lb/hr)	*cis*-1,2-DCE Discharge During Period (lb)	PCE Recovery During Period: lb/hr	PCE Recovery During Period (lb)	TCE Recovery During Period (lb/hr)	TCE Recovery During Period (lb)	*cis*-1,2-DCE Recovery During Period (lb/hr)	*cis*-1,2-DCE Recovery During Period (lb)
02/01/20	--	--	--	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/24/20	77	80	0.00	52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.0000
04/14/20	343	75	0.00	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/07/20	188	74	0.01	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/04/20	200	74	0.00	28	0.01	0.01	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.03	0.0000	0.0028	0.0000	0.0077	0.000	-0.0063
07/09/20	176	72	0.00	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/03/20	172	--	0.00	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/02/20	141	--	0.10	30	1.1000	0.1400	0.0370	0.0054	0.0019	0.0053	0.00	0.0071	0.0000	0.0025	0.0000	0.0070	0.0007	1.4448	0.0001	0.1823	0.0000	0.0418
10/06/20	21	70	0.00	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/04/20	198	76	0.20	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/08/20	--	--	--	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/26/21	160	80	0.12	49	0.1490	0.0097	0.00595	0.01080	0.0008	0.0075	0.00	0.0277	0.0000	0.0021	0.0000	0.0193	0.0001	0.3546	0.0000	0.0227	0.0000	-0.0041
02/24/21	160	80	0.02	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/25/21	160	80	0.01	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/19/21	173	75	0.00	25	0.0062	0.0011	0.0031	0.0052	0.0003	0.0166	0.00	0.0086	0.0000	0.0004	0.00001	0.0275	0.0000	0.0017	0.0000	0.0013	0.0000	-0.0224
05/19/21	250	70	0.00	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/15/21	250	68	0.00	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/20/21	250	67	0.00	35	0.0024	0.0016	0.0048	0.0011	0.0002	0.0103	0.00	0.0024	0.0000	0.0004	0.00001	0.0229	0.0000	0.0082	0.0000	0.0031	0.0000	-0.0123
08/18/21	250	16	0.00	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/22/21	250	64	0.00	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/20/21	250	64	0.00	28	0.0841	0.0086	0.0075	0.0026	0.0002	0.0159	0.00	0.0048	0.0000	0.0003	0.00001	0.0297	0.0000	0.0092	0.0000	0.0158	0.0000	-0.0156
11/18/21	250	60	0.00	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/21	250	51	0.00	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/18/22	250	61	0.00	35	0.0115	0.0048	0.0052	0.0008	0.00	0.00	0.00	0.0006	0.0000	0.0000	0.00000	0.0000	0.0000	0.0035	0.0000	0.0038	0.0000	0.0041
											PERIOD TOTALS =	**0.0570**		**0.0077**		**0.1348**		**1.8249**		**0.2367**		**-0.0149**

Notes:
SVE = Soil vapor extraction
cfm = Cubic foot (feet) per minute
in. H_20 = Inch(es) of water
ppmv = Part(s) per million (vol./vol.)
mg/m^3 = Milligram(s) per cubic meter
lb = Pound(s)
lb/hr = Pound(s) per hour
PCE = Tetrachloroethylene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
Mass Recovery (Lab Res., lb/hr) = flow (cfm)*effluent conc. (mg/cu. m.)*1g/1000mg*1lb/453.6g*1cu. m./35.31cu. ft*60min/1 hr
Mass Recovery (Lab Res., lb) = Discharge Rate (lb/hr) * # of days*24hours/day
Permit limit for PCE is 0.031 lb/hr and 270 lb/yr; TCE is 0.014 lb/hr and 120 lb/year; cis-1,2-DCE is 0.63 lb/hr and 5,510 lb/year
**Flow rates for Quarter 2 2021 are estimated as the maximum value which the flowmeter is capable of .

Table 3C. Summary of Estimated Recovery Rate via Onsite DDC System #1

	Field/System Data				Laboratory Results									Recovery based on Laboratory Results					
					SYS1-INF1			SYS1-MIDGAC			SYS1-EFF								
Date	Vacuum Flow Rate (cfm)	Applied Vacuum (in. H_20)	System Influent VOC Concentration (ppmv)	Elapsed Run-Time (days)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE Recovery During Period: lb/hr	PCE Recovery During Period (lb)	TCE Recovery During Period (lb/hr)	TCE Recovery During Period (lb)	*cis* -1,2-DCE Recovery During Period (lb/hr)	*cis* -1,2-DCE Recovery During Period (lb)
02/01/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/24/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/14/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/07/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/09/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/03/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/02/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/06/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/08/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/26/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
02/24/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/25/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/19/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/19/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/15/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/20/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/18/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/22/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/20/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/18/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/18/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
														PERIOD TOTALS =	--		--		--

Notes: cfm = Cubic foot (feet) per minute
VOC = Volatile organic compound
in. H_20 = Inch(es) of water
ppmv = Part(s) per million (vol./vol.)
mg/m^3 = Milligram(s) per cubic meter
lb = Pound(s)
lb/hr = Pound(s) per hour
PCE = Tetrachloroethylene
TCE = Trichloroethene
cis -1,2-DCE = Cis-1,2-Dichloroethene
Mass Recovery (Lab Res., lb/hr) = flow (cfm)*effluent conc. (mg/cu. m.)*1g/1000mg*1lb/453.6g*1cu. m./35.31cu. ft*60min/1 hr
Mass Recovery (Lab Res., lb) = Discharge Rate (lb/hr) * # of days*24hours/day
Samples were not collected from on-site DDC system #1 during this reporting period as the system was shut down.

Table 3D. Summary of Estimated Recovery Rate via Onsite DDC System #2

Date	Field/System Data			Elapsed Run-Time (day)	Laboratory Results									Recovery based on Laboratory Results					
					SYS2-INF1			SYS2-INF2			SYS2-EFF								
	Vacuum Flow Rate (cfm)	Applied Vacuum (in. H_20)	System Influent VOC Concentration (ppmv)		PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE Recovery During Period: lb/hr	PCE Recovery During Period (lb)	TCE Recovery During Period (lb/hr)	TCE Recovery During Period (lb)	*cis* -1,2-DCE Recovery During Period (lb/hr)	*cis* -1,2-DCE Recovery During Period (lb)
02/01/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/24/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/14/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/07/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/09/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/03/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/02/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/06/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/08/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/26/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
02/24/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/25/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/19/21	200	14.15	1.469	25	0.0624	0.0031	0.0159	0.0142	0.0021	0.0135	0.0009	0.0002	0.0014	0.0000	0.094	0.0000	0.0044	0.0000	0.0221
05/19/21	220	6.04	3.199	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/15/21	200	5.63	4.128	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/21/21	240	5.64	1.111	36	0.1900	0.0054	0.0178	0.0922	0.0033	0.0103	0.0020	0.0002	0.0020	0.0002	0.391	0.0000	0.0108	0.0000	0.0329
08/18/21	220	6.14	---	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/22/2021	240	5.64	---	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/20/2021	240	5.62	4.096	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/18/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/18/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
													PERIOD TOTALS =		0.4845		0.0153		0.0550

Notes: cfm = Cubic foot (feet) per minute
VOC = Volatile organic compound
in. H_20 = Inch(es) of water
ppmv = Part(s) per million (vol./vol.)
mg/m^3 = Milligram(s) per cubic meter
lb = Pound(s)
lb/hr = Pound(s) per hour
PCE = Tetrachloroethylene
TCE = Trichloroethene
cis -1,2-DCE = Cis-1,2-dichloroethene
Mass Recovery (Lab Res., lb/hr) = flow (cfm)*effluent conc. (mg/cu. m.)*1g/1000mg*1lb/453.6g*1cu. m./35.31cu. ft*60min/1 hr
Mass Recovery (Lab Res., lb) = Discharge Rate (lb/hr) * # of days*24hours/day

Table 3E. Summary of Estimated Recovery Rate via Offsite DDC System (Blower B501)

	Field/System Data				Laboratory Results												Recovery based on Laboratory Results					
					B501-INF1			B501-INTER1			B501-INTER2			B501-EFF								
Date	Vacuum Flow Rate (cfm)	Applied Vacuum (in. $H_2$0)	System Influent VOC Concentration (ppmv)	Elapsed Run-Time (day)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis* -1,2-DCE (mg/m^3)	PCE Recovery During Period: lb/hr	PCE Recovery During Period (lb)	TCE Recovery During Period (lb/hr)	TCE Recovery During Period (lb)	*cis* -1,2-DCE Recovery During Period (lb/hr)	*cis* -1,2-DCE Recovery During Period (lb)
02/01/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/24/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/14/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/07/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/04/20	447	60	--	28	0.0000	0.0000	0.0980	0.0000	0.0000	0.0000	0.0000	0.0000	0.0098	0.0000	0.0050	0.0081	0.0000	0.0000	0.0000	-0.0056	0.0002	0.1012
07/09/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/03/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/02/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/06/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/08/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/26/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
02/24/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/25/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/19/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/19/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/15/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/20/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/18/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/22/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/20/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/18/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/2021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/18/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
																PERIOD TOTALS =		**0.00**		**-0.01**		**0.10**

Notes: cfm = Cubic foot (feet) per minute
VOC = Volatile organic compound
in. $H_2$0 = Inch(es) of water
ppmv = Part(s) per million (vol./vol.)
mg/m^3 = Milligram(s) per cubic meter
lb = Pound(s)
lb/hr = Pound(s) per hour
PCE = Tetrachloroethylene
TCE = Trichloroethene
cis -1,2-DCE = Cis-1,2-dichloroethene
Mass Recovery (Lab Res., lb/hr) = flow (cfm)*effluent conc. (mg/cu. m.)*1g/1000mg*1lb/453.6g*1cu. m./35.31cu. ft*60min/1 hr
Mass Recovery (Lab Res., lb) = Discharge Rate (lb/hr) * # of days*24hours/day
(1) Blower B-501 replaced; O&M readings carried over from B-501 to B-502 on Table 2E for purposes of calculation. Full system shut down shortly after restart with B-501 due to leaking well head at DDC-8.

