

FINAL
Long-Term Groundwater
Monitoring Report
Colonie, New York, Site—
Natural Attenuation Remedy
July 2023 Sampling Event



January 2024



U.S. DEPARTMENT OF
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Legacy
Management

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Abbreviations

AEC	U.S. Atomic Energy Commission
amsl	above mean sea level
bgs	below ground surface
cDCE	<i>cis</i> -1,2-dichloroethene
CFR	<i>Code of Federal Regulations</i>
COC	contaminant of concern
DO	dissolved oxygen
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	feet
ft/d	feet per day
FUSRAP	Formerly Utilized Sites Remedial Action Program
I	gradient
K	hydraulic conductivity
LM	Office of Legacy Management
LTM	long-term monitoring
mg/L	milligrams per liter
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
MNA	monitored natural attenuation
mV	millivolts
n_e	effective porosity
NTU	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
ORP	oxidation-reduction potential
OU	operable unit
PCE	tetrachloroethene
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
TCE	trichloroethene
TCG	target cleanup goal

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USACE	U.S. Army Corps of Engineers
USC	<i>United States Code</i>
VC	vinyl chloride
VOC	volatile organic compound
VP	vicinity property
V _s	groundwater seepage velocity

Executive Summary

This is the third long-term groundwater monitoring report prepared by the U.S. Department of Energy Office of Legacy Management (LM) for the Colonie, New York, Site. The U.S. Army Corps of Engineers (USACE) has completed all Remedial Investigations of soil and groundwater and completed all remedial actions at the Colonie site and 56 vicinity properties. Long-term stewardship responsibilities, including continuation of the groundwater long-term monitoring (LTM) program, were transferred from USACE to LM in September 2019. The site sold at public auction, with the act of sale being finalized in January 2023.

The Record of Decision (ROD) for site groundwater specifies the selected remedy for groundwater at the site is monitored natural attenuation. The remedial action objectives for site groundwater are designed to (1) limit exposure of potential future onsite urban residents to volatile organic compounds (VOCs) that may migrate toward homes via the vapor intrusion pathway and (2) reduce the concentrations of VOCs in onsite groundwater to levels that are protective of future onsite urban residents who may be exposed to these compounds via the vapor intrusion pathway.

The remedial action objectives are being achieved as evidenced by overall decreases in concentrations of the four groundwater contaminants of concern (COCs) and by the comparison of these concentrations to the following ROD-specified target cleanup goals (TCGs): tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC).

The groundwater remedy includes a long-term groundwater monitoring program that will continue until natural environmental processes reduce the contamination to concentrations below cleanup levels. The Groundwater ROD specifies that the groundwater remedy will be considered complete and monitoring discontinued after four quarters of compliance for all four COCs with respect to these TCGs at each site monitoring well.

All wells show decreasing long-term trends of COCs. Only one well in the seven-well monitoring well network currently has COC concentrations above its TCG. The TCG of 5.5 µg/L for PCE is exceeded at monitoring well MW-41S (8.6 µg/L). All wells may be in compliance with TCGs by the next sampling event in July 2025.

1.0 Introduction

This long-term monitoring (LTM) report has been prepared by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) for the Colonie, New York, Site. This is the third LTM report that LM has prepared for the site in support of the monitored natural attenuation (MNA) remedy for volatile organic compounds (VOCs), and it presents the methods, results, and evaluations of the groundwater monitoring event conducted in July 2023. The monitoring event represented in this report was completed in accordance with the *Colonie FUSRAP Site Record of Decision—Colonie Site Groundwater* (USACE 2010a), hereafter referred to as the Groundwater Record of Decision (ROD) and following the *Long-Term Surveillance and Maintenance Plan for the Colonie, New York, Site* (DOE 2022). Documents referenced in this report are available on the LM Colonie, New York, Site webpage at <https://www.energy.gov/lm/colonie-new-york-site>.

The purpose of this LTM report is to document progress of the groundwater natural attenuation remedy and evaluate monitoring endpoints. The progress of the remedy was evaluated by reviewing monitoring data over time. Compliance status of the remedy was ascertained by comparing groundwater analytical results to the target cleanup goals (TCGs) that were established in the Groundwater ROD. In addition, this report provides conclusions derived from the data evaluation and offers recommendations relative to the LTM program.

1.1 Site Description

The site is at 1130 Central Avenue (New York State Route 5) in the town of Colonie, Albany County, New York (Figure 1). The site comprises 11.2 acres of privately owned vacant land. The site was sold by the federal government, with the act of sale being finalized in January 2023. Central Avenue forms its northern boundary. Commercial properties are due east. CSX Transportation Inc. (CSX) and National Railroad Passenger Corporation (Amtrak) railroad tracks are on the southern boundary, and residences are on the south side of the railroad tracks. Commercial and municipal properties are on the western boundary of the site (Figure 2). The site is in an urban area consisting of residential and commercial properties in an industrial zoning district (Colonie 2007). U.S. Census Bureau data from 2019 indicated that approximately 83,000 people lived in Colonie (U.S. Census Bureau 2020). Homes and businesses in the area are supplied by the Latham Water District. Water sources are the Mohawk River and five supply wells that are greater than 4 miles away and upgradient of the site (Colonie 2020; USACE 2017a).

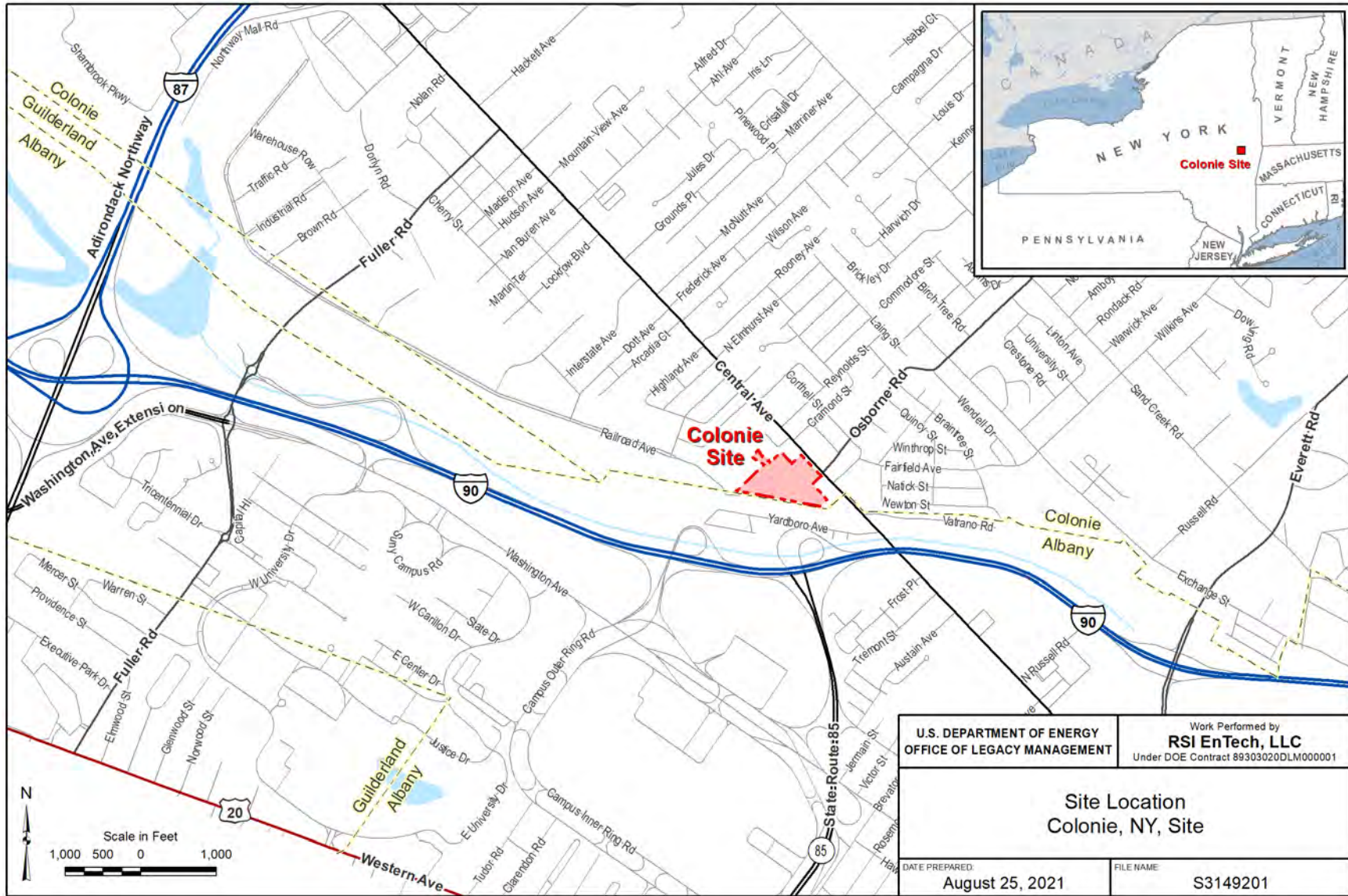


Figure 1. Colonie, New York, Site Location



Figure 2. Groundwater Monitoring Well Locations

1.2 Site History

Industrial operations at the site began in 1923, when a factory was built to manufacture wooden products. In 1927, the factory was converted to a brass foundry to manufacture rolling stock components. In 1937, National Lead (now NL Industries Inc.) purchased the foundry and began conducting electroplating operations. National Lead purchased an adjacent lot to the west that contained Patroon Lake and used it to dispose of casting sand and other industrial wastes. In 1958, National Lead began producing items manufactured from uranium and thorium under licenses issued by the U.S. Atomic Energy Commission (AEC) and the State of New York. The AEC contract was terminated in 1968; afterward, work at the plant was devoted to manufacturing shielding components, aircraft counterweights, and artillery projectiles that included depleted uranium.

The industrial operations resulted in contaminated soil, groundwater, and structures at the site and at vicinity properties (VPs). Depleted uranium was released from the plant exhaust stacks and spread across the site and 56 VPs. The New York State Supreme Court shut down the plant in 1984 due to airborne releases of depleted uranium. Congress assigned the authority for cleanup to DOE, which acquired the site for that purpose.

DOE performed cleanup actions under the Formerly Utilized Sites Remedial Action Program (FUSRAP) from 1984 to 1997. During that period, DOE investigated the VPs, onsite structures, groundwater, and surface and subsurface soils; developed a plan to remove radiologically impacted soils; remediated 53 of 56 VPs; removed onsite buildings; and stored the waste materials generated during these actions.

In 1997, Congress transferred responsibility for FUSRAP investigation and remediation to the U.S. Army Corps of Engineers (USACE). In 2003, USACE completed the Remedial Investigation (RI) of groundwater (USACE 2003). In 2007, USACE completed the large-scale soil removal action at the main site and the three remaining VPs by excavating and disposing of 135,000 cubic yards of soil contaminated with radionuclides, metals, and VOCs offsite and then backfilling with clean soil (USACE 2010c). In 2010, USACE initiated a groundwater monitoring program to measure the progress of MNA of groundwater contaminants (USACE 2010b; USACE 2014a).

From 2011 to 2014, USACE investigated depleted uranium dust contamination within VP structures (USACE 2018). All radioactive materials that were above the risk-based cleanup goals have been removed from federal property, VPs, and groundwater. No further action is required to address soil contamination. However, metals contamination remains in subsurface soils in three specific inaccessible areas near utility infrastructure. These areas are managed by an environmental easement and Site Management Plan (DOE and USACE 2020). The environmental easement areas are shown in Figure 2.

The Groundwater ROD was signed in April 2010 by USACE. The selected remedy for management of site groundwater was MNA (with temporary land use controls as an option if needed) to limit potential exposure to groundwater contaminants until TCGs are achieved. The Groundwater ROD specified a 2- to 5-year enhanced data collection period to measure the progress and compliance status of the natural attenuation remedy.

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In June 2010, USACE established the LTM program, which included the enhanced data collection period consisting of an initial eight consecutive quarterly groundwater monitoring events. The initial eight quarterly events following the signing of the Groundwater ROD occurred from November 2010 to August 2012.

The response action for groundwater is complete. The selected remedy is MNA with land use controls and has been in place since 2010. Long-term groundwater monitoring will continue until TCGs are achieved for tetrachloroethene (PCE), the single remaining VOC in exceedance (DOE 2021b; USACE 2017a).

The cleanup at the site and VPs was completed in accordance with RODs for the three site operable units (OUs): the Groundwater OU (USACE 2010a), the Main Site Soils OU (USACE 2015), and the VP OU (USACE 2017b). The Site Closeout Report documenting the completion of the remedial actions was completed in February 2018 (USACE 2018). The site was transferred for long-term stewardship from USACE to LM in September 2019.

1.2.1 Hydrogeology

The following is a summary of the geological units represented at the site, starting from the uppermost unit to the lowermost unit. Most of the unconsolidated sediments above bedrock at the site were deposited in glacial Lake Albany, which was created during continental glacier advances and retreats in the Hudson Valley.

Artificial Fill and Flood Plain Sediments: This unit consists of artificial fill materials and natural flood plain sediments. Fill materials placed at the site during industrial use included gravel, sand, brick fragments, and other construction-type materials that have since been replaced by clean fill soil during the post-excavation backfill operation at the main site. Flood plain sediments are thin deposits of materials related to sedimentation in the former Patroon Lake and from floods of the unnamed tributary of Patroon Creek.

Dune Sand: This unit is fine-grained sand that is light yellow-brown and cross laminated. Based on lithologic logs, it thins from northwest to southwest across the site and occurs near the ground surface predominantly above the water table.

Upper Silt: This unit, also known as the upper aquifer, is composed of lake silt and sand and represents the uppermost water bearing zone or water table at the site. Grain size analyses showed significant silt fractions in samples collected from this unit.

Upper Clay: This is the most easily identified unit in conductivity logs and consists of a varved sequence of clay and silt. This unit separates the two uppermost water bearing zones at the site, acting as a confining layer for the lower aquifer.

Lower Silt: This unit consists predominantly of silt with some clay and lies above the lower clay. This confined water-bearing zone is known as the lower aquifer.

Lower Clay: The lower clay is approximately 100 feet (ft) thick at the site. It is olive gray and homogenous, showing few signs of silt or sand interbeds. The lower clay is the basal hydrogeologic boundary.

Till: The glacial till unit is dark gray and poorly sorted (10% sand, 40% gravel, and 50% clay). This unit is encountered at approximately 140 ft below ground surface (bgs). One site borehole penetrated the till to a depth of 160 ft bgs. Bedrock underlies the till.

The soil units are shown in Figure 3 and described below, beginning from the ground surface. Additional geological information is provided in the RI report (USACE 2003).