Table 3F. Summary of Estimated Recovery Rate via Offsite DDC System (Blower B502)

	Field/System Data				Laboratory Results												Recovery based on Laboratory Results					
					B502-INF1			B502-INTER1			B502-INTER2			B502-EFF								
Date	Vacuum Flow Rate (cfm)	Applied Vacuum (in. H_20)	System Influent VOC Concentration (ppmv)	Elapsed Run-Time (day)	PCE (mg/m^3)	TCE (mg/m^3)	*cis*-1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis*-1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis*-1,2-DCE (mg/m^3)	PCE (mg/m^3)	TCE (mg/m^3)	*cis*-1,2-DCE (mg/m^3)	PCE Recovery During Period: lb/hr	PCE Recovery During Period (lb)	TCE Recovery During Period (lb/hr)	TCE Recovery During Period (lb)	*cis*-1,2-DCE Recovery During Period (lb/hr)	*cis*-1,2-DCE Recovery During Period (lb)
02/01/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/24/20	--	60	0.1000	52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
04/14/20	520	60	0.0000	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
05/07/20	80	--	--	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/04/20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/09/20	351	60	0.0000	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/03/20	486	60	0.0000	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/02/20	419	60	--	30	0.0027	0.0009	0.0690	0.0005	0.0002	0.0540	0.0005	0.0023	0.0520	0.0005	0.0012	0.0023	0.0000	0.0076	0.0000	-0.0012	0.0001	0.2336
10/06/20	419	60	--	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/04/20	419	60	--	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/08/20	419	60	--	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/26/21	717	54	0.778	49	0.0003	0.0004	0.0226	0.0002	0.0002	0.0052	0.0002	0.0002	0.0037	0.0003	0.0002	0.0381	0.0000	0.0000	0.0000	0.0028	-0.0001	-0.1974
02/24/21	765	62	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/25/21	2450	65	--	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/20/21	2662	1	0.000	26	0.0004	0.0004	0.0377	0.0004	0.0010	0.0341	0.0026	0.0002	0.0365	0.0005	0.0002	0.0745	0.0000	-0.0012	0.0000	0.0054	-0.0002	-0.7387
05/19/21	706	66	0.000	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/15/21	2999	66	0.000	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
07/20/21	638	67	0.027	35	0.005	0.000	0.002	0.002	0.0003	0.0020	0.0003	0.0002	0.0020	0.0003	0.0002	0.0888	0.0000	0.0229	0.0000	0.0012	-0.0002	-0.4580
08/18/21	635	66	0.000	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/22/21	504	66	2.210	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/20/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/18/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
01/18/22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
																	PERIOD TOTALS =	**0.029**		**0.008**		**-1.161**

Notes: cfm = Cubic (foot) feet per minute
VOC = Volatile organic compound
in. H_20 = Inch(es) of water
ppmv = Part(s) per million (vol./vol.)
mg/m^3 = Milligram(s) per cubic meter
lb = Pound(s)
lb/hr = Pound(s) per hour
PCE = Tetrachloroethylene
TCE = Trichloroethene
cis-1,2-DCE = Cis-1,2-dichloroethene
Mass Recovery (Lab Res., lb/hr) = flow (cfm)*effluent conc. (mg/cu. m.)*1g/1000mg*1lb/453.6g*1cu. m./35.31cu. ft*60min/1 hr
Mass Recovery (Lab Res., lb) = Discharge Rate (lb/hr) * # of days*24hours/day

Vacuum Flow Rate and Applied Vacuum for 9/02/20, 10/6/20, 11/4/20, and 12/8/20 are based on averages of the previous 3 months (6/4/2020, 7/9/2020, and 8/3/2020) due to a lack of data.

(1) Blower B-501 replaced; O&M readings carried over from B-501 to B-502 on Table 2E for purposes of calculation. Full system shut down shortly after restart with B-501 due to leaking well head at DDC-8.

Figures

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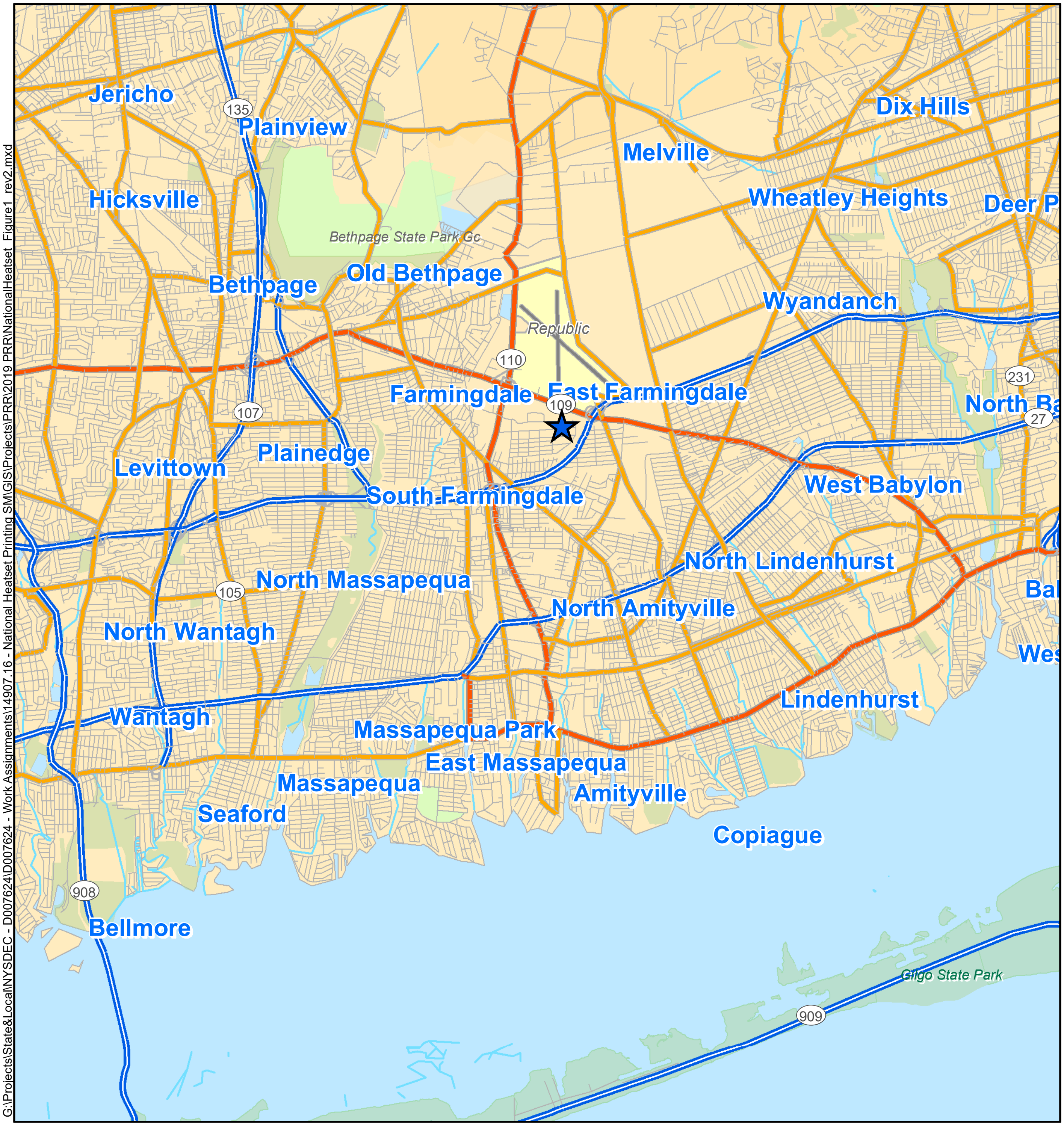

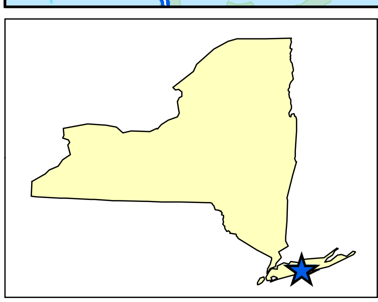

0 0.75 1.5 3
Miles

1 inch = 1.5 miles

N

Legend

★ Site Location

Figure 1
SITE LOCATION MAP
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK SUFFOLK COUNTY

Map Date: 1/3/2020
Source: ESRI, 2011

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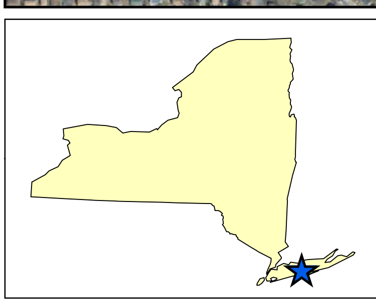
\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D009806\Work Assignments\1602518 National Heatset Printing Co. SM06 GIS\01 MXD\PRR\NationalHeatset_Figure2_Site Boundary.mxd



Legend

- DDC Well Cluster
- Groundwater Monitoring Well
- Site Location

0 0.05 0.1 0.2
Miles

N

Figure 2

SITE, SURROUNDING AREA, AND MONITORING WELL NETWORK

NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/7/2022
Source: ESRI, 2011

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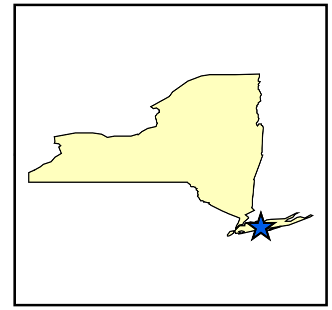
VICINITY MAP



Legend

- Monitoring Wells
- Approximate Groundwater Flow Direction
- Approximate Groundwater Elevation (ft. AMSL)

Note:
Elevations are given in feet (ft.) above mean sea level (AMSL)

N

0 30 60
Feet

Map Date: 1/17/2022

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Figure 3
ON-SITE GROUNDWATER FLOW DIRECTION (OCTOBER 2021)
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

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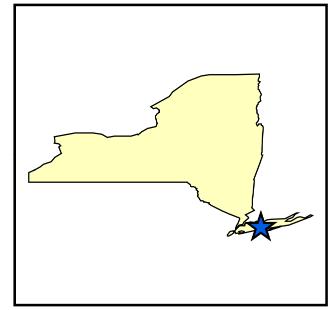

Legend

- Monitoring Wells
- Approximate Groundwater Flow Direction

Note:
Elevations are given in feet (ft.) above mean sea level (AMSL)
Offsite groundwater flow direction is based on historical estimates