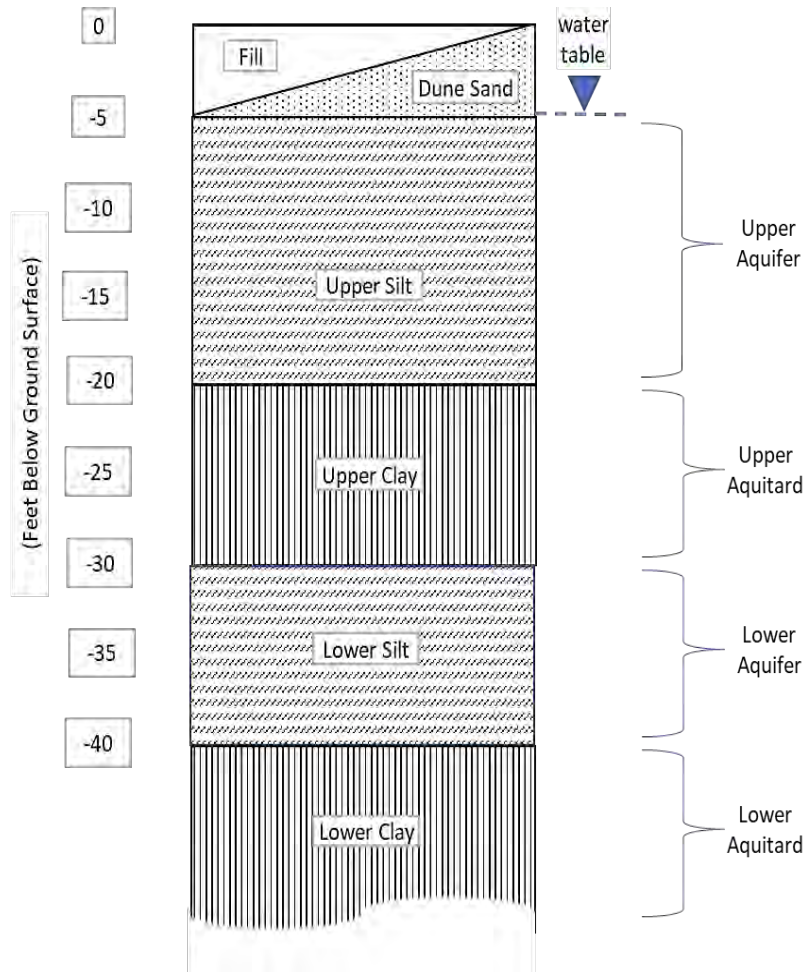


Figure 3. Geologic Cross Section

The water table is generally encountered at less than 10 ft bgs. Groundwater level measurements indicate that the saturated thickness of the upper aquifer ranges from more than 20 ft in the north to less than 15 ft in the south near the property line. The base of the upper aquifer is defined by the top of the upper clay and ranges from elevations of approximately 202 to 205 ft above mean sea level (amsl). The thickness of the upper clay ranges from approximately 12 to 15 ft. The top surface of the lower silt, in which the lower aquifer is present, is typically encountered at an elevation of approximately 190 ft amsl. The thickness of the lower aquifer ranges from 10 ft to approximately 15 ft (USACE 2003).

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A review of the groundwater and geologic unit elevations indicates that the lower aquifer is a confined water-bearing unit, with depth to groundwater less than 10 ft below grade. Groundwater in the lower aquifer is under confining pressure and rises in the monitoring wells to elevations above the top of the upper clay to levels comparable to those of the upper aquifer.

Hydraulic conductivities of these units measured from field tests ranged from 0.04 to 109 feet per day (ft/d) in the upper aquifer (mean and median of 1.5 and 1.3 ft/d, respectively) to 0.29 to 31 ft/d in the lower aquifer (mean and median of 6.4 and 0.68 ft/d, respectively).

Groundwater flow across the site is generally to the south in both aquifers. The upper aquifer has a downward vertical gradient in the northern portion of the site, and an upward vertical gradient near the unnamed tributary and toward Patroon Creek.

A notable manmade feature that locally affects groundwater flow on the site is the steel sheet pile wall installed in July 2005 to maintain stability of the CSX railroad tracks during the soil excavation of the main site (Figure 2). The sheet pile wall was driven to depths of 30 and 50 ft bgs. It is approximately 260 ft long (USACE 2017a). This subsurface feature interrupts groundwater flow locally in the southeast portion of the site and elongates the flow path by diverting flow around the structure. An unnamed tributary of Patroon Creek enters the site from the west and flows southeastward, ultimately discharging into Patroon Creek, as shown in Figure 2. The tributary is enclosed in a buried culvert except in the “keyhole” area in the western side of the site. The unnamed tributary drains an area of approximately 300 acres north of the site in the town of Colonie and has been significantly channeled into culverts (USACE 2003).

1.2.2 Groundwater Contamination

Results of the groundwater RI conducted between 1999 and 2002 showed elevated concentrations of VOCs in monitoring wells in the upper aquifer. Maximum VOC concentrations of PCE, trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC) were identified in the eastern portion of the site during the RI. RI data indicated that the lower aquifer was not impacted by VOC concentrations above evaluation criteria (USACE 2003).

The originally estimated extent of the onsite VOC mass area in the upper aquifer was provided in Figures 6 and 7 of the Groundwater ROD, which are included in Appendix A. These drawings show that the historical VOC mass was largely present within the site property, with a portion of the mass overlapping onto CSX property in the general direction of groundwater flow. The leading edge of the VOC mass extended just into the CSX rail corridor at that time but did not travel farther downgradient, as evidenced by groundwater results from sentinel wells just south of the railroad tracks.

Groundwater RI data provided in Appendix B include historical groundwater analytical data for VOCs from 1998 through 2009. These results show that the highest concentrations of VOCs occurred in the early part of the record, with overall decreasing trends in VOCs occurring across the site, as can be seen in subsequent data. The decreasing trend is also attributed to removal of VOC source soils during the large-scale excavation of soil and associated dewatering at the main site.

Analytical data obtained subsequent to the RI showed that VOC concentrations have declined significantly and continue to do so. Previous analytical results show that the only VOC exceedances of TCGs (in this case, PCE) are in onsite wells MW-30S, MW-41S, and MW-44S. Since the Groundwater ROD was issued, groundwater monitoring results from 2010 to date indicate an overall decrease in VOC concentrations, further reducing the availability and the extent of the VOC mass in groundwater.

Groundwater contamination levels have consistently decreased since excavation of source zone soils was completed in 2007 (USACE 2010b). The presence of the PCE breakdown products TCE, cDCE, and VC indicates that natural degradation processes are occurring. As a result, MNA was determined to be a viable means of achieving the TCGs (USACE 2010b; USACE 2016; USACE 2017a).

1.2.3 Target Cleanup Goals for Groundwater

Site-specific remedial action objectives were developed to (1) limit exposure of potential future onsite urban residents to VOC constituents that could have migrated toward homes via the vapor intrusion pathway and (2) reduce the concentrations of VOCs in onsite groundwater to levels that are protective of future onsite urban residents who may be exposed to these compounds via the vapor intrusion pathway. The proposed action was implemented to reduce excess cancer risk from inhaling vapors that might intrude into a hypothetical onsite residence to less than 1 in 1 million (1×10^{-6}). Four chlorinated VOCs have been identified as contaminants of concern (COCs). Radiological COCs no longer need to be monitored. The remaining COCs and their TCGs are summarized in Table 1.

Table 1. Target Cleanup Goals

Contaminants of Concern	Target Cleanup Goals (µg/L)
Tetrachloroethene (PCE)	5.5
Trichloroethene (TCE)	18
<i>cis</i> -1,2-Dichloroethene (cDCE)	1800
Vinyl chloride (VC)	1.4

The groundwater remedy includes a long-term groundwater monitoring program that will continue until natural environmental processes reduce the contamination to concentrations below cleanup levels (USACE 2010a). The Groundwater ROD specifies that the groundwater remedy will be considered complete and monitoring discontinued after 4 quarters of compliance for all four VOCs with respect to these TCGs at each site monitoring well. In 2017, USACE estimated that contaminants would achieve cleanup standards in 15 years (i.e., by 2032) based on modeling using Monitoring and Remediation Optimization System software (USACE 2017a).

In the prior monitoring event in July 2020, there were two exceedances of TCGs. PCE exceeded the TCG of 5.5 µg/L in wells MW-30S and MW-41S (DOE 2021a).

2.0 Long-Term Monitoring Program Description

The groundwater remedy was chosen following the ROD requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (Title 42 *United States Code* Section 9601–9675 [42 USC 9601–9675]) and, to the extent practicable, the “National Oil and Hazardous Substances Pollution Contingency Plan,” as amended (Title 40 *Code of Federal Regulations* Section 300 [40 CFR 300]). The decisions presented in the Groundwater ROD were based on information contained in the Administrative Record file for the site and have been made by USACE in conjunction with the New York State Department of Environmental Conservation (NYSDEC).

The groundwater remedy has the following elements regarding monitoring, remedy progress, and protection:

- Enhanced data collection for 2–5 years to assess the rate of natural attenuation processes and to document that geochemical conditions have returned to a state of equilibrium.
- The progress of MNA to be assessed at the end of the data collection period to refine time frames. As necessary, subsequent LTM will be implemented until compliance with the TCGs has been achieved. The time frame for compliance was initially estimated at 15 years.
- Temporary land use controls, as appropriate, to limit potential future onsite residential exposure to groundwater contaminants until TCGs are achieved. In addition, easement restrictions prohibit potable use of groundwater.

The scope of the USACE LTM program was established after the enhanced data collection period; it included groundwater monitoring and associated site activities as well as data evaluation, as detailed in the *Final Long-Term Monitoring Work Plan, Rev. 1, Groundwater Sampling for Natural Attenuation, Colonie FUSRAP Site* (USACE 2010b). NYSDEC concurred with modifications to the LTM program; these were summarized in the *Addendum to the Final Long-Term Monitoring Work Plan, Colonie FUSRAP Site* (USACE 2014b).

2.1 Previous Long-Term Monitoring Program

As described in the Groundwater ROD, an LTM program has been implemented to assess the groundwater remedy. USACE conducted the monitoring program from November 2010 until April 2017. Well logs and construction details of the existing wells are included in Appendix C. Appendix D provides a historical data summary table that incorporates all VOC, radiological, MNA, and field data obtained over the previous LTM events from 2010 to 2021.

Site monitoring wells and piezometers no longer used in groundwater LTM were decommissioned from July to August 2015, as reported to NYSDEC in the draft final *Decommissioning Report, Monitoring Wells and Piezometers, Colonie FUSRAP Site* (CB&I 2015). The effort included the decommissioning of all lower aquifer monitoring wells. Well MW-32S was decommissioned on September 27, 2022 (DOE 2023).

Each monitoring event was documented by data summary reports that were transmitted by USACE to NYSDEC. Annual reports were also prepared to evaluate remedy progress and status. The LTM program evolved through optimization via stepwise reductions in the number of monitoring wells, constituents analyzed, groundwater zones monitored, and frequency of sampling based on remedy progress.

2010–2015 LTM Program

- The 2-year demonstration period was completed (USACE 2014b).

2015–2016 LTM Program Modifications

The 2015–2016 annual sampling report recommendations were to:

- Continue monitoring semiannually for 2 years.
- Sample monitoring well MW-08S annually for VOCs to continue monitoring upgradient groundwater conditions.
- Sample monitoring wells MW-30S, MW-34S, MW-37S, MW-41S, MW-42S, and MW-44S semiannually for VOCs and annually for MNA parameters.
- Discontinue sampling monitoring well MW-32S and decommission the well.
- Discontinue sampling for uranium.

The monitoring events of August 2016 and April 2017 were performed under the optimized LTM program, based on the recommendations from the 2015–2016 sampling events (USACE 2017a). NYSDEC preferred that monitoring well MW-32S be removed from the program but not be decommissioned.

2016–2017 LTM Program Modifications

The USACE 2016–2017 annual LTM report stated that a direct comparison of VOC results to TCGs and the graphic representation of these results over time clearly demonstrate that the MNA remedy is making progress toward TCG compliance. The report showed:

- Three monitoring wells (MW-08S, MW-37S, and MW-42S) showed no detections of any of the COCs above respective TCGs during the monitoring period.
- One monitoring well (MW-30S) had no exceedances of TCGs for the last four monitoring events.
- One monitoring well (MW-34S) showed no exceedance during the last monitoring event.
- Two monitoring wells (MW-41S and MW-44S) had one VOC (i.e., PCE) that exceeded its TCG.

The report recommended that LTM be conducted every 2 years with the following monitoring specifics:

- Continue sampling the seven active wells for PCE, TCE, cDCE, and VC concentrations.
- Retain monitoring well MW-08S as an upgradient control well.
- Sample onsite monitoring wells MW-30S, MW-41S, MW-42S, and MW-44S to bound the plume.
- Sample monitoring wells MW-34S and MW-37S to continue monitoring downgradient groundwater conditions.

2.2 Current Long-Term Monitoring Program

LM's LTM program is described in the *Long-Term Surveillance and Maintenance Plan for the Colonie, New York, Site* (DOE 2022). Groundwater sampling and analysis activities are conducted according to the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351), hereafter referred to as the Sampling and Analysis Plan (SAP). Field and laboratory data were validated according to the *LMS Environmental Data Validation Procedure*, LMS/PRO/S15870. The data validation memo is included as Appendix E.

Site-specific sampling instructions are stated in a program directive included in a SAP appendix. They direct that:

- Monitoring wells will be redeveloped using the guidance in the SAP and supporting guidance in *Inspection and Maintenance of Groundwater Monitoring and Extraction Wells* (LMS/PRO/S18459).
- Sample analyses will be conducted by a laboratory that is accredited under the New York State Department of Health Environmental Laboratory Approval Program for the category of parameters analyzed.
- Investigation-derived waste groundwater will be filtered onsite using a granular activated carbon medium and released to the ground.

2020 LTM Program Modifications

USACE transferred the site to LM in September 2019, and LM produced a Long-Term Surveillance and Maintenance Plan (DOE 2019). LM conducted a sampling event in July 2020. LM sampled each well for a suite of MNA parameters and well stability parameters and determined that geochemical conditions were similar to previous measurements. The report recommended the following specifics:

- Continue redeveloping wells before sampling events as indicated by SAP parameters.
- Continue sampling for well stabilization parameters and VOCs.
- Remove the stuck pump from well MW-44S.
- Decommission offsite well MW-32S.

2021 LTM Program Modifications

NYSDEC requested a 2021 sampling event take place in order for future events to match the previously established biennial schedule. The report contained the following recommendations:

- Sample groundwater every 2 years.
- Continue sampling for well stabilization parameters and VOCs.
- Sampling for MNA parameters is no longer warranted.

2.2.1 Monitoring Well Network

The current monitoring well network consists of the seven wells indicated in Table 2. The locations of the seven wells are shown in Figure 2. Section 3.6 provides details regarding purpose of each monitoring well.

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Table 2. Monitoring Well Network

Well ID	Installation Date	Coordinates ²		Inner Diameter	Top of Casing (TOC) Elevation [ft msl]	Ground Surface Elevation [ft msl]	Top of Screen		Pump Intake		Bottom of Screen		Well Total Depth ³	
		Northing [ft]	Easting [ft]				Depth (ft from TOC)	Elevation (ft amsl)	Depth (ft from TOC)	Elevation (ft amsl)	Depth (ft from TOC)	Elevation (ft amsl)	Depth (ft from TOC)	Elevation (ft amsl)
MW-08S	7/28/1988	1406050.14	679397.21	2"	230.90	228.90	8.00	222.90	10.50	220.40	13.00	217.90	15.00	215.90
MW-30S	8/2/2000	1405591.48	679047.79	2"	226.74	225.24	6.00	220.74	10.00	216.74	16.00	210.74	16.00	210.74
MW-34S	12/20/2001	1405327.12	679309.35	2"	219.84	218.33	10.01	209.83	15.01	204.83	20.01	199.83	20.01	199.83
MW-37S	1/27/2002	1405238.84	679671.42	2"	219.96	218.05	12.91	207.05	17.91	202.05	22.91	197.05	22.91	197.05
MW-41S	12/11/2006	1405453.53	679538.46	2"	224.82	223.15	11.67	213.15	16.67	208.15	21.67	203.15	23.67	201.15
MW-42S	12/12/2006	1405480.59	679426.27	2"	225.77	224.23	11.54	214.23	16.54	209.23	21.54	204.23	24.54	201.23
MW-44S ⁴	7/13/2020	1405455.84	679685.19	2"	225.11	223.36	13.91	211.20	18.91	206.20	23.91	201.20	23.91	201.20

Notes:

¹ Abbreviations: ft: feet, amsl: above mean sea level, TOC: top of casing,

² Coordinates Reference: New York State Plane NAD83 East Zone, Units: US survey feet.

³ Well total depths are from boring logs/wellconstruction diagrams prepared at the time of well construction.

⁴ Well MW-44S was damaged in 2019 and repaired on July 13, 2020. Coordinates and TOC elevation were re-surveyed on July 18, 2020.

2.3 July 2023 Long-Term Monitoring Event

The following sections discuss the data from the July 2023 monitoring event. During the event, groundwater level measurements were made, and groundwater samples were collected for chemical analysis. Fieldwork began on Monday, July 10, and concluded on Tuesday, July 11, 2023. The weather was warm and there were showers early Monday morning. There was standing water in the northern part of the site. All seven wells were found to be secured by locks and in good condition.

2.3.1 Well Sampling

The sampling technicians commenced work on Monday, July 10, at well MW-08S. There was standing water in the area surrounding the well and the depth to groundwater was higher than ground surface. The next well to be sampled was well MW-30S, which did not reach the target turbidity of less than 10 nephelometric turbidity units (NTU).

On Tuesday, July 11, technicians sampled wells MW-34S and MW-37S in the morning, followed by onsite wells MW-44S, MW-42S, and MW-41S in the afternoon. The turbidity at wells MW-30S, MW-37S, and MW-42S was higher than 10 NTU. All other sampling criteria were met.

All wells were sampled using the low-flow protocol specified in the SAP, with unfiltered samples. All seven wells were sampled for the same suite of analyses. The analyses included VOCs and well stability parameters shown in Table 3.

Table 3. Analysis Summary

Parameters (all are aqueous)	Analytical Method ^a	Field or Lab	Primary Samples	Field Duplicate	Waste Water ^b	Trip ^c Blank	No. of Samples
VOCs (PCE, TCE, cDCE, VC)	SW 8260B	Lab	7	1	1	1	10
Dissolved oxygen	SM 4500-O	Field	7	0	0	0	7
Temperature	SM 2550	Field	7	0	0	0	7
Oxidation-reduction potential	ASTM D1498-00	Field	7	0	0	0	7
pH	EPA 9045C	Field	7	0	0	0	7
Specific conductance	SM 2510	Field	7	0	0	0	7
Turbidity	EPA 2130	Field	7	0	0	0	7
Totals			49	1	1	1	52

Notes:

^a Test methods are described in EPA's SW-846 test methods for hazardous waste (EPA 2015).

^b Waste purge water was filtered through granular activated carbon prior to release.

^c One trip blank was used for the shipment of VOC samples.

Abbreviations:

ASTM = ASTM International

EPA = U.S. Environmental Protection Agency

SM = Standard Method, SW = solid waste

All samples were shipped to the laboratory by overnight delivery in a single shipment, meaning that only a single trip blank was needed. Only dedicated sampling equipment was used, so there was no need for an equipment rinsate sample. A field duplicate was collected at well MW-44S.

3.0 Monitoring Results

Field measurements and laboratory results of the July 2023 sampling event are discussed in the following sections. The current and previous field measurements and laboratory results from long term monitoring are summarized in Appendix D.

3.1 Groundwater Elevations

Groundwater elevations were measured from all seven of the active monitoring wells within 24 hours on July 10 and 11, 2023. All measurements were taken with the same water level meter. No weather events occurred during the measuring period (weather fronts can rapidly change water table elevations). Groundwater elevations are shown in Table 4. Groundwater elevations from the LTM program dating from 2008 to present are included in Appendix D.

Table 4. Groundwater Elevations, July 10–11, 2023

Well ID	Coordinates ^a		Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Depth Below Top of Casing to Water (ft)	Groundwater Elevation (ft amsl)
	Northing	Easting				
MW-08S	1406050.14	679397.21	228.90	230.90	1.98	228.92
MW-30S	1405591.48	679047.79	225.24	226.74	6.30	220.44
MW-34S	1405327.12	679309.35	218.33	219.84	5.64	214.20
MW-37S	1405238.84	679671.42	218.05	219.96	5.95	214.01
MW-41S	1405453.53	679538.46	223.15	224.82	5.03	219.79
MW-42S	1405480.59	679426.27	224.23	225.77	6.89	218.88
MW-44S	1405455.84	679685.19	223.36	225.11	4.23	220.88

Note:

^a Coordinate references: New York State Plane North American Datum of 1983 (NAD 83) East Zone. Units are U.S. survey feet.

The depth to groundwater ranged from a maximum of 228.92 ft amsl at upgradient well MW-08S to a minimum of 214.01 ft amsl at offsite well MW-37S. As noted in Section 2.3.1, the water table was higher than ground surface at well MW-08S. The water table averaged 0.52 ft lower than the previous monitoring event in July 2021. As indicated in Figure 4, the groundwater flow direction was to the south-southwest, which is consistent with all previous observations. Groundwater seepage velocity (V_s) can be calculated using the site’s average hydraulic conductivity (K) of 1.5 ft/d (USACE 2003) and an assumed effective porosity (n_e) of 30% (Ohio EPA 2006), where: $V_s = K \times I/n_e$. The gradient (I) was approximately 3% near well MW-41S. The seepage velocity near well MW-41S is calculated to be approximately 0.028 ft/d or approximately 10 ft per year.

3.2 Well Stability Parameters

Well stability parameters were measured after well purging once all the parameters had stabilized. Purging is an integral part of the low-flow sampling protocol immediately before groundwater samples are acquired from each well. In accordance with the SAP, the stability criteria are specific conductance: $\pm 10\%$, pH: ± 0.2 standard units, and turbidity: < 10 NTU.

The stabilization parameter results are summarized in Table 5. Well stability parameters dating from the beginning of the LTM program in 2008 up to 2023 are included in Appendix D.

Table 5. Well Stability Parameter Results

Well ID	MW-08S	MW-30S	MW-34S	MW-37S	MW-41S	MW-42S	MW-44S
Sample Date	7/10/23	7/10/23	7/11/23	7/11/23	7/10/23	7/10/23	7/10/23
Parameter							
Dissolved oxygen (mg/L)	1.83	16.2*	1.54	1.35	0.84	1.22	3.95
Oxidation-reduction potential (mV)	128	171	68.6	-88.6	-57.3	-112	125
pH (standard units)	6.50	6.80	6.94	7.04	6.69	7.08	6.78
Specific conductance ($\mu\text{S}/\text{cm}$)	520	420	500	439	925	428	812
Temperature ($^{\circ}\text{C}$)	15.6	13.9	13.0	13.3	13.3	14.8	16.0
Turbidity (NTU)	2.12	16.7	nm*	nm*	36.0	14.0	9.25

Note:

* Indicates an anomalous reading.

Abbreviations:

- $\mu\text{S}/\text{cm}$ = microsiemens per centimeter
- mg/L = milligrams per liter
- mV = millivolts
- nm = not measured
- NTU = nephelometric turbidity units

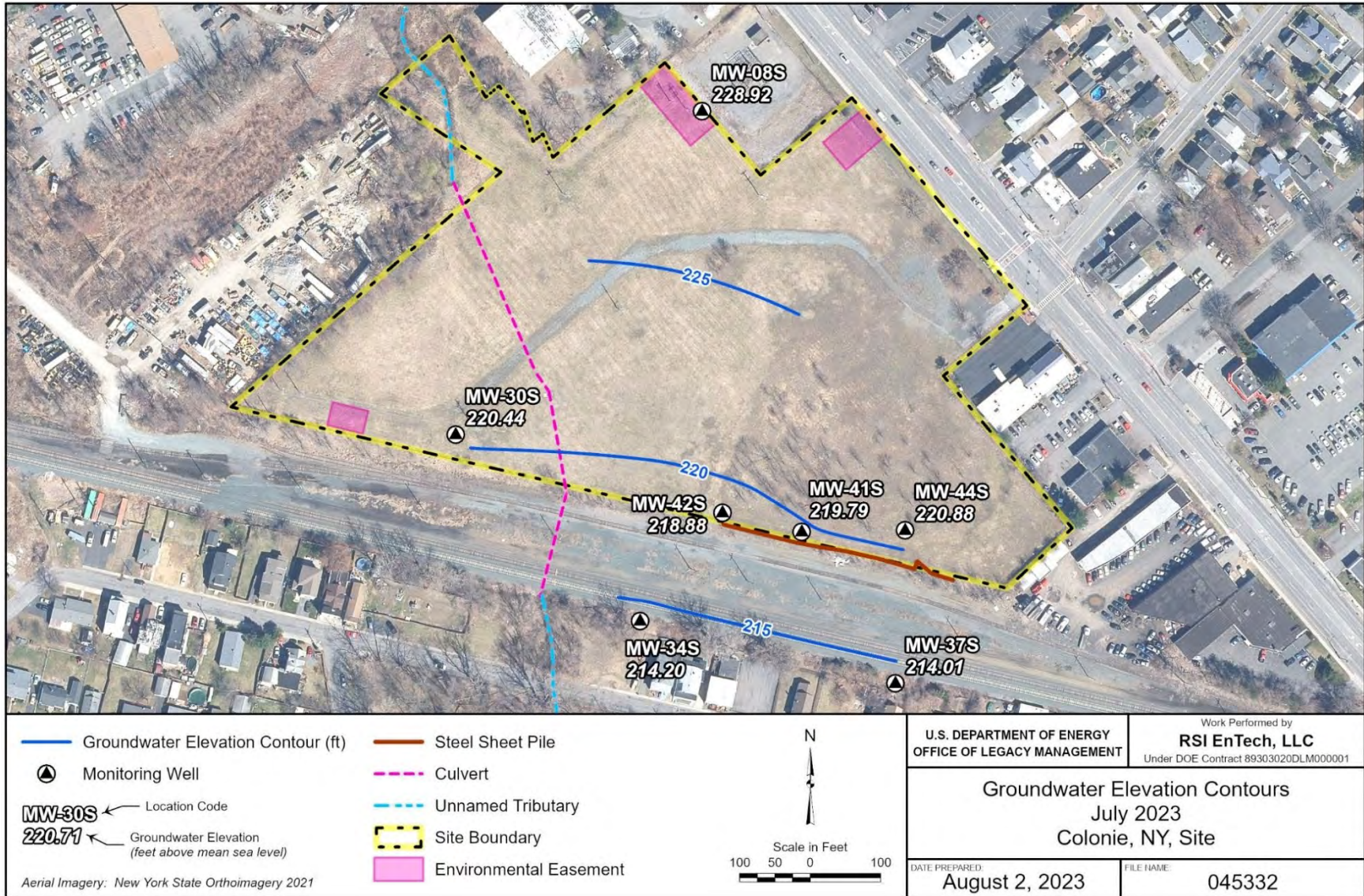


Figure 4. Groundwater Elevation Contours, July 2023

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Dissolved oxygen (DO) concentrations ranged from 0.84 milligram per liter (mg/L) at monitoring well MW-41S to 3.95 mg/L at well MW-44S and averaged 1.53 mg/L. The theoretical maximum DO at the elevation of the Colonie site and the given groundwater temperature is approximately 10 mg/L, indicating that the DO reading at well MW-30S is an anomaly, and was not included in statistical averaging. DO readings have typically ranged from 0 to 3 mg/L during previous sampling events.

Oxidation-reduction potential (ORP) was measured using a silver/silver chloride reference electrode and ranged from -112 millivolts (mV) at well MW-42S to +171 mV at well MW-30S and averaged 33.6 mV. The measurements suggest slightly oxidizing conditions. ORP has historically been in the same range of approximately -100 to +200 mV.

The pH ranged from a minimum of 6.50 at well MW-08S to a maximum of 7.08 in well MW-42S, and the average (logarithmic mean) was 6.72. All pH results have historically been circumneutral.

Specific conductance ranged from a minimum of 420 microsiemens per centimeter ($\mu\text{S}/\text{cm}$) at well MW-30S to a maximum of 925 $\mu\text{S}/\text{cm}$ at well MW-41S and averaged 578 $\mu\text{S}/\text{cm}$. Drinking water typically ranges from 200 to 800 $\mu\text{S}/\text{cm}$. The U.S. Environmental Protection Agency (EPA) secondary maximum contaminant level for total dissolved solids is 500 mg/L, which is equivalent to a specific conductance of 780 $\mu\text{S}/\text{cm}$ (EPA 2020).

Temperature of the groundwater measured in the flow-through cell ranged from a minimum of 13.0 °C at well MW-34S to a maximum of 16.0 °C at well MW-44S and averaged 14.3 °C.

Turbidity ranged from a minimum of 2.12 NTU at well MW-08S to a maximum of 36.0 NTU at well MW-41S and averaged 15.6 NTU. The turbidimeter could not be calibrated on the second day of sampling, so turbidity readings are missing from wells MW-34S and MW-37S. Although average turbidity decreased compared to the 2021 sampling event, three of the seven wells had turbidities above 10 NTU this year which was the same number as last year.

3.3 Contaminant Concentrations

All seven wells were sampled for the COC VOCs by EPA SW-846 Method 8260B (EPA 2015). Well MW-41S was sampled in duplicate. Table 6 shows VOC analysis results for the present and previous sampling events in comparison to the TCGs. Analysis results from the LTM program dating from 2008 to present are also included in Appendix D. Figure 5 shows VOC results on a map of the site.

There was one single exceedance of TCGs in July 2023; PCE exceeded the TCG of 5.5 $\mu\text{g}/\text{L}$ in well MW-41S. The PCE concentration was 8.6 $\mu\text{g}/\text{L}$.

Upgradient well MW-08S has consistently had nondetectable results for VOCs. The apparent decrease in VOC concentrations in July 2020, as shown in Table 6, is due to the decrease in the method detection limits from 1.0 to 0.333 $\mu\text{g}/\text{L}$.

Cross-gradient well MW-30S exhibited a continued decrease in PCE concentration from 6.67 $\mu\text{g}/\text{L}$ in July 2020 to 2.88 $\mu\text{g}/\text{L}$ in July 2021, to 0.8 $\mu\text{g}/\text{L}$ in July 2023.

Offsite well MW-34S continues to exhibit VOC concentrations at or near their respective detection limits. The four COCs exhibit consistently decreasing concentrations.

Offsite well MW-37S exhibited a cDCE concentration of 33.3 µg/L, while PCE, TCE, and VC were near the detection limit.

Onsite well MW-41S exhibited a PCE concentration of 8.6 µg/L, which exceeds the TCG of 5.5 µg/L. The result is less than the previous sampling event in 2021, which was 12.7 µg/L. The well exhibits a trend of decreasing concentration over time as shown in Figure 6. TCE and cDCE concentrations were slightly lower than the previous sampling event, while VC was slightly above the detection limit.

Onsite well MW-42S had no exceedances. VOC concentrations are similar to offsite well MW-37S because cDCE concentration is elevated while the other VOCs are nondetectable or near their detection limits, as shown in Table 6.

Onsite well MW-44S had no detected VOC results for this event and the previous one.

3.4 Temporal and Spatial Changes in COC Results

Most detectable COCs had lower concentrations in July 2023 compared to July 2021. Although there were two exceedances of TCGs in July 2020, there was only one exceedance in July 2021 and one exceedance in July 2023. As in previous events, PCE remains elevated near the former source zone: the southeast corner of the building formerly near well MW-41S. PCE remains near the detection limit in downgradient wells MW-34S and MW-37S. The PCE breakdown products TCE and cDCE show slight upticks in concentrations in wells MW-30S and MW-37S from July 2021 to July 2023, albeit at concentrations below the reporting limit (J flagged in Table 6).

As shown in the time-series plot of well MW-41S (Figure 6), PCE continues to decline in the single well where PCE exceeds the cleanup goal.