N

0 40 80
Feet

Map Date: 12/10/2021

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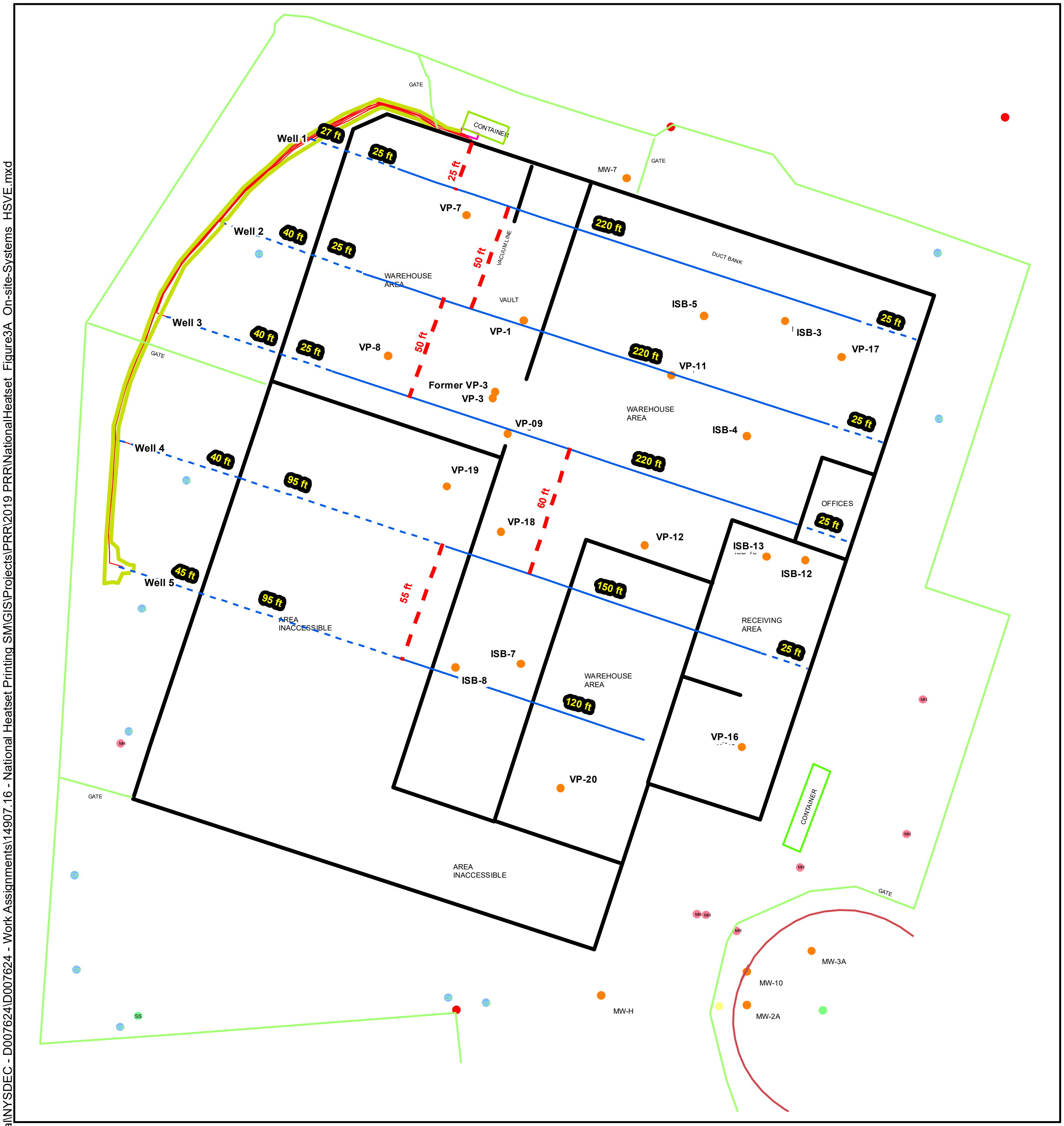
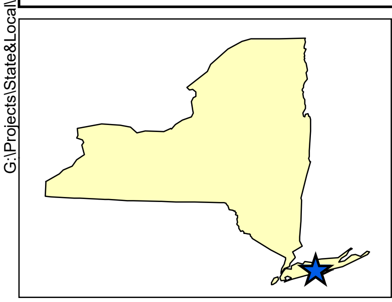
Figure 4
OFF-SITE GROUNDWATER FLOW DIRECTION (OCTOBER 2021)
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY





0 15 30 60
Feet

1 inch = 66.67 feet

N

Legend

- HSVE Solid PVC Pipe
- HSVE Well Screen
- HSVE Well Piping (EA Installed)
- HSVE Trench
- HSVE Manifold Shed
- 1 Adams Blvd Building Outline
- Site Location
- Catch Basin Square
- Catch Basin Round
- Manhole
- Sanitary Manhole
- Soil Boring / Vapor Point
- Soil Boring
- Monitoring Well
- Chainlink Fence

Figure 5A
ON-SITE TREATMENT SYSTEM LOCATION SVE System

NATIONAL HEATSET PRINTING CO. SITE (152140)

BABYLON, NEW YORK

SUFFOLK COUNTY

Map Date: 2/7/2022

Source: ESRI, 2011

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alls

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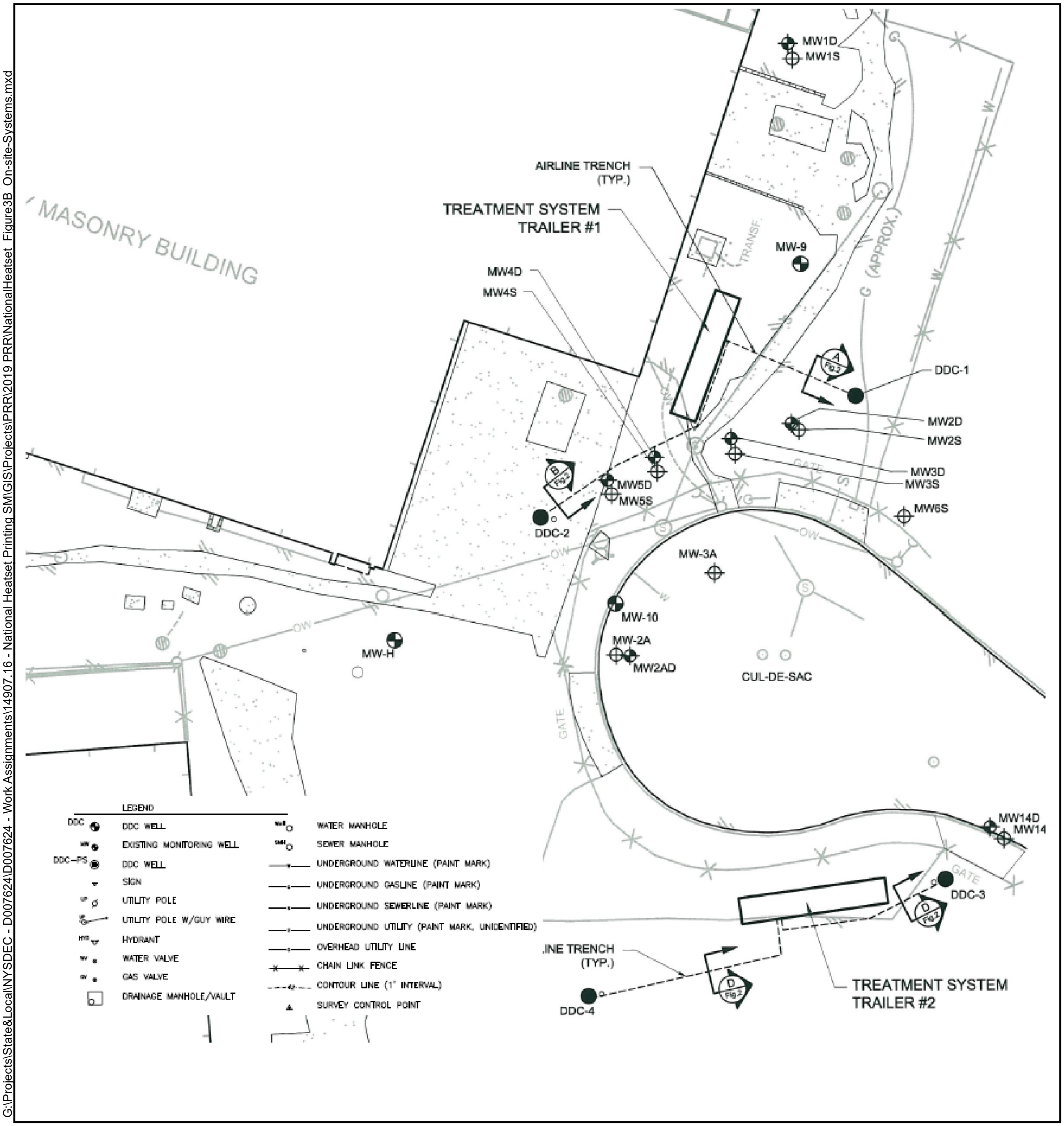
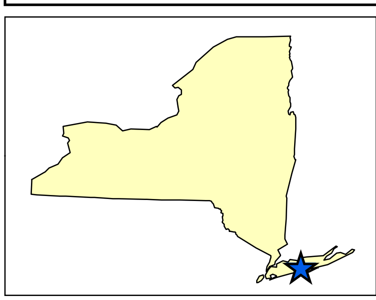




0 12.5 25 50
Feet
1 inch = 50 feet
N

Legend

★ Site Location

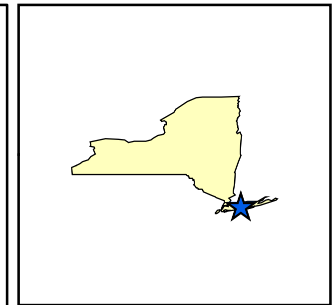
Figure 5B
ON-SITE TREATMENT SYSTEM LOCATION
DDC System #1 and DDC System #2