Table 6. VOC Analysis Results

Sample Date			11/2010		3/2011		5/2011		8/2011		2/2012		5/2012		8/2012		8/2015		3/2016		8/2016		4/2017		7/2020		7/2021		7/2023	
Well	Analyte	Target Cleanup Goal	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q	Result [µg/L]	Q		
MW-08S	PCE	5.5	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS		1.0	U	1.0	U	0.333	U	0.333	U	0.333	U
	TCE	18.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS		1.0	U	1.0	U	0.333	U	0.333	U	0.333	U
	cDCE	1,800	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS		1.0	U	1.0	U	0.333	U	0.333	U	0.333	U
	VC	1.4	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS		1.0	U	1.0	U	0.333	U	0.333	U	0.333	U
MW-30S	PCE	5.5	5.6		4.7		3.6		4.4		4.5		4.6		6.0		2.8		1.5		3.9		3.1	J	6.67		2.88		0.8	J
	TCE	18.0	1.4		1.1		0.5	J	1.6		1.7		1.6		2.4		1.6		0.52	J	1.2		1.0	U	1.54		0.333	U	0.49	J
	cDCE	1,800	0.56	J	0.67	J	1.0	U	1.3		1.4		1.3		2.3		2.0		0.76	J	0.96	J	1.0	U	0.54	J	0.333	U	0.52	J
	VC	1.4	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.333	U	0.333	U	0.333	U
MW-34S	PCE	5.5	0.96		0.75	J	0.66	J	0.71	J	0.70	J	0.72	J	0.73	J	0.45	J	0.49	J	0.61	J	0.75	J	0.47	J	0.51	J	0.37	J
	TCE	18.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.29	J	0.333	U	0.333	U	0.333	U
	cDCE	1,800	1.6		0.96	J	0.93	J	1.2		1.1	J	0.86	J	1.5		0.91	J	0.79	J	1.3		1.2		1.34		1.09		1.04	
	VC	1.4	2.5		1.8		2.4		2.2		2.3		2.0		3.4		1.7	J	1.1		1.6		1.1		0.97	J	0.86	J	0.74	J
MW-37S	PCE	5.5	0.25	J	1.0	U	0.25	J	0.39	J	0.58	J	0.21	J	0.37	J	0.49	J	0.38	J	1.0	U	0.50	J	0.333	U	0.333	U	0.48	J
	TCE	18.0	0.36	J	0.33	J	0.41	J	0.63	J	0.68	J	0.31	J	0.53	J	0.58	J	0.62	J	0.28	J	0.42	J	0.333	U	0.333	U	0.48	J
	cDCE	1,800	17.0		27		27.0		34.0		28		39		48.0		52.0		39		51		49		45.6		41.6		33.3	
	VC	1.4	0.50	J	0.66	J	0.91	J	0.53	J	0.40	J	0.63	J	0.69	J	0.59	J	0.35	J	0.48	J	0.65	J	0.333	U	0.62	J	0.86	J
MW-41S	PCE	5.5	26.0		15		39.0		24		30.0		28		30.0		14.0		25		18		24		15.0		12.7		8.6	
	TCE	18.0	8.3		5.3		11.0		7.1		6.8		7.4		8.6		4.5		6.1		5.3		5.1		4.93		4.86		2.88	
	cDCE	1,800	1.0		3.5		6.8		5.2		4.4		5.2		5.1		4.2		4.7		4.7		4.8		5.77		6.35		4.93	
	VC	1.4	0.66	J	0.58	J	0.92	J	0.69	J	1.0		1.2		1.0		0.90	J	0.53	J	0.62	J	0.58	J	0.33	U	0.76	J	1.10	
MW-42S	PCE	5.5	0.43		0.20	J	0.37	J	0.23	J	0.22	J	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.34	J	0.33	U	0.33	U	0.33	U
	TCE	18.0	1.3		1.0		0.75	J	0.73	J	0.54	J	0.73	J	0.59	J	0.65	J	0.44	J	0.45	J	0.75	J	0.52	J	0.33	U	0.33	U
	cDCE	1,800	4.3		3.4		9.2		12		6.6		7.4		11.0		13.0		7.2		8.5		7.6		7.00		5.31		4.88	
	VC	1.4	1.0	U	1.0	U	0.22	J	1.0	U	0.22	J	1.0	U	0.21	J	1.0	U	1.0	U	1.0	U			0.33	U	0.33	U	0.33	U
MW-44S	PCE	5.5															3.1		13		15		18		0.33	U	0.33	U	0.33	U
	TCE	18.0															4.0		7.7		9.9		9.9		0.33	U	0.33	U	0.33	U
	cDCE	1,800															3.1		2.8		3.5		3.3		0.51	J	0.33	U	0.33	U
	VC	1.4															1.0	U	1.0	U	1.0	U	1.0	U	0.33	U	0.33	U	0.33	U

Note:
 Bold, shaded entry indicates value exceeds the target cleanup goal.

Abbreviations:
 cDCE = cis-1,2-dichloroethene
 J = estimated value below the method reporting limit
 µg/L = micrograms per liter
 NS = not sampled
 PCE = tetrachloroethene
 Q = qualifier assigned by laboratory
 TCE = trichloroethene
 U = not detected at method reporting limit
 VC = vinyl chloride

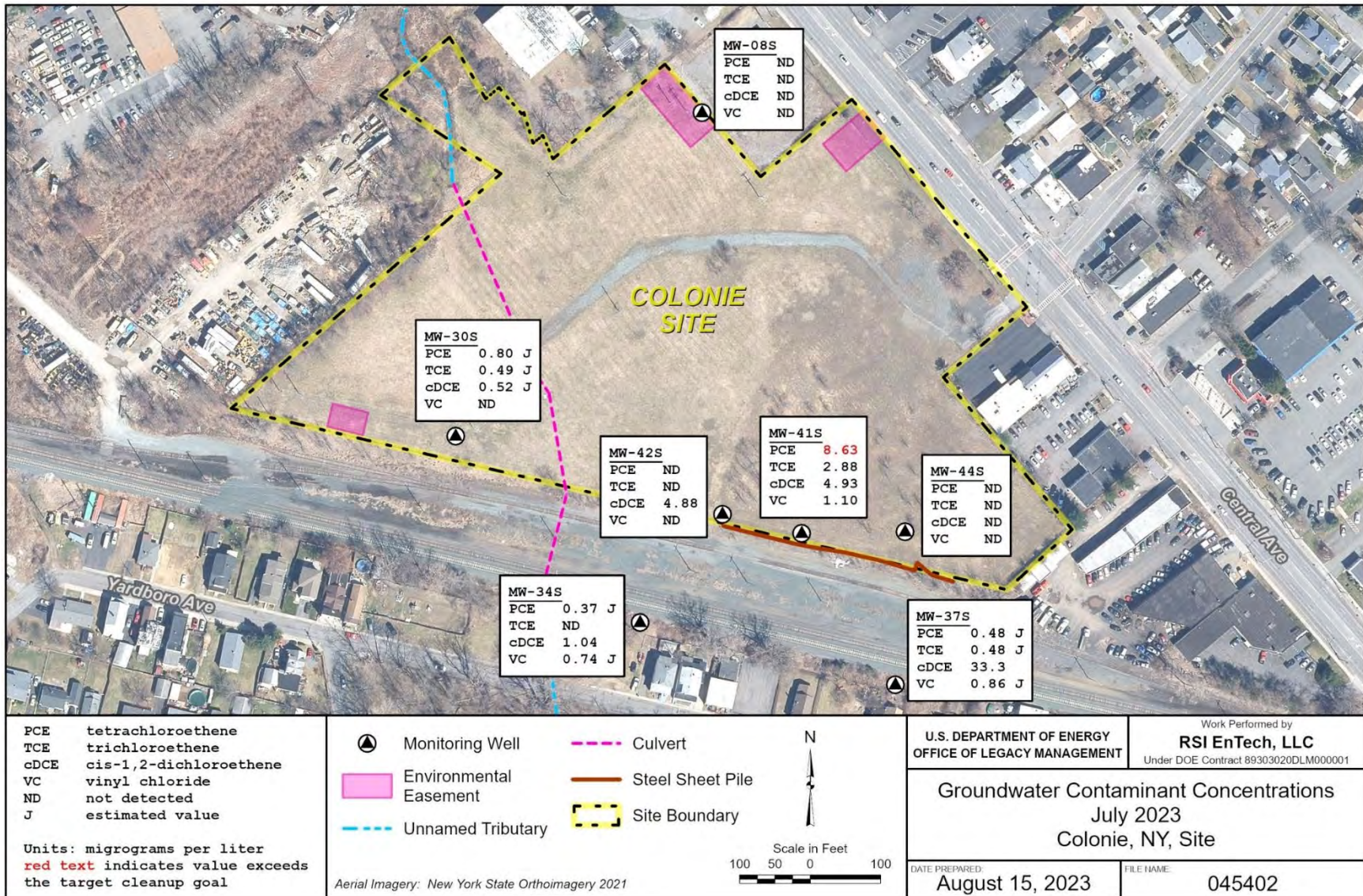


Figure 5. Groundwater Contaminant Concentrations, July 2023

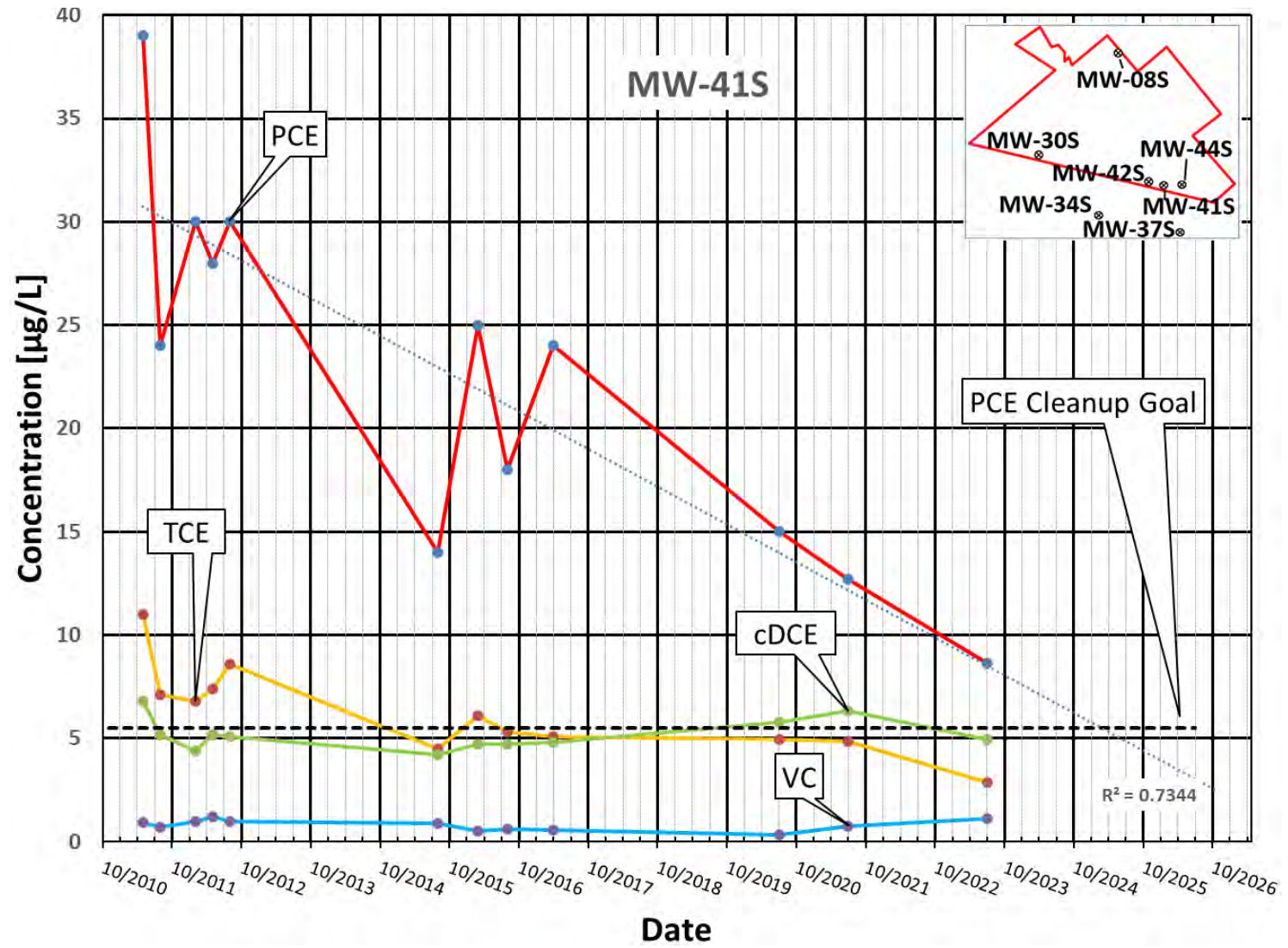


Figure 6. Graph of VOCs Versus Time at MW-41S

3.5 Comparison of COC Results to TCGs

As observed during the previous two monitoring events, PCE was the only COC to exceed its TCG. The PCE exceedances have previously occurred in three wells. The only other VOC to show exceedances was VC in well MW-34S, but this well has not exhibited an exceedance since 2016.

3.6 Evaluation of the Monitoring Well Network

The following discussion reviews the utility of each monitoring well:

- **MW-08S:** This upgradient well serves to indicate potential upgradient influences and defines much of the gradient across the site. Analysis results have been nondetectable from all sampling events.
- **MW-30S:** This onsite well shows groundwater conditions near the former landfill location.
- **MW-34S:** This offsite downgradient well serves as a sentinel to demonstrate that contaminant migration is not occurring.
- **MW-37S:** This is another sentinel well downgradient from the former building location. There has not been a TCG exceedance at this well.
- **MW-41S:** This well indicates contaminant concentrations from the former building's source zone. It exhibits the single PCE exceedance at the site, but it is decreasing.
- **MW-42S:** This well indicates contaminant concentrations from the former building's source zone. The four VOCs are below their TCGs here, and concentrations continue to decrease. This well is redundant to well MW-41S.
- **MW-44S:** This well indicates groundwater contaminant concentrations from the former building's source zone. Contaminant concentrations have been nondetectable during the last three sampling events.

4.0 Conclusions and Recommendations

4.1 Conclusions

The following conclusions were made based on the remedy evaluation:

- Groundwater flow direction remains to the southwest consistent with the previous measurements.
- The TCGs are exceeded for only one COC in a single well. PCE was the only COC to exceed its TCG. This exceedance occurred in well MW-41S but shows consistently declining concentrations.
- All wells may be in compliance with TCGs by the next sampling event in July 2025.