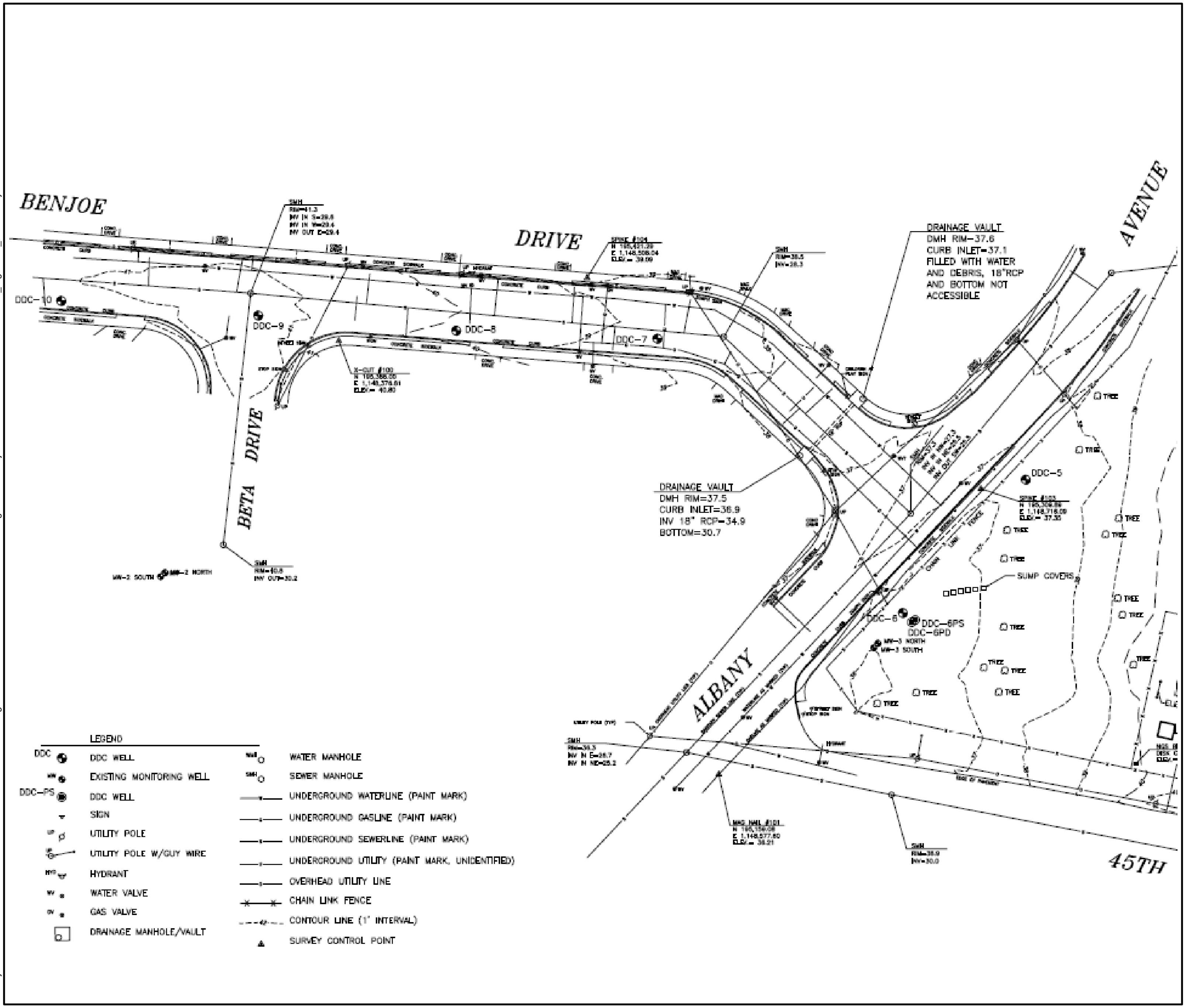
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/7/2022
Source: ESRI, 2011

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

VICINITY MAP





Map Date: 2/7/2022
Source:
Projection:

N

0 25 50 100
Feet

1 inch = 100 feet

EA

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Figure 5C
OFF-SITE TREATMENT SYSTEM LOCATION
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

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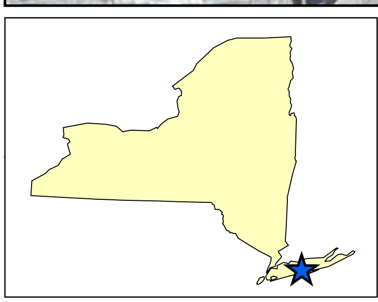

Legend

- DDC Well Cluster
- Groundwater Monitoring Well
- PCE
- TCE
- cis-1,2-DCE
- VC
- Site Location

0 25 50 100
Feet

N

Figure 6A
ON-SITE SHALLOW WELLS CVOC TREND GRAPHS

June 2010 - October 2021 NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/18/2022
Source: ESRI, 2011

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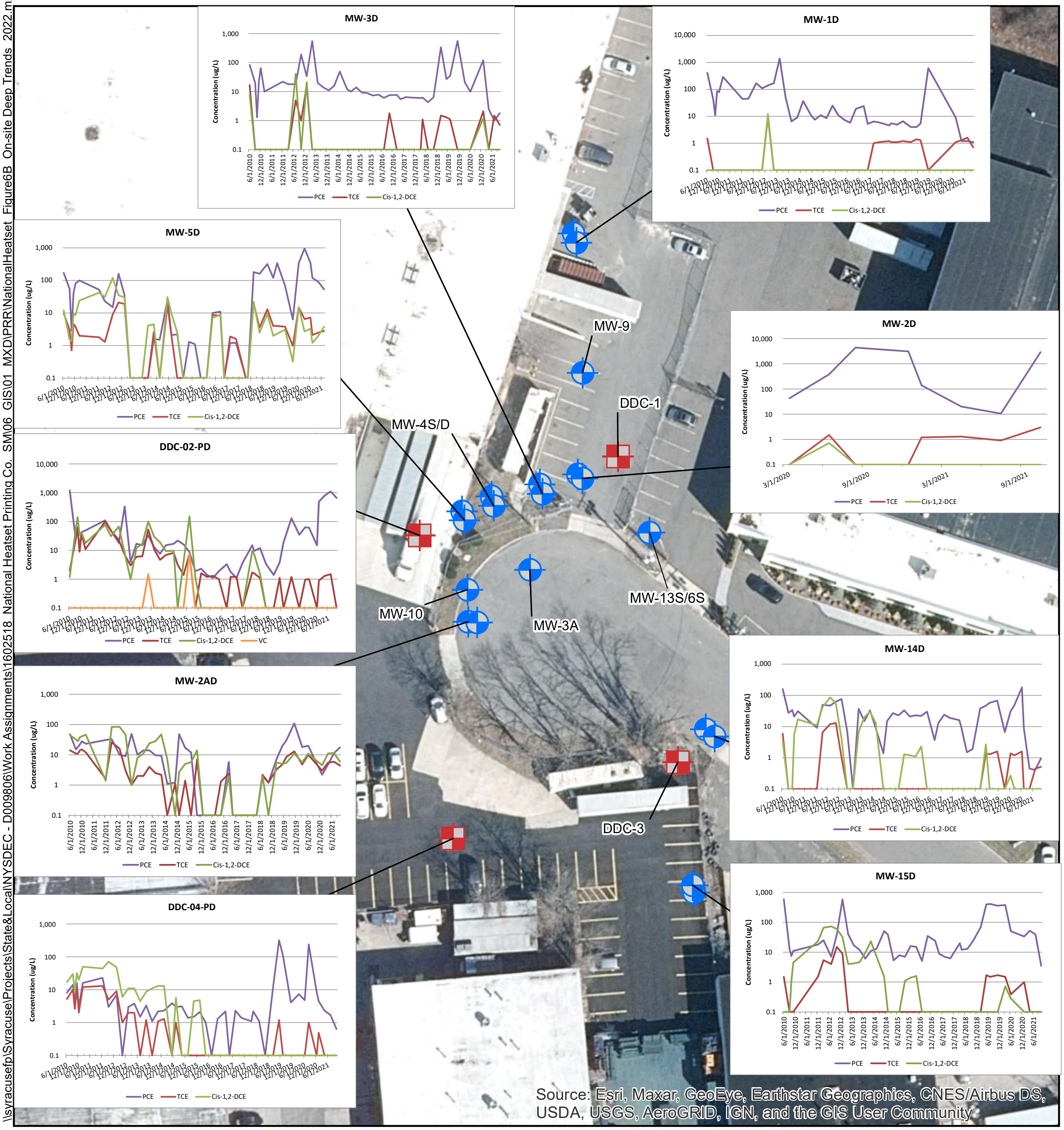
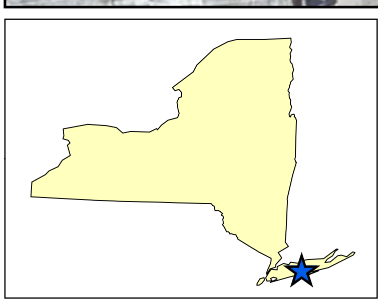
EA®

\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D009806\Work Assignments\1602518_National Heatset Printing Co._SM06_GIS\01_MXD\PRR\NationalHeatset_Figure6B_On-site Deep Trends_2022.mxd





Legend

- DDC Well Cluster
- Groundwater Monitoring Well
- PCE
- TCE
- cis-1,2-DCE
- VC
- Site Location

0 25 50 100
Feet

N

Figure 6B
ON-SITE DEEP WELLS CVOC TREND GRAPHS

June 2010 - October 2021 NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/18/2022
Source: ESRI, 2011

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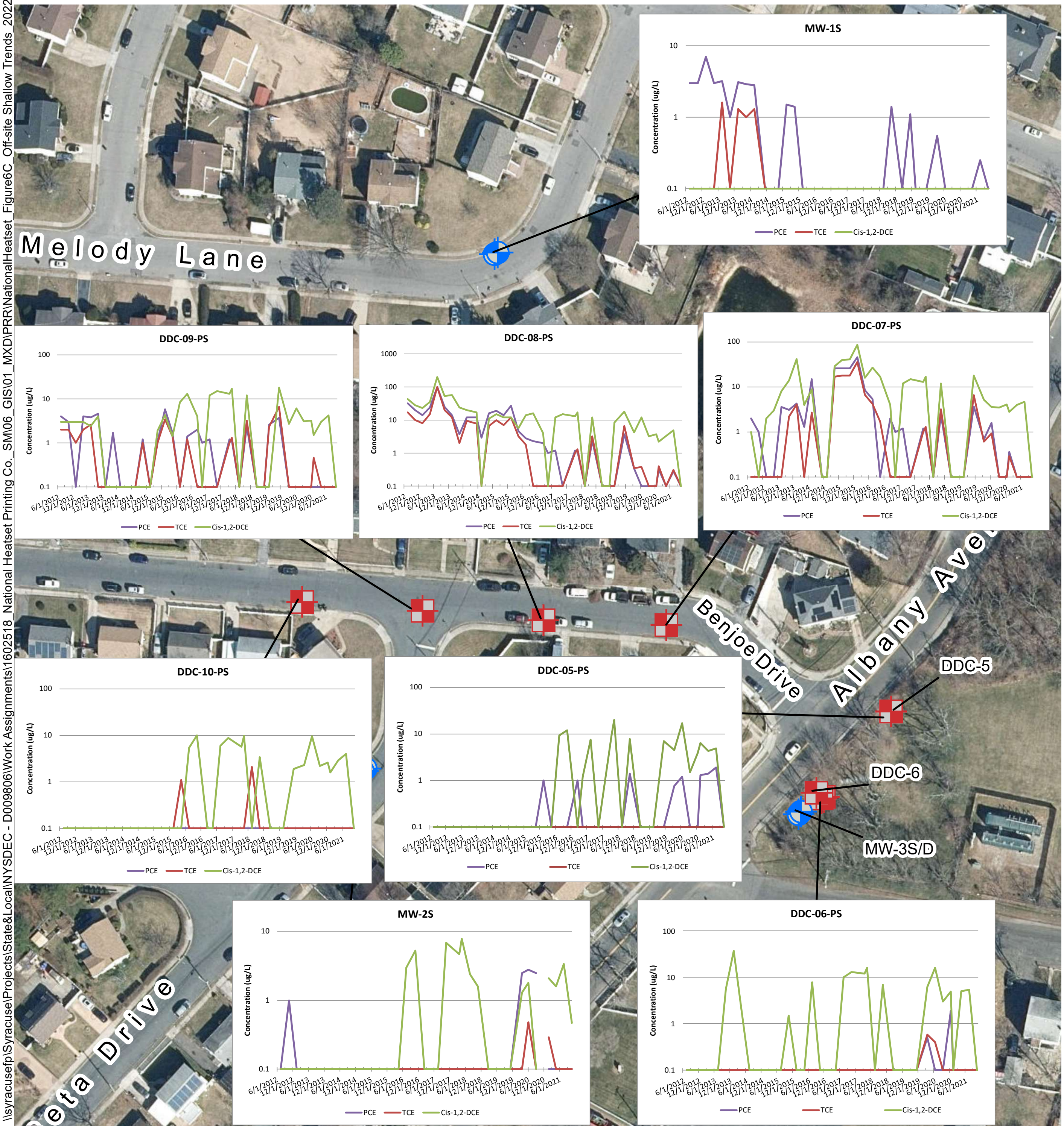
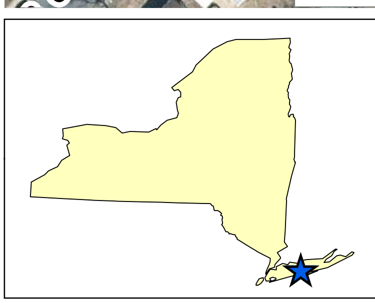
\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D009806\Work Assignments\1602518_National Heatset Printing Co._SM06_GIS\01_MXD\PRR\NationalHeatset_Figure6C_Off-site Shallow Trends_2022.mxd





Legend

- DDC Well Cluster
- Groundwater Monitoring Well
- PCE
- TCE
- cis-1,2-DCE
- VC
- Site Location

0 37.5 75 150
Feet

N

Figure 6C
OFF-SITE SHALLOW WELLS CVOC TREND GRAPHS

June 2012 - October 2021 NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/11/2022
Source: ESRI, 2011

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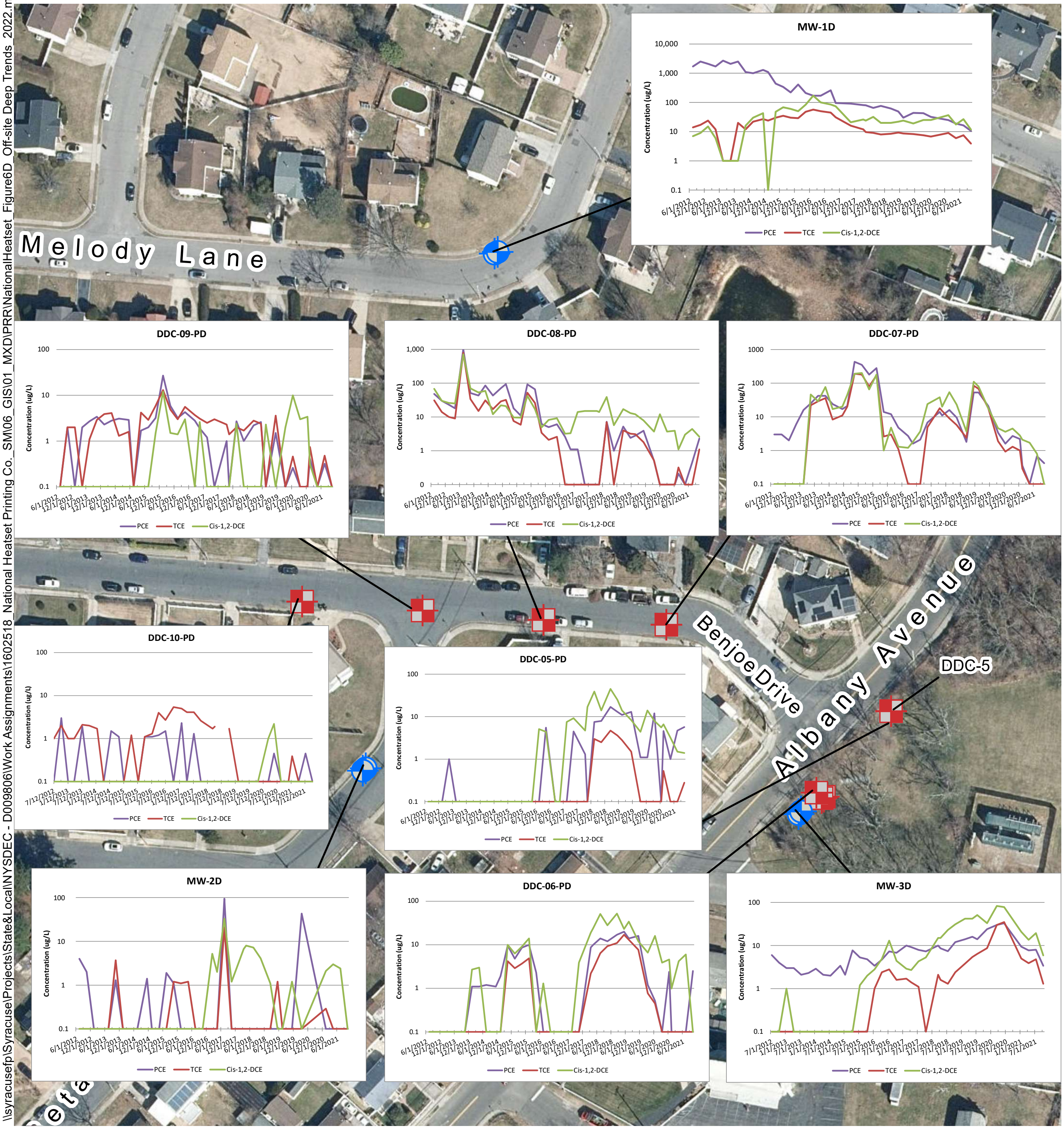
\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D009806\Work Assignments\1602518_National Heatset Printing Co._SM06_GIS\01_MXD\PRR\NationalHeatset_Figure6D_Off-site Deep Trends_2022.mxd



Legend

- DDC Well Cluster
- Groundwater Monitoring Well
- PCE
- TCE
- cis-1,2-DCE
- VC
- Site Location

0 37.5 75 150
Feet

N

Figure 6D
OFF-SITE DEEP WELLS CVOC TREND GRAPHS

June 2012 - October 2021
NATIONAL HEATSET PRINTING CO. SITE (152140)
BABYLON, NEW YORK
SUFFOLK COUNTY

Map Date: 2/11/2022
Source: ESRI, 2011

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Appendix A

Institutional/Engineering Control Certification

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Enclosure 1
Engineering Controls - Standby Consultant/Contractor Certification Form

Site Details **Box 1**

Site No. 152140

Site Name National Heatset Printing Co.

Site Address: 1 Adams Boulevard Zip Code: 11735
City/Town: East Farmingdale
County: Suffolk
Site Acreage: 4.3

Reporting Period: April 30, 2021 to January 30, 2022

		YES	NO
1.	Is the information above correct?	X	☐
	If NO, include handwritten above or on a separate sheet.		
2.	To your knowledge has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	X
3.	To your knowledge has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	X
4.	To your knowledge have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	X
	If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5.	To your knowledge is the site currently undergoing development?	☐	X

Box 2

		YES	NO
6.	Is the current site use consistent with the use(s) listed below? Industrial	X	☐
7.	Are all ICs/ECs in place and functioning as designed?	X	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

_______________________________________ _______________
Signature of Standby Consultant/Contractor Date

SITE NO. 152140 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
100.097-0001-020.001	Michael Adamowicz III	Ground Water Use Restriction Monitoring Plan Site Management Plan O&M Plan (SVE) IC/EC Plan Landuse Restriction

The environmental notice provides an alert that the groundwater use is restricted.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
100.097-0001-020.001	Soil Vapor Extraction

The soil vapor extraction system remediates soil contamination beneath the on-site building and provides vapor mitigation for the building.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification, including data and material prepared by previous contractors for the current certifying period, if any;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) nothing has occurred that would constitute a failure to comply with the Site Management Plan, or equivalent if no Site Management Plan exists.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

Donald Ca

Signature of Standby Consultant/Contractor

March 4, 2022

Date

Box 6

IC/EC CERTIFICATIONS

Professional Engineer Signature

I certify that all information in Boxes 2 through 5 are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Donald Conan at EA Engineering, P.C.
print name

269 W. Jefferson St.

Syracuse, NY 13202,
(print business address)

am certifying as a Professional Engineer.