4.2 Recommendations

This section presents recommendations based on the review of groundwater data trends and comparison of analytical results to TCG concentrations. The following actions are recommended:

- Sample groundwater in 2 years (2025)
- Continue sampling for well stabilization parameters and COCs

5.0 References

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Appendix A

Groundwater Record of Decision Figures 6 and 7

CENTRAL AVENUE N.Y.S. ROUTE 5
(99' RIGHT OF WAY)



- LEGEND**
- MW (with symbol) MONITORING WELL USED FOR LONG-TERM MONITORING
 - PZ (with symbol) GEOPROBE LOCATION
 - CB CATCH BASIN
 - GUY WIRE
 - IRF IRON ROD FOUND
 - MW (with symbol) MONITORING WELL
 - PZ-14B PIEZOMETER
 - SMH SANITARY MANHOLE
 - CMON SQUARE CONCRETE MONUMENT
 - STMH STORMWATER MANHOLE
 - TMH TELEPHONE MANHOLE
 - TSB TRAFFIC SIGNAL BOX
 - UP UTILITY POLE
 - WMTR WATER METER
 - WSO WATER SHUT-OFF
 - YCIRF YELLOW CAPPED IRON ROD FOUND
 - OVERHEAD ELECTRIC
 - UNDERGROUND PIPE
 - FENCE LINE
 - HOPE HIGH DENSITY POLYETHYLENE PIPE
 - RCP REINFORCED CONCRETE PIPE
 - ONSITE PORTION OF VOC PLUME

- GENERAL NOTES:**
1. THIS SURVEY IS BASED ON PHOTOGRAMMETRIC MAPPING PREPARED BY LOCKWOOD MAPPING, INC., PHOTOS DATED MAY 13, 1998.
 2. FIELD EDIT BASED ON SITE WORK CONDUCTED THROUGH JULY 2005
 3. MONITORING WELLS REMOVED DUE TO EXCAVATION: WELL 19S/NOV 2002, WELL 7S/NOV 2004, WELL 1F/JUN 2005, WELL 5S/M/F/JUL 2005.
 4. EXCAVATION LIMIT CONTOURS PROVIDED BY CT MALE ASSOCIATES JULY 2005, ELEVATIONS SHOWN IN COMPLETED UNITS ARE BOTTOM OF EXCAVATION.
 5. TOPOGRAPHIC INFORMATION TO THE SOUTH OF YARBORO AVENUE SURVEYED BY CT MALE, INC. 2002.
 6. ONLY AVERAGE VOC VALUES ARE SHOWN FOR WELLS.
 7. GEOPROBE CONCENTRATIONS REPRESENT HISTORICAL RI DATA.
 8. ALL UTILITIES ARE NOT SHOWN.
 9. CONTAMINANT CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA SHOWN ON THE FIGURE. GEOPROBE DATA INCLUDES PHASE I, II, AND III RESULTS (OCT 1999 TO DEC 2001). ONLY GEOPROBE DETECTIONS ARE SHOWN.
 10. WELL DATA IS AVERAGE OF FOUR 2003 TO 2005 SEMIANNUAL SAMPLE EVENTS (SECOND HALF 2003 TO FIRST HALF 2005) EXCEPT: DATA FOR WELL 05S IS AVE. OF THREE SAMPLE EVENTS; AND DATA FOR WELL 58S AND PZ12 IS AVE. OF TWO SAMPLE EVENTS; AND DATA FOR WELLS 07S AND 40S IS BASED ON ONE SAMPLE EVENT.
 11. VOC CONCENTRATIONS SHOWN FOR THE GEOPROBES ARE THE MAXIMUM OF THE SHALLOW UPPER SILT LAYER (0' - 15') AND THE DEEP UPPER SILT LAYER (15' - 30').
 12. VOC WAS NOT DETECTED AT LOCATIONS WHERE NO CONCENTRATION DATA IS PROVIDED.



U.S. ARMY CORPS OF ENGINEERS
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

FIGURE 6
ESTIMATED EXTENT OF ONSITE VOCs
IN EXCESS OF RAO CONCENTRATION (2003-2005)

Cabrera Services	COLONIE FUSRAP SITE 1130 CENTRAL AVENUE, ALBANY, NY 12205	
SCALE: 1" = 60'	DRAWING NO. 837935D92	SHEET NO. 1 OF 1
		REVISION NO.

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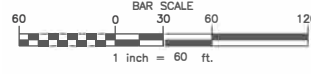
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LEGEND

	MONITORING WELL USED FOR LONG-TERM MONITORING
	CATCH BASIN
	GUY WIRE
	IRON ROD FOUND
	MONITORING WELL
	PIEZOMETER
	SANITARY MANHOLE
	SQUARE CONCRETE MONUMENT
	STORMWATER MANHOLE
	TELEPHONE MANHOLE
	TRAFFIC SIGNAL BOX
	UTILITY POLE
	WATER METER
	WATER SHUT-OFF
	YELLOW CAPPED IRON ROD FOUND
	OVERHEAD ELECTRIC
	UNDERGROUND PIPE
	FENCE LINE
	HDPPE HIGH DENSITY POLYETHYLENE PIPE
	RCP REINFORCED CONCRETE PIPE
	SOIL UNITS WHERE VOC CONTAMINATED SOILS EXCAVATED
	VOC CONCENTRATION IN GROUNDWATER (UG/L)

- GENERAL NOTES:**
1. THIS SURVEY IS BASED ON PHOTOGRAMMETRIC MAPPING PREPARED BY LOCKWOOD MAPPING, INC., PHOTOS DATED MAY 13, 1998.
 2. FIELD EDIT BASED ON SITE WORK CONDUCTED THROUGH JULY 2005
 3. MONITORING WELLS REMOVED DUE TO EXCAVATION: WELL 19S/NOV 2002, WELL 7S/NOV 2004, WELL 1F/JUN 2005, WELL 5S/M/F/JUL 2005.
 4. EXCAVATION LIMIT CONTOURS PROVIDED BY CT MALE ASSOCIATES JULY 2005, ELEVATIONS SHOWN IN COMPLETED UNITS ARE BOTTOM OF EXCAVATION.
 5. TOPOGRAPHIC INFORMATION TO THE SOUTH OF YARBORO AVENUE SURVEYED BY CT MALE, INC. 2002.
 6. ONLY AVERAGE VOC VALUES ARE SHOWN FOR WELLS.
 7. GEOPROBE CONCENTRATIONS REPRESENT HISTORICAL RI DATA.
 8. ALL UTILITIES ARE NOT SHOWN.
 9. CONTAMINANT CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA SHOWN ON THE FIGURE. GEOPROBE DATA INCLUDES PHASE I, II, AND III RESULTS (OCT 1999 TO DEC 2001). ONLY GEOPROBE DETECTIONS ARE SHOWN.
 10. WELL DATA IS AVERAGE OF FOUR 2003 TO 2005 SEMIANNUAL SAMPLE EVENTS (SECOND HALF 2003 TO FIRST HALF 2005) EXCEPT; DATA FOR WELL 05S IS AVE. OF THREE SAMPLE EVENTS; AND DATA FOR WELL 36S AND PZ12 IS AVE. OF TWO SAMPLE EVENTS; AND DATA FOR WELLS 07S AND 40S IS BASED ON ONE SAMPLE EVENT.
 11. VOC CONCENTRATIONS SHOWN FOR THE GEOPROBES ARE THE MAXIMUM OF THE SHALLOW UPPER SILT LAYER (0' -15') AND THE DEEP UPPER SILT LAYER (15' -30').
 12. VOC WAS NOT DETECTED AT LOCATIONS WHERE NO CONCENTRATION DATA IS PROVIDED.



	U.S. ARMY CORPS OF ENGINEERS FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM		
	FIGURE 7 SOIL EXCAVATION AREAS AND ESTIMATED VOC PLUME IN GROUNDWATER (2003-2005)		
Cabrera Services	COLONIE FUSRAP SITE 1130 CENTRAL AVENUE, ALBANY, NY 12205		
SCALE: 1" = 60'	DRAWING NO. 837935D92	SHEET NO. 1 OF 1	REVISION NO.

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Appendix B

Groundwater Remedial Investigation Data Summary Tables

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	28-Jul-08		29-Oct-08		18-Feb-09		21-May-09		1-Dec-98		1-May-99		1-Oct-99		1-Jan-00	
Well ID		MW-02S		MW-02S		MW-02S		MW-02S		MW-08S		MW-08S		MW-08S		MW-08S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	-		-		-		-		10	U	5	U	10	U	-	
PCE	µg/L	-		-		-		-		10	U	5	U	10	U	-	
TCE	µg/L	-		-		-		-		10	U	5	U	10	U	-	
VC	µg/L	-		-		-		-		10	U	10	U	10	U	-	
cis-1,2-DCE	µg/L	-		-		-		-		10^	U	5^	U	10^	U	-	
trans-1,2-DCE	µg/L	-		-		-		-								-	
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		1.7	B	2.9	U	2.1	U	-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		2.3	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	1.00	J	1.15	J	1.24	J	0.967	J	-		-		-		-	
DOC	mg/L	1.34	J	0.940	J	1.190	J	0.953	J	-		-		-		-	
Ethane	µg/L	2.0	U	2.0	U	2.0	U	2.0	U	-		-		-		-	
Ethene	µg/L	2.0	U	2.0	U	2.0	U	2.0	U	-		-		-		-	
Methane	µg/L	12.0		14		13		8.7		-		-		-		-	
Nitrate-N	mg/L	0.10	U	14	J	0.10	U	0.10	U	-		-		-		-	
Sulfate	mg/L	46.7		14		62.7		45.0		-		-		-		-	
Chloride	mg/L	84.7		14		162		92.8		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	0.43		14		0.50	U	0.40		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	1.2		14		0.6		1.4		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.20		7.63		7.42		7.27		-		-		-		-	
Specific Conductance	mS/cm	0.510		0.494		0.702		0.461		-		-		-		-	
Turbidity	NTU	76.0		23.0		22.4		1.5		-		-		-		-	
Dissolved Oxygen	mg/L	3.36		NM		2.12		9.97		-		-		-		-	
Temperature	°C	14.11		13.26		10.72		11.99		-		-		-		-	
ORP	mV	-72.8		-133.0		-156.8		-106.2		-		-		-		-	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	1-Mar-00		1-Aug-00		1-Dec-00		1-Feb-01		1-Aug-01		1-Dec-01		1-Feb-02		2-Jun-02	
Well ID		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	10	U	10	U	-		1	U	0.83	U	-		0.5	U	0.5	U
PCE	µg/L	10	U	10	U	-		1	U	0.78	U	-		0.5	U	0.5	U
TCE	µg/L	10	U	10	U	-		1	U	0.49	U	-		0.5	U	0.5	U
VC	µg/L	10	U	10	U	-		2	U	1.0	U	-		0.5	U	0.5	U
cis-1,2-DCE	µg/L	10 [^]	U	10 [^]	U	-		1 [^]	U	0.49	U	-		0.5	U	0.5	U
trans-1,2-DCE	µg/L					-				0.84	U	-		0.5	U	0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.3	U	1.3	U	-		4.3		1.2	U	-		2.8	U	2.8	U
Lead (Dissolved)	µg/L	-		-		1.3	U	3.2		-		1.2	U	2.8	U	2.8	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		-		-		-		-		-		-		-	
Specific Conductance	mS/cm	-		-		-		-		-		-		-		-	
Turbidity	NTU	-		-		-		-		-		-		-		-	
Dissolved Oxygen	mg/L	-		-		-		-		-		-		-		-	
Temperature	°C	-		-		-		-		-		-		-		-	
ORP	mV	-		-		-		-		-		-		-		-	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	1-Mar-03		3-Dec-03		4-Jul-04		4-Dec-04		5-Jun-05		5-Dec-05		1-Dec-06		26-Jun-07	
Well ID		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.3	J	0.5	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U
TCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.2	R	2.2	U	3	U	2	UJ	2	U	2	U	2	U	2	U
Lead (Dissolved)	µg/L			2.2	U	25	U	25	U	2.2	UJ	2	U	-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		6.65		-		6.26		6.74		6.8		6.71		6.58	
Specific Conductance	mS/cm	-		0.452		-		0.353		0.432		0.633		0.336		0.314	
Turbidity	NTU	-		0.0		-		1.4		5.3		0.0		0.0		1.3	
Dissolved Oxygen	mg/L	-		4.58		-		0.71		2.28		0.86		1.05		0.64	
Temperature	°C	-		6.22		-		16.72		8.63		13.17		10.02		11.28	
ORP	mV	-		222.2		-		282.3		192.4		221.1		230.6		84.3	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	28-Dec-08		28-Jul-08		29-Oct-08		18-Feb-09		21-May-09		1-Dec-98		1-May-99		1-Oct-99	
Well ID		MW-08S		MW-08S		MW-08S		MW-08S		MW-08S		MW-010S		MW-010S		MW-010S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U
PCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U
TCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U
VC	µg/L	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	10	U	10	U	10	U
cis-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	10 [^]	U	5 [^]	U	10 [^]	U
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U						
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		1.0	U	1.0	U	1.0	U	1.0	U	2.4	B	2.9	U	2.1	U
Lead (Dissolved)	µg/L	-		1.0	U	1.0	U	1.0	U	1.0	U	-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.36		5.52		6.68		7.00		6.20		-		-		-	
Specific Conductance	mS/cm	0.486		0.401		0.280		0.483		0.418		-		-		-	
Turbidity	NTU	10.4		1.3		1.0		0.0		0.0		-		-		-	
Dissolved Oxygen	mg/L	0.97		0.95		0.45		0.00		4.08		-		-		-	
Temperature	°C	13.90		16.61		12.95		5.80		13.19		-		-		-	
ORP	mV	161.4		520.3		150.0		115.0		198.1		-		-		-	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	1-Jan-00		1-Mar-00		1-Aug-00		1-Dec-00		1-Feb-01		1-Aug-01		1-Dec-01		1-Feb-02	
Well ID		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	-		10	U	10	U	-		1	U	0.83	U	-		0.5	U
PCE	µg/L	-		10	U	10	U	-		1	U	0.78	U	-		0.5	U
TCE	µg/L	-		10	U	10	U	-		1	U	0.49	U	-		0.5	U
VC	µg/L	-		10	U	10	U	-		2	U	1.0	U	-		0.5	U
cis-1,2-DCE	µg/L	-		10 [^]	U	10 [^]	U	-		1 [^]	U	0.49	U	-		0.5	U
trans-1,2-DCE	µg/L	-						-				0.84	U	-		0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		2.3	U	1.3	UV	-		10		1.2	U	-		2.8	U
Lead (Dissolved)	µg/L	2.3	U	-		-		3.6	V	3.4		-		1.2	U	2.8	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		-		-		-		-		-		-		-	
Specific Conductance	mS/cm	-		-		-		-		-		-		-		-	
Turbidity	NTU	-		-		-		-		-		-		-		-	
Dissolved Oxygen	mg/L	-		-		-		-		-		-		-		-	
Temperature	°C	-		-		-		-		-		-		-		-	
ORP	mV	-		-		-		-		-		-		-		-	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	1-Jun-02		1-Mar-03		3-Dec-03		4-Jul-04		4-Dec-04		5-Jun-05		5-Dec-05		1-Dec-06		26-Jun-07	
Well ID		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S		MW-010S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TCE	µg/L	0.5	U	0.5	U	0.5	U	0.21	J	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	0.5	U	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-DCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.8	U	2.2	U	2.2	U	3	U	3	U	2	U	2	U	2	U	2	U
Lead (Dissolved)	µg/L	10	U	2.2	U	2.2	U	25	U	25	U	25	U	2	U	-	-	-	-
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Beta	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Uranium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combined Radium 226/228	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Alpha - Dissolved	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Beta - Dissolved	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Uranium - Dissolved	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combined Radium 226/228 - Dissolved	pCi/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethane	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethene	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methane	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soluble Manganese, Mn(II)	mg/L																		
Ferrous Iron, Fe(II)	mg/L																		
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-	-	7.95	-	-	-	7.98	-	8	-	7.91	-	7.74	-	8.00	-	6.90	-
Specific Conductance	mS/cm	-	-	0.224	-	-	-	0.331	-	0.385	-	0.355	-	0.242	-	0.227	-	0.347	-
Turbidity	NTU	-	-	3.8	-	-	-	0	-	0.5	-	0.2	-	3.2	-	0.0	-	5.2	-
Dissolved Oxygen	mg/L	-	-	3.8	-	-	-	1.7	-	1.48	-	2.13	-	2.72	-	1.46	-	0.22	-
Temperature	°C	-	-	10.06	-	-	-	12.26	-	10.43	-	11.25	-	9.78	-	10.76	-	16.58	-
ORP	mV	-	-	-14.7	-	-	-	-79.9	-	-69.2	-	101.3	-	-42.5	-	-94.1	-	201.3	-

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	28-Jul-08		29-Oct-08		18-Feb-09		21-May-09		1-Dec-98		1-May-99		1-Oct-99		1-Jan-00	
Well ID		MW-010S		MW-010S		MW-010S		MW-010S		MW-21S		MW-21S		MW-21S		MW-21S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U	-	
PCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U	-	
TCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	10	U	5	U	10	U	-	
VC	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	10	U	10	U	10	U	-	
cis-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	10 [^]	U	5 [^]	U	10 [^]	U	-	
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U							-	
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	0.588	J	1.0	U	1.0	U	1.0	U	2.3	B	2.9	U	2.1	U	-	
Lead (Dissolved)	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	-		-		-		2.3	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	5.71		7.94		7.82		7.80		-		-		-		-	
Specific Conductance	mS/cm	0.297		0.255		0.355		0.266		-		-		-		-	
Turbidity	NTU	NM		0.0		1.2		0.0		-		-		-		-	
Dissolved Oxygen	mg/L	2.91		0.74		7.38		-		-		-		-		-	
Temperature	°C	20.78		12.92		7.51		14.07		-		-		-		-	
ORP	mV	411.7		-117.8		-95.6		-9.0		-		-		-		-	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	1-Mar-00		1-Aug-00		1-Dec-00		1-Feb-01		1-Aug-01		1-Dec-01		1-Feb-02		2-Jun-02	
Well ID		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	10	U	10	U	-		1	U	0.83	U	-		0.5	U	0.5	U
PCE	µg/L	10	U	10	U	-		1	U	0.78	U	-		240	D	41	D
TCE	µg/L	10	U	10	U	-		1	U	0.49	U	-		23	V	3	
VC	µg/L	10	U	10	U	-		2	U	1.0	U	-		0.5	U	0.5	U
cis-1,2-DCE	µg/L	10 [^]	U	10 [^]	U	-		1 [^]	U	0.49	U	-		0.5	U	0.5	U
trans-1,2-DCE	µg/L					-				0.84	U	-		0.5	U	0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.3	U	1.3	U	-		2.1	B	1.2	U	-		2.8	U	2.8	U
Lead (Dissolved)	µg/L	-		-		1.3	U	1.9	B	-		1.2	U	2.8	U	2.8	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		-		-		-		-		-		-		-	
Specific Conductance	mS/cm	-		-		-		-		-		-		-		-	
Turbidity	NTU	-		-		-		-		-		-		-		-	
Dissolved Oxygen	mg/L	-		-		-		-		-		-		-		-	
Temperature	°C	-		-		-		-		-		-		-		-	
ORP	mV	-		-		-		-		-		-		-		-	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	1-Mar-03		4-Dec-03		4-Jul-04		4-Dec-04		5-Jun-05		30-Nov-05		1-Dec-05		1-Dec-06	
Well ID		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U
PCE	µg/L	7		3		2.5		1.7		1.5	J	-		1.0	U	0.5	J
TCE	µg/L	0.5		0.5	U	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U
VC	µg/L	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	-		2.0	U	2.0	U
cis-1,2-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U
trans-1,2-DCE	µg/L	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.2	U	2.2	U	3	U	3	U	2	U	-		2	U	2	U
Lead (Dissolved)	µg/L	2.2	U	2.2	U	25	U	25	U	25	U	2	U	-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	7.48		7.46		7.17		7.75		7.36		7.84				4.77	
Specific Conductance	mS/cm	0.253		0.426		0.446		0.437		0.320		0.288				0.551	
Turbidity	NTU	1.0		1.6		1.8		0.4		5.3		1.4				166.0	
Dissolved Oxygen	mg/L	2.14		1.83		0.78		0.78		1.59		0.81				0.30	
Temperature	°C	8.52		15.23		10.97		11.7		11.47		9.90				14.55	
ORP	mV	-38.3		-128.5		28.8		-186.8		-123.4		-149.3				114.3	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	1-Jun-07		28-Jul-08		29-Oct-08		18-Feb-09		21-May-09		1-Feb-01		1-Aug-01		1-Feb-02	
Well ID		MW-21S		MW-21S		MW-21S		MW-21S		MW-21S		MW-30S		MW-30S		MW-30S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	0.83	U	0.5	U
PCE	µg/L	1.6		1.0	U	1.0	U	1.0	U	1.0	U	67	D	42		23	V
TCE	µg/L	0.12	J	1.0	U	1.0	U	1.0	U	1.0	U	19		15		8	
VC	µg/L	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2	U	1.0	U	0.5	U
cis-1,2-DCE	µg/L	0.15	J	1.0	U	1.0	U	1.0	U	1.0	U	2.4^		0.49	U	1	
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U			0.84	U	0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	1	B	1.0	U	1.0	U	1.0	U	1.0	U	30.5		---	R	2.8	U
Lead (Dissolved)	µg/L	-		1.0	U	1.0	U	1.0	U	1.0	U	26.5		R		2.8	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		47.39		1.24	U	-	
Gross Beta	pCi/L	-		-		-		-		-		83.31		8.28		-	
Total Uranium	µg/L	-		-		-		-		-		0.54		0.0551		0.1919	B
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.85		9.04		8.55		8.54		5.71		-		-		-	
Specific Conductance	mS/cm	0.195		0.179		0.183		0.147		0.409		-		-		-	
Turbidity	NTU	0.3		0.0		46.8		4.5		0.0		-		-		-	
Dissolved Oxygen	mg/L	3.91		1.89		4.53		47.34		10.11		-		-		-	
Temperature	°C	14.21		12.05		9.24		11.29		11.32		-		-		-	
ORP	mV	205.7		59.8		-87.0		-48.5		-32.7		-		-		-	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	2-Jun-02		1-Mar-03		3-Dec-03		4-Jul-04		1-Dec-04		5-Jun-05		1-Dec-05	
Well ID		MW-30S		MW-30S		MW-30S		MW-30S		MW-30S		MW-30S		MW-30S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	29	D	23		21		33.0		20.0		21.0	J	23.0	
TCE	µg/L	5		3		3		11.0		3.5		8.8		4.3	
VC	µg/L	0.5	U	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-DCE	µg/L	0.3	JJ	0.5	U	0.6		1.7		0.5	J	2.2		1.1	
trans-1,2-DCE	µg/L	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.8	U	---	R	2.2	U	2	U	3	UJ	2	U	2	U
Lead (Dissolved)	µg/L	2.8	U			2.2	U	25	U	25	U	25	U	2	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-0.02	U	0.50	UJ	1.70	UJ	3.80	UJ
Gross Beta	pCi/L	-		-		-		5.70		5.10	J	4.80	J	35.00	J
Total Uranium	µg/L	0.2897	B	1.2897	B	0.16565	J	0.30		0.14	U	0.21	U	0.27	U
Combined Radium 226/228	pCi/L	-		-		-		0.78	U	0.92	UJ	0.86	UJ	1.34	J
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L														
Ferrous Iron, Fe(II)	mg/L														
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		6.44		-		6.22		6.39		6.34		6.30	
Specific Conductance	mS/cm	-		0.991		-		0.777		0.903		0.741		0.527	
Turbidity	NTU	-		18		-		3.7		3		2		12.2	
Dissolved Oxygen	mg/L	-		10.31		-		2.1		5.8		6.88		2.83	
Temperature	°C	-		7.36		-		16.61		10.84		12.93		12.96	
ORP	mV	-		226.7		-		222.6		212.9		191.6		187.8	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	1-Dec-06		1-Jun-07		29-Jul-08		6-Nov-08		17-Feb-09		18-May-09		1-Feb-02		2-Jun-02	
Well ID		MW-30S		MW-30S		MW-30S		MW-30S		MW-30S		MW-30S		MW-32S		MW-32S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	2	
PCE	µg/L	20.0		9.7		14.0		12.0		9.0		7.8		1200	D	490	D
TCE	µg/L	8.7		3.1		5.8		5.4		2.9		3.1		420	D	190	D
VC	µg/L	2.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	23		11	
cis-1,2-DCE	µg/L	2.0		0.94	J	3.2		2.7		1.4		2.4		940	D	440	D
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	14		9	
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.9		1.6	B	0.529	J	0.881	J	1.91		1.0	U	2.8	U	2.8	U
Lead (Dissolved)	µg/L	-		-		1.0	U	1.0	U	1.0	U	1.0	U	2.8	U	2.8	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	5.30		1.20	U	0.944	U	2.89	U	2.75	U	0.600	U	-		-	
Gross Beta	pCi/L	8.60		5.90	U	8.90		8.35	J	9.61	J	6.37	J	-		-	
Total Uranium	µg/L	0.14	U	0.41		0.56		0.54		0.48		0.475	J	3.7454		28.163	
Combined Radium 226/228	pCi/L	0.51	U	0.48	J	1.755		1.769	J	0.991	J	3.296	U				
Gross Alpha - Dissolved	pCi/L	-		-1.60	U	0.303	U	1.68	U	0.212	U	-0.162	U	-		-	
Gross Beta - Dissolved	pCi/L	-		0.40	U	5.85	J	9.42	J	8.34	J	9.91	J	-		-	
Total Uranium - Dissolved	µg/L	-		0.22	U	0.46		0.49		0.43		0.587	J	-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		0.65	J	1.203		1.197	U	0.407	U	0.512	U	-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.07		6.29		5.80		6.22		6.31		6.37		-		-	
Specific Conductance	mS/cm	0.581		0.597		1.114		0.869		0.807		0.956		-		-	
Turbidity	NTU	146.8		110.1		5.0		16.0		0.0		60.5		-		-	
Dissolved Oxygen	mg/L	3.49		5.41		0.93		2.23		4.80		9.67		-		-	
Temperature	°C	12.41		13.72		18.08		14.56		7.49		9.14		-		-	
ORP	mV	102.1		160		452.2		273.6		110.0		239.0		-		-	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	1-Mar-03		3-Dec-03		4-Jul-04		4-Dec-04		5-Jun-05		1-Dec-05		1-Dec-06		1-Jun-07	
Well ID		MW-32S		MW-32S		MW-32S		MW-32S		MW-32S		MW-32S		MW-32S		MW-32S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	2		2		1.0		0.9	J	1.0	U	0.31	J	0.31	J	1.00	J
PCE	µg/L	660	D	440		420.0	J	360.0	J	200	J	140		18		9.4	
TCE	µg/L	310	D	230		200.0	J	170.0	J	150		89		6		4.1	
VC	µg/L	6		5		2.8		2.5	J	2.3		2.4		0.4	J	0.53	J
cis-1,2-DCE	µg/L	550	D	390		9.5	J	230.0	J	240		260		27		18	
trans-1,2-DCE	µg/L	9		9		5.2		5.3		4.0		4.2		0.7	J	0.48	J
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	3.5	B	2.2	U	3	U	2	U	2	UJ	1.2	J	2.9		2	U
Lead (Dissolved)	µg/L	3.2	B	2.2	U	25	U	25	U	1.3	U	2	U	-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		221	J	322		535	J	296	J	53.40		81	
Gross Beta	pCi/L	-		-		112		128		376	J	163	J	34.70		21.30	
Total Uranium	µg/L			275.83		700	J	641		896		592		181		177	
Combined Radium 226/228	pCi/L					1.24	J	1.00	J	3.17	J	0.48	UJ	0.50		0.44	U
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		64	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		19.10	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		17.60	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		0.66	U
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L																
Ferrous Iron, Fe(II)	mg/L																
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.52		-		5.86		6.62		6.61		6.48		6.63		6.49	
Specific Conductance	mS/cm	0.606		-		0.975		0.795		0.981		0.795		0.285		0.236	
Turbidity	NTU	115.1		-		1.8		51.8		4.7		15.9		13.8		9.8	
Dissolved Oxygen	mg/L	1.59		-		0.66		0.35		0.35		0.32		4.50		1.42	
Temperature	°C	6.14		-		16.4		11.49		12.93		10.74		10.35		13.65	
ORP	mV	78		-		212		86.8		118.9		108.4		157.4		107.9	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	6-Aug-08		4-Nov-08		23-Feb-09		19-May-09		1-Feb-02		2-Jun-02		1-Mar-03		3-Dec-03		4-Jul-04	
Well ID		MW-32S		MW-32S		MW-32S		MW-32S		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U
PCE	µg/L	72.0		21.0		21		9.9		250	D	10		1		2		1.3	
TCE	µg/L	23.0		7.7		6.3		4.5		0.5	U	0.5	U	0.3	J	0.5	U	0.27	J
VC	µg/L	0.93	J	0.91	J	0.59	J	0.65	J	2		1		0.5	U	2		1.8	J
cis-1,2-DCE	µg/L	23.0		20.0		13		11		2		2		1		2		1.1	
trans-1,2-DCE	µg/L	0.98	J	0.64	J	0.42	J	0.44	J	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	-		-		-		-		-	
Lead (Dissolved)	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	60	J	50.20		59.6		35.3	J	-		-		-		-		-	
Gross Beta	pCi/L	31.1		32.80		37.7		27.0		-		-		-		-		-	
Total Uranium	µg/L	160		110.00		157	J	95.2	J	-		-		-		-		-	
Combined Radium 226/228	pCi/L	0.752		2.13	J	0.461	J	1.21	U	-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	68.3	J	43.3		65.5		36.2	J	-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	31.9		29.4		30.3		25.8	J	-		-		-		-		-	
Total Uranium - Dissolved	µg/L	170	J	108		185	J	111	J	-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	0.692		0.728	U	0.701	J	1.581	J	-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	1.80	J	-		1.44	J	1.44	J	-		-		-		-		-	
DOC	mg/L	1.95	J	-		1.62	J	1.59	J	-		-		-		-		-	
Ethane	µg/L	2.0	U	-		2.0	U	2.0	U	-		-		-		-		-	
Ethene	µg/L	2.0	U	-		2.0	U	2.0	U	-		-		-		-		-	
Methane	µg/L	150		-		180		120		-		-		-		-		-	
Nitrate-N	mg/L	0.0864	J	-		0.116	J	0.202	J	-		-		-		-		-	
Sulfate	mg/L	16.3		-		13.5		17.9		-		-		-		-		-	
Chloride	mg/L	7.71		-		5.63		6.71		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	0.70				0.70		0.20		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	0.2	U			0.2	U	0.2	U	-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	4.09		6.38		7.11		6.06		-		-		6.98		6.86		6.86	
Specific Conductance	mS/cm	0.225		0.198		0.292		0.379		-		-		0.68		1.123		1.123	
Turbidity	NTU	63.0		1.0		116.0		0.0		-		-		176		6.6		6.6	
Dissolved Oxygen	mg/L	1.00		0.66		0.00		0.60		-		-		0.68		0.25		0.25	
Temperature	°C	18.02		14.95		6.70		10.74		-		-		8.55		13.93		13.93	
ORP	mV	425.3		111.6		107.0		237.0		-		-		115.3		141.5		141.5	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	4-Dec-04		5-Jun-05		1-Dec-05		1-Dec-06		1-Jun-07		1-Aug-08		30-Oct-08		19-Feb-09		26-May-09	
Well ID		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S		MW-34S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	1.1		0.6	J	1.1		1.9		0.41	J	0.92	J	1.0		0.94	J	0.85	J
TCE	µg/L	0.2	J	1.0	U	1.0	U	0.4	J	0.16	J	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	1.7	J	1.3	J	1.8	J	1.0	J	1.3	J	1.6		1.8		1.6		2.0	
cis-1,2-DCE	µg/L	1.0		0.6	J	1.3		2.1		0.75	J	0.93	J	1.3		0.89	J	0.85	J
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		2.31	J	2.25	J	2.16		2.19	J
DOC	mg/L	-		-		-		-		-		3.13	J	2.55	J	2.4		2.65	J
Ethane	µg/L	-		-		-		-		-		2	U	2	U	2	U	2	U
Ethene	µg/L	-		-		-		-		-		2	U	2	U	2	U	2	U
Methane	µg/L	-		-		-		-		-		13		13		13		15	
Nitrate-N	mg/L	-		-		-		-		-		0.161		0.13	J	0.239		0.229	
Sulfate	mg/L	-		-		-		-		-		92		95		79		84	
Chloride	mg/L	-		-		-		-		-		96		108		73		109	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		1		1		0	U	1	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		0		0		0		0	U
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.74		7.16		7.05		6.87		7.91		6.42		6.91		7.15		7.10	
Specific Conductance	mS/cm	0.707		0.833		0.500		0.353		0.620		0.414		0.507		0.582		0.527	
Turbidity	NTU	67.2		33.3		86.0		24.1		0.0		0.0		0.0		>1000		1287.0	
Dissolved Oxygen	mg/L	0.82		0.53		0.35		0.62		0.09		0.48		0.31		0.00		0.61	
Temperature	°C	11.65		10.96		11.72		11.98		13.51		13.58		13.78		8.90		10.73	
ORP	mV	181.9		50		101.3		89.2		259.4		283.0		13.1		150.0		121.8	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	Feb-02		Jun-02		Mar-03		Dec-03		Jul-04		Dec-04		Jun-05		Dec-05		Dec-06	
Well ID		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.2	J	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U
TCE	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-DCE	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-		-	
Methane	mg/L	-		-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		-		7.11		6.97		7.25		6.58		6.02		6.54		6.70	
Specific Conductance	mS/cm	-		-		0.308		0.995		4.37		0.948		0.311		0.397		0.777	
Turbidity	NTU	-		-		1.4		2.2		74.3		6.5		0.0		19.5		18.6	
Dissolved Oxygen	mg/L	-		-		10.82		4.05		4.31		2.37		5.36		3.32		2.19	
Temperature	°C	-		-		7.41		12.72		10.37		11.88		11.76		10.65		12.90	
ORP	mV	-		-		120.4		179.6		231.1		206.6		226.7		64.2		82.7	

See notes at the end of the table.

**Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site**

Sampling Date	Units	Jun-07		Aug-08		Oct-08		Feb-09		May-09		Feb-02		Jun-02		Mar-03		Dec-03	
Well ID		MW-35S		MW-35S		MW-35S		MW-35S		MW-35S		MW-37S		MW-37S		MW-37S		MW-37S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U
PCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U
TCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U
VC	µg/L	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.4	J	0.7	
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	0.5	U	0.5	U	0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-									
Gross Beta	pCi/L	-		-		-		-		-									
Total Uranium	µg/L	-		-		-		-		-		1.5309	B	0.6003	B			0.2418	J
Combined Radium 226/228	pCi/L	-		-		-		-		-									
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-									
Gross Beta - Dissolved	pCi/L	-		-		-		-		-									
Total Uranium - Dissolved	µg/L	-		-		-		-		-									
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-									
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		1.01	J	1.53		1.13	J	0.847	J	-		-		-		-	
DOC	mg/L	-		1.32	J	1.6		1.06	J	1.22	J	-		-		-		-	
Ethane	µg/L	-		2	U	2	U	2	U	2	U	-		-		-		-	
Ethene	µg/L	-		2	U	2	U	2	U	2	U	-		-		-		-	
Methane	mg/L	-		2	U	2	U	2	U	2	U	-		-		-		-	
Nitrate-N	mg/L	-		0.1	U	0.0571	J	0.0588	J	0.1	U	-		-		-		-	
Sulfate	mg/L	-		11		12		10		18		-		-		-		-	
Chloride	mg/L	-		115		50		35		136		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		0		0	U	0	U	0	U	-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		0	U	0	U	0	U	0	U	-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	5.16		6.65		6.75		6.56		6.56		-		-		7.22		-	
Specific Conductance	mS/cm	0.383		0.237		0.184		0.446		0.446		-		-		0.863		-	
Turbidity	NTU	10.8		1.0		9.2		0.0		0.0		-		-		1.7		-	
Dissolved Oxygen	mg/L	6.22		9.41		13.13		3.00		3.00		-		-		0.65		-	
Temperature	°C	15.73		13.76		7.12		10.78		10.78		-		-		10.09		-	
ORP	mV	545.2		192.7		68.8		61.0		61.0		-		-		-95.7		-	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	Jul-04		Dec-04		Jun-05		Dec-05		Dec-06		Jun-07		Aug-08		Oct-08		Feb-09	
Well ID		MW-37S		MW-37S		MW-37S		MW-37S		MW-37S		MW-37S		MW-37S		MW-37S		MW-37S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	1.0	U	0.6	J	0.4	J	1.0	U	0.3	J	1.0	U	0.22	J	0.23	J	0.51	J
TCE	µg/L	0.18	J	0.28	J	0.4	J	1.0	U	0.9	J	0.3	J	0.33	J	0.38	J	0.71	J
VC	µg/L	0.41	J	0.7	J	1.0	J	1.0	J	1.1	J	2.0	U	0.99	J	1.1	J	0.85	J
cis-1,2-DCE	µg/L	0.98	J	0.98	J	3.1	J	2.7		5.5		2.1		1.6		2.3		3.6	
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	2.4	U	10	J	0	UJ	3.2	UJ	6.9	U	4.2	U	1.26	U	1.9	J	1.26	U
Gross Beta	pCi/L	13		13.4		11.2	J		R	18		19.9		22.3		13.5		14.1	
Total Uranium	µg/L	0.5		0.24		0.61		0.21	U	0.27	U	NA	U	0.24		0.21	U	1.1	
Combined Radium 226/228	pCi/L	0.81	U	1.55	J	0.98	UJ	4.58	J	1.92	U	1.36	J	2.013		2.13	J	2.596	J
Gross Alpha - Dissolved	pCi/L											0.06	U	1.78	J	0.974	U	0.443	U
Gross Beta - Dissolved	pCi/L											11.6		16.1		9.05	J	11.2	
Total Uranium - Dissolved	µg/L											0	U	0		0	U	0	J
Combined Radium 226/228 - Dissolved	pCi/L											1	J	2		2	J	1	J
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		1.01	J	1.53		1.13	J
DOC	mg/L	-		-		-		-		-		-		1.32	J	1.6		1.06	J
Ethane	µg/L	-		-		-		-		-		-		2	U	2	U	2	U
Ethene	µg/L	-		-		-		-		-		-		2	U	2	U	2	U
Methane	mg/L	-		-		-		-		-		-		2	U	2	U	2	U
Nitrate-N	mg/L	-		-		-		-		-		-		0.1	U	0.0571	J	0.0588	J
Sulfate	mg/L	-		-		-		-		-		-		11		12		10	
Chloride	mg/L	-		-		-		-		-		-		115		50		35	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		0		0	U	0	U
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		0	U	0	U	0	U
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	7.12		7.04		6.99		7.12		6.99		6.83		6.67		7.25		7.05	
Specific Conductance	mS/cm	0.919		0.987		1.066		0.755		0.659		0.611		0.676		0.630		0.565	
Turbidity	NTU	22.6		29.9		6.2		318.4		91.0		53.5		54.2		6.5		2085.8	
Dissolved Oxygen	mg/L	7.34		1.3		0.3		2.36		0.47		1.68		1.71		5.10		0.94	
Temperature	°C	13.82		11.3		11.6		10.29		11.76		12.32		12.30		12.62		10.09	
ORP	mV	-83.6		-33.8		-74.3		-66.5		-83.8		-85.9		-77.9		-96.4		-48.9	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	26-May-09		2-Jun-02		1-Mar-03		3-Dec-03		4-Jul-04		4-Dec-04		5-Jun-05		1-Dec-05	
Well ID		MW-37S		MW-39S		MW-39S		MW-39S		MW-39S		MW-39S		MW-39S		MW-39S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.27	J	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	UJ	1.0	U
TCE	µg/L	0.36	J	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	1.2	J	0.5	U	0.5	U	0.5	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-DCE	µg/L	1.9		0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	1.0	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	1.47	J	-		-		-		-		-		-		-	
Gross Beta	pCi/L	11.8		-		-		-		-		-		-		-	
Total Uranium	µg/L	0.285		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	2.74	U	-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	2.29	J	-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	1.58	J	-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	0		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	0	U	-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	0.847	J	-		-		-		-		-		-		-	
DOC	mg/L	1.22	J	-		-		-		-		-		-		-	
Ethane	µg/L	2	U	-		-		-		-		-		-		-	
Ethene	µg/L	2	U	-		-		-		-		-		-		-	
Methane	mg/L	2	U	-		-		-		-		-		-		-	
Nitrate-N	mg/L	0.1	U	-		-		-		-		-		-		-	
Sulfate	mg/L	18		-		-		-		-		-		-		-	
Chloride	mg/L	136		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	0	U	-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	0	U	-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.41		-		7.96		-		7.6		7.62		7.34		8	
Specific Conductance	mS/cm	0.717		-		0.254		-		0.754		0.514		1.603		0.448	
Turbidity	NTU	76.0		-		721.6		-		194		745.1		854		701	
Dissolved Oxygen	mg/L	1.14		-		2.06		-		1.58		3		2.13		4.57	
Temperature	°C	11.48		-		7.83		-		11.25		10.37		10.88		12.67	
ORP	mV	-56.3		-		71.1		-		167.1		59.8		90		-71.5	

See notes at the end of the table.

Table A-1
Historical Analytical Results - Upper Aquifer
DOE Colonie New York, Site