Signature of Professional Engineer

Date 3/4/22

Appendix B

Annual Inspection (2020 and 2021)

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SITE-WIDE INSPECTION **Day: Tuesday Date: 7/20/2021**

NYSDEC		Temperature: (F)	79	(am)	92	(pm)
		Wind Direction:	WNW	(am)	WNW	(pm)
National Heatset Printing Site		Weather:	(am) Sunny (pm) Sunny			
NYSDEC Site # 152140						
Contract # 1602518		Arrive at site	0715	(am)		
Babylon, New York		Leave site:	1700	(pm)		

Site Security

Evidence of vandalism (wells, protective cover damage):

MW-9 monitoring well cover missing. Repairs are set up with Preferred Environmental, just pending a date for work.

Evidence of penetrations (poles, posts, stakes):

None

General site condition (gates, access, storm drains):

Good.

Additional Comments:

None

SVE System Enclosure

Is there any damage to the system enclosure?

No.

Does system piping appear to be compromised in any way? If so, describe:

No.

Do gauges and meters read within acceptable levels?

Yes.

Is equipment making any abnormal noises?

No.

Is remote communication equipment functional?

No. Verizon removed wires on 4/19/2021.

Has enclosure heating and ventilation changed since the last inspection?

No

Is there any damage to the well heads?

No.

On-Site DDC Treatment System

Is there any damage to the system enclosure?

No.

Does system piping appear to be compromised in any way? If so, describe:

No

Do gauges and meters read within acceptable levels?

Yes for Onsite DDC System #2.
Onsite DDC System #1 currently off pending repairs.

Is equipment making any abnormal noises?

No

Is remote communication equipment functional?

Yes for DDC System #2. DDC System #1 and Sensaphone both remain off.

Has enclosure heating and ventilation changed since the last inspection?

No

Is there any damage to the well heads?

Yes. DDC#2 had a crack in the PVC elbow on top of the well head on 1/27/2021. Broken PVC was replaced 7/7/2021.

Off-site DDC Treatment System

Is there any damage to the system enclosure?

No damage to system enclosure; tree branch had fallen on fence enclosure. Fence slightly bent.

Does system piping appear to be compromised in any way? If so, describe:

No

Do gauges and meters read within acceptable levels?

Yes. 1 temperature gauge and 2 pressure gauges have been replaced. Temperature gauge was not reading correctly, pressure gauges were damaged but reading properly.

Is equipment making any abnormal noises?

No.

Is remote communication equipment functional?

No. Alarm systems operational, however, no callout. PLC still functioning but PLC screen not working.

Has enclosure heating and ventilation changed since the last inspection?

No.

Is there any damage to the well heads?

No.

INSPECTION PHOTOLOG

	
Cracked PVC fitting on DDC-2	DDC-2 after replacing cracked PVC
	
Sensaphone for DDC System #1 remains off	Tree branch bending fence at Off Site System

Appendix C

Green Remediation

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Summary of Green Remediation Metrics for Site Management

Site Name: National Heatset Printing Co.________Site Code: ___152140___________________
Address: _____1 Adams Blvd____________________City: _Farmingdale____________________
State: _NY__________ Zip Code: 11735_____County: _____Nassau___________________

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: ___October 15, 2013________________

Current Reporting Period
Reporting Period From: _____1 February 2020___ To: ___30 January 2022_____

Contact Information
Preparer's Name: ___Megan Miller_______ Phone No.: __(315) 565-6557______
Preparer's Affiliation: ______EA Engineering________________________

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

Without a report of how many kWh were consumed by onsite and offsite treatment systems during the reporting period, EA assumed the annual electrical usage was consistent from the previous reporting period. The annual rate was multiplied to cover three years. Additionally, it was assumed that the same percentage of energy used at the site was derived from renewable resources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))	0	0
Fuel Type 2 (e.g. fuel oil, propane (gals))	0	0
Electricity (kWh)	124,380	2,473,660
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind, and hydropower)	7,587.18 (~6.1%)	304,260.18 (~12.3%)
Other energy sources (e.g. geothermal, solar thermal (Btu))	0	0

Provide a description of all energy usage reduction programs for the site in the space pron Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (lb)	**Total to Date (lb)**
Total waste generated on-site		
OM&M generated waste (carbon)	0	24,154
RSO Generated Waste (IDW)	0	38,500
Of that total amount, provide quantity:		
Transported off-site to landfills	0	16,000
Transported off-site to other disposal facilities	0	24,300
Transported off-site for recycling/reuse	0	24,154
Reused on-site	0	0

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	Total to Date (miles)
Standby Engineer/Contractor	8,170	78,730
Laboratory Courier/Delivery Service	2,546	3,446
Waste Removal/Hauling (Carbon Disposal)	0	2,876
RSO Groundwater Profiling; Engineer & Contractor	0	5,880
RSO HSVE Install; Engineer & Contractor	0	6,560
Waste Removal/Hauling Drilling IDW	0	1,960

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	Total to Date (gallons)
Total quantity of water used on-site	63,400	64,900
Of that total amount, provide quantity:		
Public potable water supply usage	0	1,500
Surface water usage	0	0
On-site groundwater usage	63,400	63,400
Collected or diverted storm water usage	0	0

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	Total to Date (acres)
Land disturbed	0	0
Land restored	0	0

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage: The most recent report issued by PSE&G Environmental Information for Basic Generation states the following breakdown of energy sources: Coal 17.15%, Gas 37.65%, Hydroelectric 1.04%, Oil 0.11%, Solar 0.31%, Wind 2.49%, Solid Waste 0.42%, Fuel Cells 0.02%, Hydro 0.01%, Captured Methane Gas 0.26%, Wood/Biomass 0.13%. Source: https://corporate.pseg.com/-/media/pseg/corporate/corporate-citzenship/environmentalpolicyandinitiatives/environmental_label.ashx
Waste Generation: No waste was generated during this reporting period.
Transportation/Shipping: 1. Mileage for typical site work / operation includes: a. Transportation mileage from the standby engineer/contractor assumed to be equivalent to the following for monthly O&M and quarterly sampling: i. 12 monthly site trips of 1 person in 1 vehicle for 2 years = 600 miles round trip, each trip = 14,400 mi ii. Quarterly site trips of 4 people in 2 vehicle for 2 years = 600 miles round trip, each trip = 9600 mi iii. 1 maintenance trip performed by EA, 1 vehicle = 600 miles RT, each trip = 600 mi b. Miles associated with Lab work increased when considering shipment of glassware to Syracuse office prior to sampling and shipping from site to the lab following sampling.
Water usage: Water consumption includes volume of water lost during Quarterly Sampling events.
Land Use and Ecosystems:
Other:

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Remedial Alternatives	GHG Emissions	Total energy Used	Water Consumption	Electricity Usage	Onsite NO_x Emissions	Onsite SO_x Emissions	Onsite PM_{10} Emissions	Total NO_x Emissions	Total SO_x Emissions	Total PM_{10} Emissions	Accident Risk Fatality	Accident Risk Injury
	metric ton	MMBTU	gallons	MWH	metric ton	metric ton	metric ton	metric ton	metric ton	metric ton		
Feb2020-Jan2022_PRR	57.89	1.18E+03	6.34E+04	1.24E+02	0.00E+00	0.00E+00	0.00E+00	1.01E-01	9.95E-02	3.44E-02	1.47E-04	1.68E-02

Additional Sustainability Metrics

Remedial Alternatives	Non-Hazardous Waste Landfill Space	Hazardous Waste Landfill Space	Topsoil Consumption	Costing	Lost Hours - Injury	Percent Electricity from Renewable Sources	Final Cost with Footprint Reduction
	tons	tons	cubic yards	$		%	$
Feb2020-Jan2022_PRR	0.00	0.00E+00	0.00E+00	0.00E+00	1.34E-01	6.1%	0.00E+00

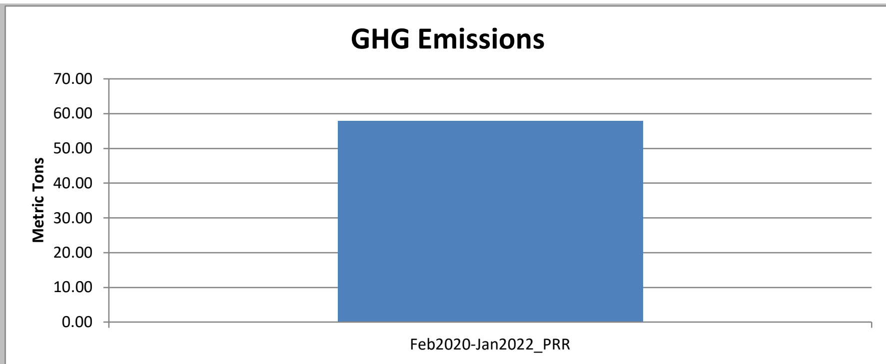
Relative Impact

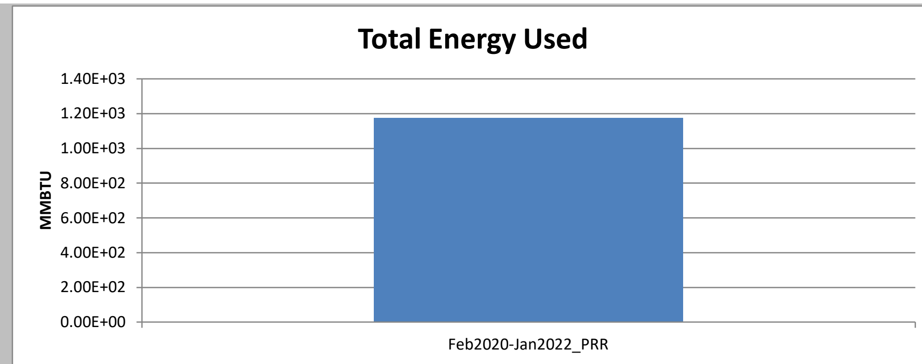
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Feb2020-Jan2022_PRR	High	High	High	High	Low	Low	Low	High	High	High	Low	Low	user select	user select

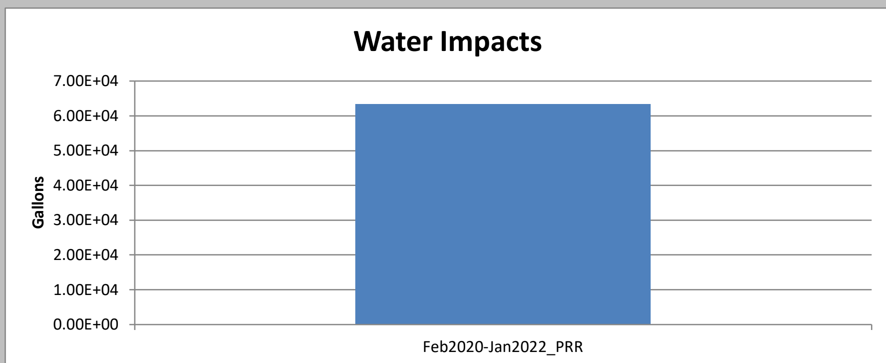
Relative Impact (User Override)

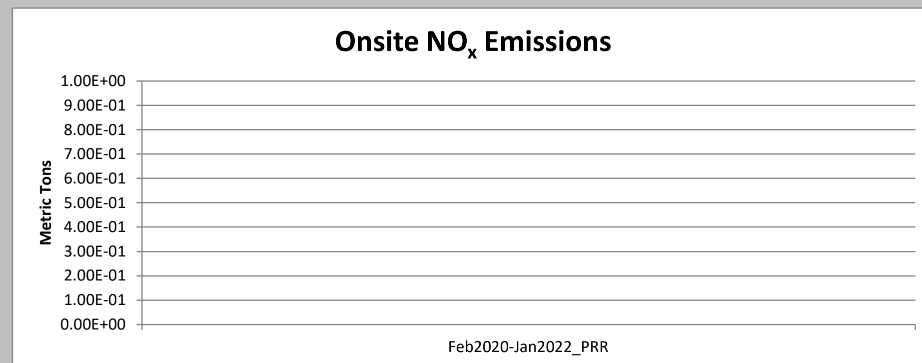
Remedial Alternatives	GHG Emissions	Energy Usage	Water Usage	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx Emissions	Total SOx Emissions	Total PM10 Emissions	*Accident Risk Fatality	*Accident Risk Injury	Community Impacts	Resources Lost
Feb2020-Jan2022_PRR	High	High	High	High	Low	Low	Low	High	High	High	Low	Low	user select	user select

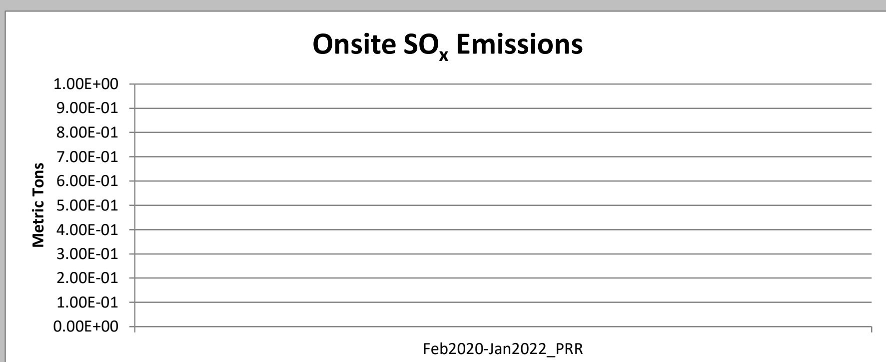
*Accident Risk is an estimate of how many accidents may occur. This risk is not the same as Cancer Risk, which is the probablity (for a single person) of getting cancer. Accident risk is not comparable to Cancer Risk due to inherent fundamental differences.

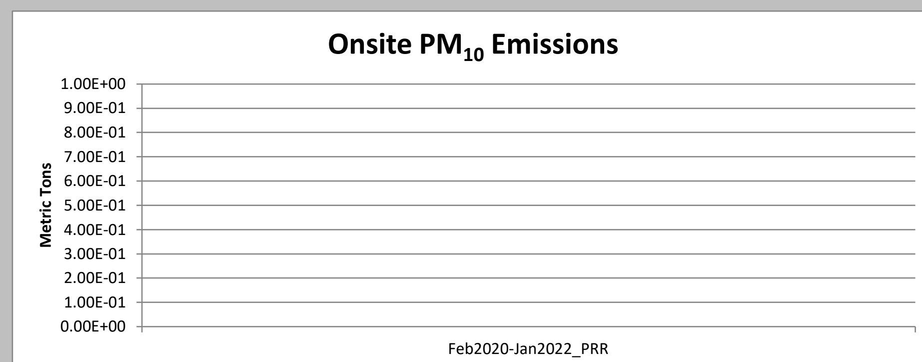

GHG Emissions
Metric Tons
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Feb2020-Jan2022_PRR

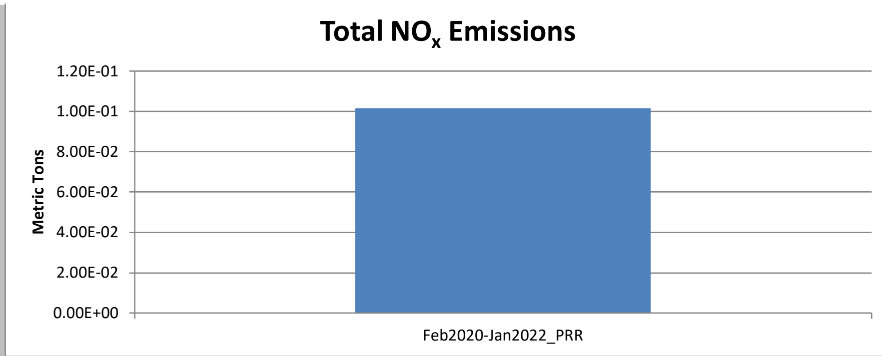

Total Energy Used
MMBTU
1.40E+03
1.20E+03
1.00E+03
8.00E+02
6.00E+02
4.00E+02
2.00E+02
0.00E+00
Feb2020-Jan2022_PRR

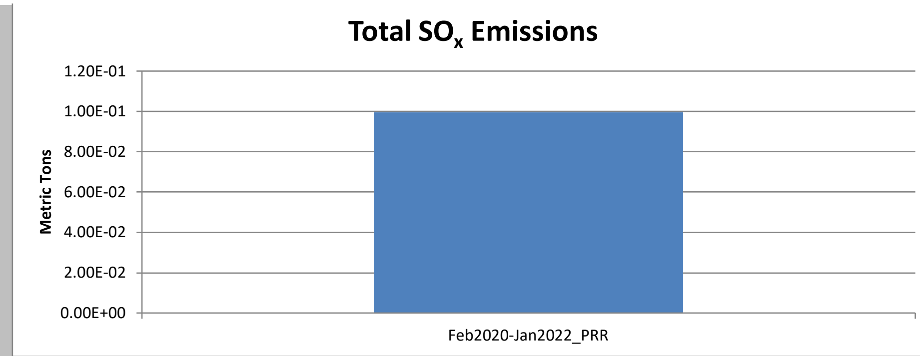

Water Impacts
Gallons
7.00E+04
6.00E+04
5.00E+04
4.00E+04
3.00E+04
2.00E+04
1.00E+04
0.00E+00
Feb2020-Jan2022_PRR

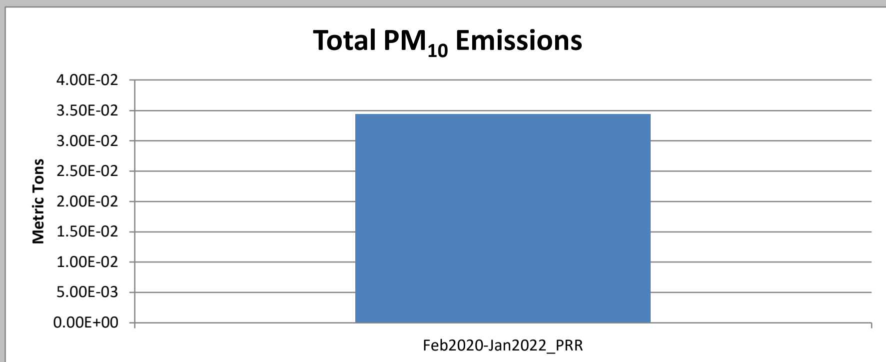

Onsite NO_x Emissions
Metric Tons
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR

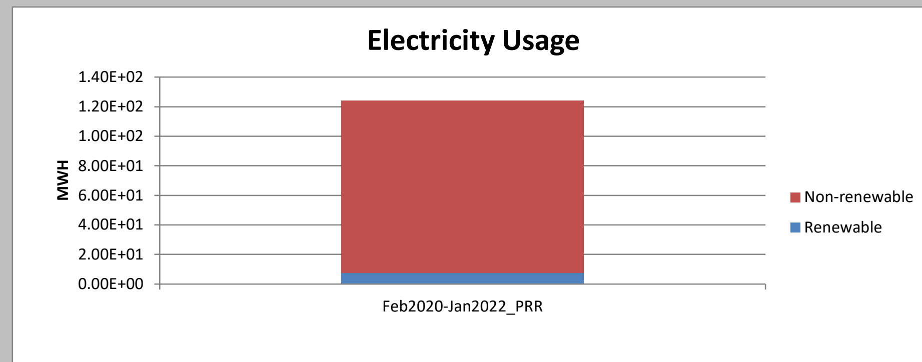

Onsite SO_x Emissions
Metric Tons
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR

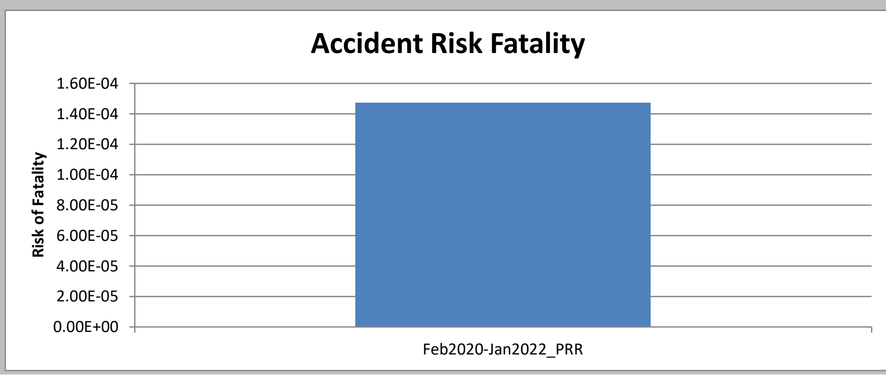

Onsite PM_{10} Emissions
Metric Tons
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR

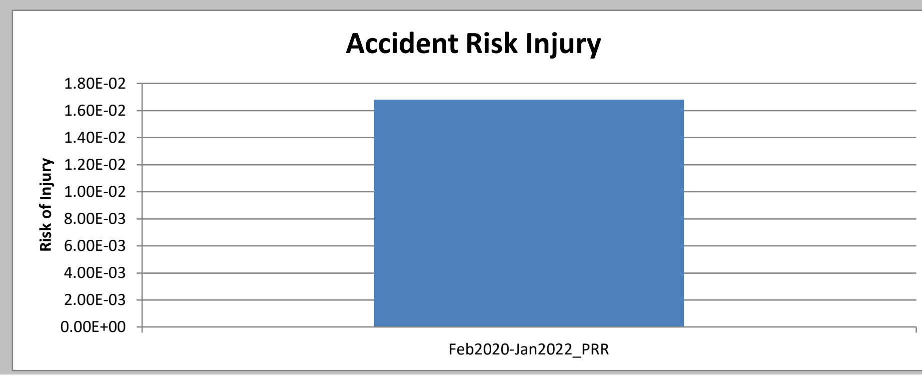

Total NOx Emissions
Metric Tons
1.20E-01
1.00E-01
8.00E-02
6.00E-02
4.00E-02
2.00E-02
0.00E+00
Feb2020-Jan2022_PRR


Total SOx Emissions
Metric Tons
1.20E-01
1.00E-01
8.00E-02
6.00E-02
4.00E-02
2.00E-02
0.00E+00
Feb2020-Jan2022_PRR

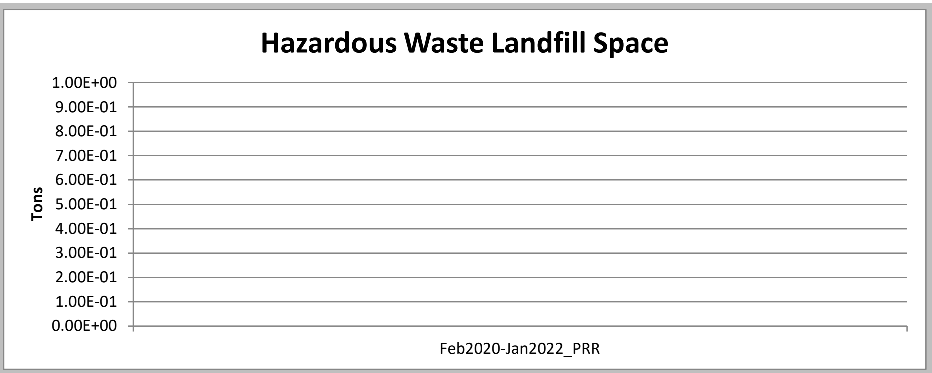

Total PM10 Emissions
Metric Tons
4.00E-02
3.50E-02
3.00E-02
2.50E-02
2.00E-02
1.50E-02
1.00E-02
5.00E-03
0.00E+00
Feb2020-Jan2022_PRR

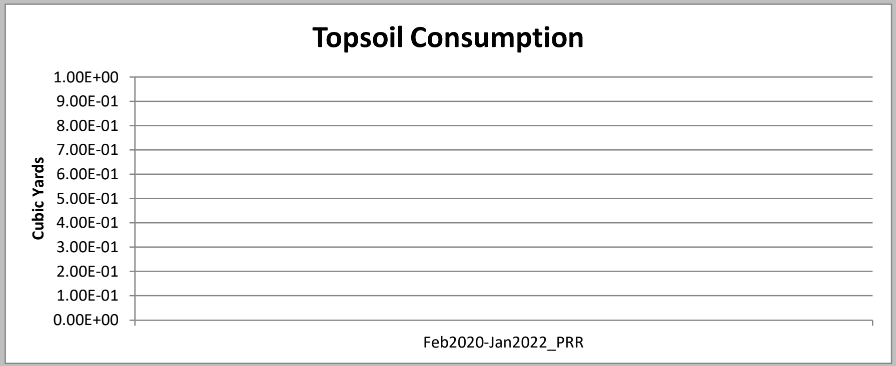

Electricity Usage
MWH
1.40E+02
1.20E+02
1.00E+02
8.00E+01
6.00E+01
4.00E+01
2.00E+01
0.00E+00
Feb2020-Jan2022_PRR
Non-renewable
Renewable


Accident Risk Fatality
Risk of Fatality
1.60E-04
1.40E-04
1.20E-04
1.00E-04
8.00E-05
6.00E-05
4.00E-05
2.00E-05
0.00E+00
Feb2020-Jan2022_PRR

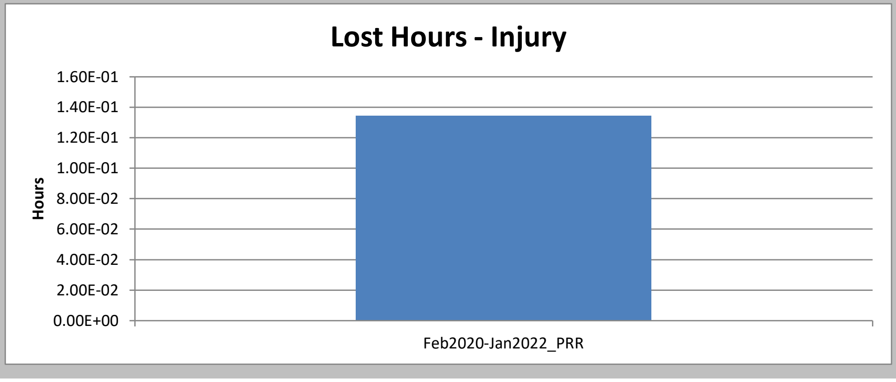

Accident Risk Injury
Risk of Injury
1.80E-02
1.60E-02
1.40E-02
1.20E-02
1.00E-02
8.00E-03
6.00E-03
4.00E-03
2.00E-03
0.00E+00
Feb2020-Jan2022_PRR

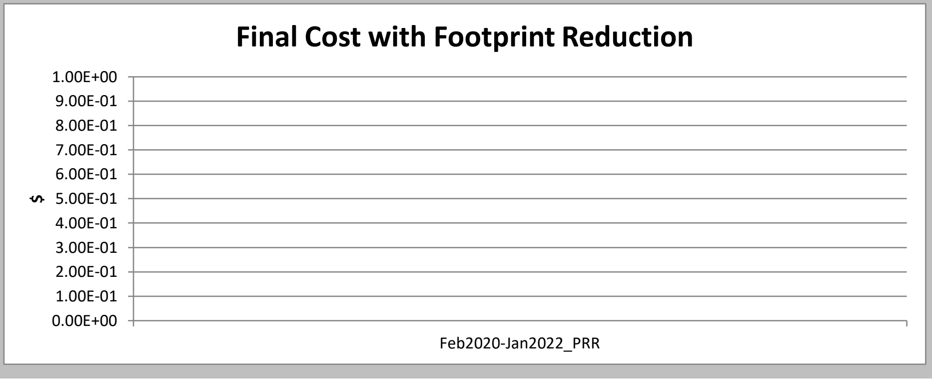

Non-Hazardous Waste Landfill Space
Tons
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Feb2020-Jan2022_PRR

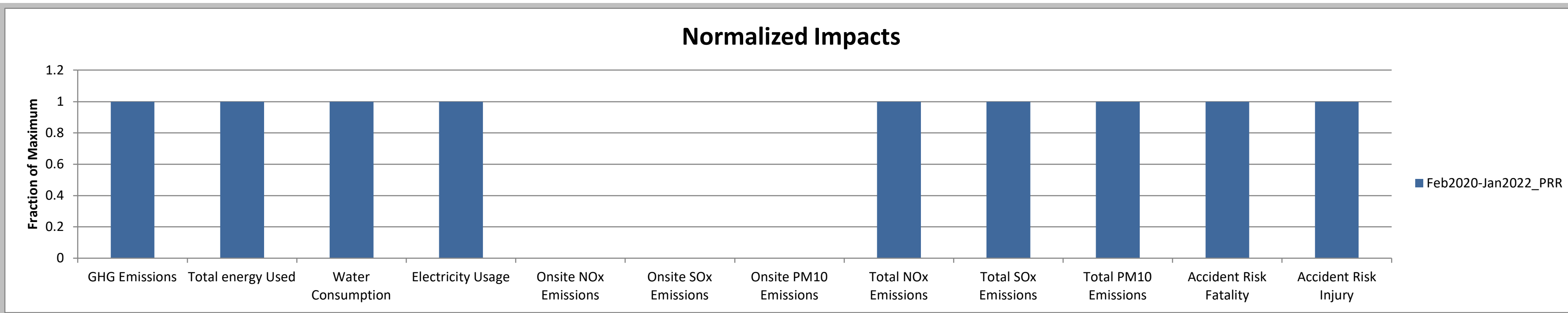

Hazardous Waste Landfill Space
Tons
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR


Topsoil Consumption
Cubic Yards
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR


Costing
$
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR


Lost Hours - Injury
Hours
1.60E-01
1.40E-01
1.20E-01
1.00E-01
8.00E-02
6.00E-02
4.00E-02
2.00E-02
0.00E+00
Feb2020-Jan2022_PRR


Final Cost with Footprint Reduction
$
1.00E+00
9.00E-01
8.00E-01
7.00E-01
6.00E-01
5.00E-01
4.00E-01
3.00E-01
2.00E-01
1.00E-01
0.00E+00
Feb2020-Jan2022_PRR


Normalized Impacts
Fraction of Maximum
1.2
1
0.8
0.6
0.4
0.2
0
GHG Emissions
Total energy Used
Water Consumption
Electricity Usage
Onsite NOx Emissions
Onsite SOx Emissions
Onsite PM10 Emissions
Total NOx Emissions
Total SOx Emissions
Total PM10 Emissions
Accident Risk Fatality
Accident Risk Injury
Feb2020-Jan2022_PRR

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