Sampling Date	Units	1-Dec-06		1-Jun-07		1-Aug-08		30-Oct-08		19-Feb-09		May-09	
Well ID		MW-39S		MW-39S		MW-39S		MW-39S		MW-39S		MW-39S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	2.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	-		-		-		-		-		-	
Lead (Dissolved)	µg/L	-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-	
Methane	mg/L	-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	7.9		3.38		7.12		7.65		7.89		7.64	
Specific Conductance	mS/cm	0.335		2.074		0.427		0.384		0.418		0.703	
Turbidity	NTU	681		335.0		1350.3		473.0		559.6		495.0	
Dissolved Oxygen	mg/L	3.81		0.12		1.60		1.23		10.77		5.05	
Temperature	°C	10.78		11.31		12.66		9.86		8.59		8.96	
ORP	mV	-10.2		369.2		351.5		25.2		-152.7		38.2	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Sampling Date	Units	Dec-98		May-99		Oct-99		Mar-00		Aug-00		Feb-01		Aug-01		Feb-02	
Well ID		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	10	U	5	U	0.5	U	10	U	20	U	2	U	0.83	U	0.5	U
PCE	µg/L	1	J	1	J	3		2	J	6	JD	2	U	0.78	U	0.5	U
TCE	µg/L	2	J	5	U	1		10	U	20	U	2	U	0.49	U	0.5	U
VC	µg/L	14		4	J	10		8	J	20	U	2.3	J	1.0	U	3	
cis-1,2-DCE	µg/L	14^		8^		10^		6^	J	20^	U	2^	J	2	J	2	
trans-1,2-DCE	µg/L													0.84	U	0.5	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	16		3,120		151		339		701		1,180		133		95.1	NV
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		-	
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228	pCi/L	-		-		-		-		-		-		-		-	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		-		-	
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		-		-	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		-	
DOC	mg/L	-		-		-		-		-		-		-		-	
Ethane	µg/L	-		-		-		-		-		-		-		-	
Ethene	µg/L	-		-		-		-		-		-		-		-	
Methane	µg/L	-		-		-		-		-		-		-		-	
Nitrate-N	mg/L	-		-		-		-		-		-		-		-	
Sulfate	mg/L	-		-		-		-		-		-		-		-	
Chloride	mg/L	-		-		-		-		-		-		-		-	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		-	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		-	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		-		-		-		-		-		-		-	
Specific Conductance	mS/cm	-		-		-		-		-		-		-		-	
Turbidity	NTU	-		-		-		-		-		-		-		-	
Dissolved Oxygen	mg/L	-		-		-		-		-		-		-		-	
Temperature	°C	-		-		-		-		-		-		-		-	
ORP	mV	-		-		-		-		-		-		-		-	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Sampling Date	Units	Jun-02		Jul-04		Dec-04		Jun-05		Dec-05		Dec-06		Jun-07		Aug-08	
Well ID		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S		MW-40S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.5	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U
TCE	µg/L	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	3		2.0	U	2.0	U	2.0	U	2.0	UJ	2.0	U	2.0	U	1.0	U
cis-1,2-DCE	µg/L	4		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	0.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	206		61.7		247	J	125		3.9		424		170		77.5	
Lead (Dissolved)	µg/L	-		-		-		-		-		-		-		0.541	J
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	-		0.37	U	8.80	J	4.70	J	1.00	UJ	3.70		4.70		25.3	
Gross Beta	pCi/L	-		0.80	U	4.20	U	5.10	J	1.30	U	3.50	J	3.10	U	52.2	
Total Uranium	µg/L	-		0.50		0.50		0.42	J	-		0.20	U	0.87		2.3	
Combined Radium 226/228	pCi/L	-		0.32	U	0.73	UJ	0.10	UJ	-		0.39	U	0.54	J	2.083	
Gross Alpha - Dissolved	pCi/L	-		-		-		-		-		-		0.40	U	2.85	J
Gross Beta - Dissolved	pCi/L	-		-		-		-		-		-		0.90	U	10.6	
Total Uranium - Dissolved	µg/L	-		-		-		-		-		-		1.00		0.51	J
Combined Radium 226/228 - Dissolved	pCi/L	-		-		-		-		-		-		0.53	U	1.235	
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	-		-		-		-		-		-		-		0.801	
DOC	mg/L	-		-		-		-		-		-		-		1.12	J
Ethane	µg/L	-		-		-		-		-		-		-		0.680	J
Ethene	µg/L	-		-		-		-		-		-		-		2.0	U
Methane	µg/L	-		-		-		-		-		-		-		53.0	
Nitrate-N	mg/L	-		-		-		-		-		-		-		0.243	
Sulfate	mg/L	-		-		-		-		-		-		-		13.8	J
Chloride	mg/L	-		-		-		-		-		-		-		38.0	
Soluble Manganese, Mn(II)	mg/L	-		-		-		-		-		-		-		0.35	
Ferrous Iron, Fe(II)	mg/L	-		-		-		-		-		-		-		0.2	U
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	-		7.02		7.84		7.95		8.16		7.73		7.64		6.91	
Specific Conductance	mS/cm	-		0.399		0.326		0.321		0.224		0.211		0.223		0.201	
Turbidity	NTU	-		16.7		146.8		83		18.9		97.1		64.7		1555.0	
Dissolved Oxygen	mg/L	-		0.82		0.9		5.99		2.21		1.75		2.38		1.68	
Temperature	°C	-		37.97		12.94		12.56		11.92		13.29		13.07		18.00	
ORP	mV	-		-23.9		87.1		29.3		-113.8		-47.9		-78.9		389.5	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Sampling Date	Units	Nov-08		Feb-09		May-09		Dec-06		Jan-07		Jun-07		Aug-08		Nov-08	
Well ID		MW-40S		MW-40S		MW-40S		MW-41S		MW-41S		MW-41S		MW-41S		MW-41S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U	1.0	U
PCE	µg/L	1.0	U	1.0	U	1.0	U	53	D	-		45	E	33.0		31.0	
TCE	µg/L	1.0	U	1.0	U	1.0	U	8.3		-		10.0		7.3		6.7	
VC	µg/L	1.0	U	1.0	U	1.0	U	0.6	J	-		0.6	J	0.78	J	0.77	J
cis-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	6.4		-		8.3		4.7		4.6	
trans-1,2-DCE	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	-		0.2	J	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	129		41.8		110		20.3		-		6.2		13.8		3.16	
Lead (Dissolved)	µg/L	3.38		0.654	J	1.0	U	-		-		-		1.0	U	1.0	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	7	J	38.9		40.7	J	-		56		4.60	J	17.5		4.58	J
Gross Beta	pCi/L	10		72.1		55.5	J	-		103		9.60	J	51.2	J	15.1	
Total Uranium	µg/L	1		0.87		3.55		-		3.50		0.90		1.7		0.81	
Combined Radium 226/228	pCi/L	1.182	U	1.07	J	3.13	U	-		1.69		0.93	J	1.285		1.889	J
Gross Alpha - Dissolved	pCi/L	1.110	U	1.36	U	1.73	J	-		-		2.00	U	1.55	U	2	U
Gross Beta - Dissolved	pCi/L	1.200	U	-0.395	U	1.33	U	-		-		4.40		6.63	J	4.75	J
Total Uranium - Dissolved	µg/L	0.190	J	0.31		2.57		-		-		0.30	U	0.38		0.28	
Combined Radium 226/228 - Dissolved	pCi/L	0.897	U	0.826	J	0.775	U	-		-		1.16	J	0.901		0.743	U
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	0.678	J	0.677	J	0.713	J	-		-		-		2.89		2.64	J
DOC	mg/L	0.962	J	0.698	J	0.882	J	-		-		-		3.21		3.09	J
Ethane	µg/L	0.63	J	2.0	U	12		-		-		-		1.4	J	0.84	J
Ethene	µg/L	2.0	U	2.0	U	2.0	U	-		-		-		2.0	U	2.0	U
Methane	µg/L	57		55		190		-		-		-		78.0		56	
Nitrate-N	mg/L	0.117	J	0.0839	J	0.10	U	-		-		-		0.114	J	0.106	J
Sulfate	mg/L	15.4		14.4		13.8		-		-		-		75.6		80.1	
Chloride	mg/L	42.1		43.2		45		-		-		-		49.0		63.1	
Soluble Manganese, Mn(II)	mg/L	0.25		0.025		0.025		-		-		-		0.68		0.68	
Ferrous Iron, Fe(II)	mg/L	0.2	U	0.2	U	0.2	U	-		-		-		0.6		0.6	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	7.88		7.88		7.50		7.14		-		7.08		3.89		7.12	
Specific Conductance	mS/cm	0.176		0.261		0.255		0.484		-		0.390		0.471		0.415	
Turbidity	NTU	491		202.4		1866.0		910.1		-		48.3		676.0		378	
Dissolved Oxygen	mg/L	1.79		8.16		5.93		2.70		-		1.40		2.37		0.31	
Temperature	°C	15.14		11.21		10.52		12.83		-		13.48		14.44		14.17	
ORP	mV	78.8		-88.5		-52.0		16.8		-		-50.0		413.1		-33.7	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Sampling Date	Units	Feb-09		May-09		Dec-06		1-Jan-07		1-Jun-07		5-Aug-08		4-Nov-08		17-Feb-09	
Well ID		MW-41S		MW-41S		MW-42S		MW-42S		MW-42S		MW-42S		MW-42S		MW-42S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	37		37		0.8	J	-		1.0	U	0.51	J	0.34	J	0.30	J
TCE	µg/L	6.9		6.5		0.3	J	-		1.0	U	1.1		1.0	J	1.0	
VC	µg/L	1.0	U	0.56	J	2.0	U	-		2.0	U	1.0	U	1.0	U	1.0	U
cis-1,2-DCE	µg/L	4.7		4.7		2.9		-		2.2		2.2		2.3		2.0	
trans-1,2-DCE	µg/L	1.0	U	0.24	J	1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	2.02		2.96		2.4		-		1.6	B	3.56		3.26		3.69	
Lead (Dissolved)	µg/L	1.0	U	1.0	U	-		-		-		1.0	U	1.0	U	1.0	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	2.86	U	11.8		-		1.40	U	1.10	U	4.51	J	2.95	J	12.1	
Gross Beta	pCi/L	6.26		31.3		-		8.00	U	0.20	U	15.5		2.08	U	27.1	
Total Uranium	µg/L	0.49		2.01	J	-		0.90		0.37		0.59		0.43		0.44	
Combined Radium 226/228	pCi/L	0.586	J	2.183	U	-		1.20	J	0.87	J	1.622		1.501	U	1.97	
Gross Alpha - Dissolved	pCi/L	-0.063	U	1.80	J	-		-		2.30	U	1.17	U	2.9	J	0.0717	U
Gross Beta - Dissolved	pCi/L	5.56	J	5.11		-		-		1.30	U	14.4		2.71	U	1.65	U
Total Uranium - Dissolved	µg/L	0.33		2.93	J	-		-		0.69		0.23	J	0.27		0.40	
Combined Radium 226/228 - Dissolved	pCi/L	0.772	J	0.952	U	-		-		0.41	U	0.751		0.89	U	0.638	J
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	2.72		2.88		-		-		-		14.5		12.1		9.53	
DOC	mg/L	2.48		2.79		-		-		-		14.9		12.7		9.48	
Ethane	µg/L	2.0	U	0.65	J	-		-		-		1.2	J	2.0	U	2.0	U
Ethene	µg/L	2.0	U	2.0	U	-		-		-		2.0	U	2.0	U	2.0	U
Methane	µg/L	66		110		-		-		-		230		400		510	
Nitrate-N	mg/L	0.112	J	0.10	U	-		-		-		0.10	U	0.118	J	0.0789	J
Sulfate	mg/L	74.2		70.8		-		-		-		98.6		96.1		75.2	
Chloride	mg/L	68.1		90.4		-		-		-		55		69.5		87.4	
Soluble Manganese, Mn(II)	mg/L	0.05		0.68		-		-		-		0.70		0.70		0.05	
Ferrous Iron, Fe(II)	mg/L	0.8		1.8		-		-		-		2.2		2.2		2.6	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	6.94		6.92		6.89		-		6.75		6.10		6.83		6.93	
Specific Conductance	mS/cm	0.545		0.773		0.703		-		0.691		0.592		0.603		0.674	
Turbidity	NTU	154.3		17.6		32.1		-		29.4		466.0		155		261.0	
Dissolved Oxygen	mg/L	2.74		3.18		0.41		-		3.12		1.11		6.38		0.89	
Temperature	°C	9.11		10.19		12.56		-		13.57		15.82		14.66		9.49	
ORP	mV	-8.1		18.0		-60.1		-		-83.7		-173.3		-62.7		-87.1	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Sampling Date	Units	19-May-09		1-Dec-06		1-Jan-07		1-Jun-07		5-Aug-08		4-Nov-08		17-Feb-09		19-May-09	
Well ID		MW-42S		MW-43S		MW-43S		MW-43S		MW-43S		MW-43S		MW-43S		MW-43S	
VOCs		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,1-DCE	µg/L	1.0	U	1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PCE	µg/L	0.28	J	1.0	U	-		1.0	U	1.0	U	0.22	J	1.0	U	1.0	U
TCE	µg/L	0.78	J	1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VC	µg/L	1.0	U	2.0	U	-		2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,2-DCE	µg/L	1.5		1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-DCE	µg/L	1.0	U	1.0	U	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Metals		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Lead (Total)	µg/L	3.59		1.0	B	-		2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Lead (Dissolved)	µg/L	1.0	U	-		-		-		1.0	U	1.0	U	1.0	U	1.0	U
Radiological Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Gross Alpha	pCi/L	10.7	J	-		13.60		4.10	U	-0.0578	U	1.1	U	-0.343	U	-0.0199	U
Gross Beta	pCi/L	20.1	J	-		11.20		5.20	U	14.0		7.4	J	3.62	J	2.11	J
Total Uranium	µg/L	0.834		-		7.40		1.09		0.74		0.86		0.64		0.449	J
Combined Radium 226/228	pCi/L	1.749	U	-		1.38	J	0.85	J	0.82035		1.019	U	0.258	U	0.653	U
Gross Alpha - Dissolved	pCi/L	1.78	J	-		-		1.90	U	1.57	U	1.79	U	0.237	U	-0.245	U
Gross Beta - Dissolved	pCi/L	1.93	J	-		-		4.10	U	5.71	J	4.64	J	2.72	J	2.76	J
Total Uranium - Dissolved	µg/L	0.344		-		-		0.70		0.74		0.78		0.89		0.507	J
Combined Radium 226/228 - Dissolved	pCi/L	0.931	J	-		-		0.62	J	1.206		1.445	U	0.465	U	0.947	J
MNA Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
TOC	mg/L	8.79		-		-		-		1.68	J	1.64		1.66		1.09	J
DOC	mg/L	8.90		-		-		-		1.93	J	1.74		1.49	J	1.19	J
Ethane	µg/L	1.2	J	-		-		-		2.0	U	2.0	U	2.0	U	2.0	U
Ethene	µg/L	2.0	U	-		-		-		2.0	U	2.0	U	2.0	U	2.0	U
Methane	µg/L	470		-		-		-		6.6		1.8	J	5.8		6.5	
Nitrate-N	mg/L	0.10	U	-		-		-		0.345		0.320		0.135	J	0.164	
Sulfate	mg/L	66.3		-		-		-		44.3		45.0		46.1		37.2	
Chloride	mg/L	101		-		-		-		108		94.2		71.5		97.6	
Soluble Manganese, Mn(II)	mg/L	0.68		-		-		-		0.50		0.46		0.175		0.500	
Ferrous Iron, Fe(II)	mg/L	1.2		-		-		-		0.2	U	0.2	U	0.2	U	0.0	
Field Parameters		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
pH	SU	4.84		7.07		-		7.01		5.90		7.15		7.34		8.56	
Specific Conductance	mS/cm	0.681		1.100		-		0.824		0.560		0.371		0.458		0.150	
Turbidity	NTU	66.5		43.4		-		41.5		28.0		14		20.0		1305.0	
Dissolved Oxygen	mg/L	17.39		1.52		-		1.41		NM		2.54		2.24		1.32	
Temperature	°C	9.77		10.29		-		12.43		14.23		13.05		7.18		12.59	
ORP	mV	-28.5		42.9		-		-14.9		176.1		58.2		12.0		84.4	

See notes at the end of the table.

Table A-2
Historical Analytical Results - Upper Groundwater
Zone 2016 - 2017 Annual LTM Report
Colonie FUSRAP Site, Colonie New York

Notes:

Q = data qualifier

^ = total value of cis-1,2-Dichloroethene and trans-1,2-Dichloroethene µg/L = micrograms per liter

mg/L = milligrams per liter

pCi/L = picoCuries per liter

mS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

SU - Standard Units

mV = millivolts

Boldface text = result was detected above the method detection limits

* = standard applies to each isomer individually

U = non-detect as less than method reporting limit

J = estimated value

B = blank

E = exceeding the calibration range

N = spiked sample recovery not within control limits

V = presumptive evidence of a compound

UJ = estimated, not detected

JB = estimated, blank value

NM = analyte not measured

Appendix C

Well Logs and Construction Details

GEOLOGIC DRILL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.					
CISS				Colonic Interim Storage Site		4501-139	1 OF 1	B39W08S					
SITE			COORDINATES			ANGLE FROM HORIZ		BEARING					
CISS			N 1776 E 1122			Vertical		-----					
BEGAN	COMPLETED	DRILLER	DRILL RAKE AND MODEL		SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH					
11-7-84	11-7-84	Empire Soils	Acker AD-2		7-1/2"			14.0					
CORE RECOVERY (FT./%)		CORE BOXES	SAMPLES	SEL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER		DEPTH/EL. TOP OF ROCK					
/				231.45	229	/		/					
SAMPLE NUMBER WEIGHT/FALL			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY:							
						E. W. Lundeen							
SAMP TYPE AND DIAH.	SAMP. ADV. LEN CORE	SAMP. REC. CORE REC.	SAMP. N=	CORE RECOVERY	LOSS IN G.P.M.	WATER PRESSURE TESTS		ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						PRESS. P.S.I.	TIME MIN.						
								229.0				0.0 - 0.3 Ft. TOPSOIL	
								222.0	5			0.3 - 10.8 Ft. SAND (SP). Light brown, medium- to coarse-grained, well sorted, rounded to subangular, frosted particles. 10% silt. Noncohesive. Dry to saturated at 3.5 Ft. (DUNE SAND)	
								218.1	10			10.8 - 14.0 Ft. Clayey SILT (ML). Gray to dark gray noncohesive to slightly cohesive, slightly plastic material. Rapid to moderate dilatancy.	
								214.0				(UPPER SAND)	
												Bottom of borehole at 14.0 Ft. Monitor well installed and screened at 6.0 to 11.0 Ft., 11/7/84.	

S = SPLIT SPOON; ST = SHELBY TUBE; SITE
 = DENNISON; P = PITCHER; O = OTHER

CISS

HOLE NO.
 B39W08S



IT CORPORATION
A Member of the IT Group

Drilling Log

Monitoring Well: 30-S

Project: Colonie FUSRAP Site Owner: USACE
 Location: Colonie, NY Proj. No. 866724
 Surface Elev. _____ Total Hole Depth 14.5 ft. Diameter _____
 Top of Casing 225.74 ft. Water Level Initial 6 ft. Static _____
 Screen: Dia 2 in. Length 10 ft. Type/Size Sch 40PVC in.
 Casing: Dia 2 in. Length 6 ft. Type Sch 40PVC
 Fill Material _____ Rig/Core _____
 Drill Co. Maxim Technology Method HSA
 Driller C. DiNova Log By T. Maynard Date 08/01/00 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:

Atmosphere & samples monitored by ECI.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
							Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0							
2							0-10': Dark brown-brown, medium grained sand, increased silt content w/depth, increased moisture-wetness w/depth, trace boulder, cobble, gravel, fine gravel, content decreases w/depth.
6						SM	
10						SM	10-12': Brown, saturated, sandy silt; 60-80% silt, very fine-fine grained sand, trace clay, medium dense.
12			2/2/2/2 80%			SM	
14						SM	
16							
18							
20							
22							
24							

Colonie FUSRAP Site		DISTRICT Baltimore		BORING NUMBER MW - 34S	
COMPANY NAME IT Corporation		DRILL SUBCONTRACTOR Parratt Wolff		SHEET 1 of 2	
PROJECT NAME TERC CONTRACT NO. DACA31-95-D-0083			SITE LOCATION 1130 Central Ave. Albany, NY		
NAME OF DRILLER Mickey Marshall			HOLE LOCATION See site map		
NAME OF GEOLOGIST Marc Flanagan			SIGNATURE OF GEOLOGIST		
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT Hollow Stem Auger / Split spoon sampler			DATE STARTED 12/20/2001	DATE COMPLETED 12/20/2001	
			SURFACE ELEVATION 218.33		
			DEPTH TO FIRST ENCOUNTERED WATER NA		
DEPTH TO REFUSAL NA			DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
DEPTH DRILLED INTO BEDROCK NA			OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		
TOTAL DEPTH OF HOLE 18.5'			TOTAL FLUID LOSSES NA		
GEOTECHNICAL SAMPLES		SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES	
ENVIRONMENTAL SAMPLES		SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %	
DISPOSITION OF HOLE Monitoring well installed		BACKFILLED #0 Morie	MONITORING WELL MW - 34S	CASING TYPE 2" PVC	SCREENED INTERVAL 8.5'-18.5'
DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION	
SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS				SCALE:	
PROJECT TO 33, DC SCHOOLS				BORING.	
NOTE: ATTACH WELL CONSTRUCTION DIAGRAM				MW - 34S	

IT DRILLING LOG

(CONTINUATION SHEET)

BORING
NUMBER MW - 34S

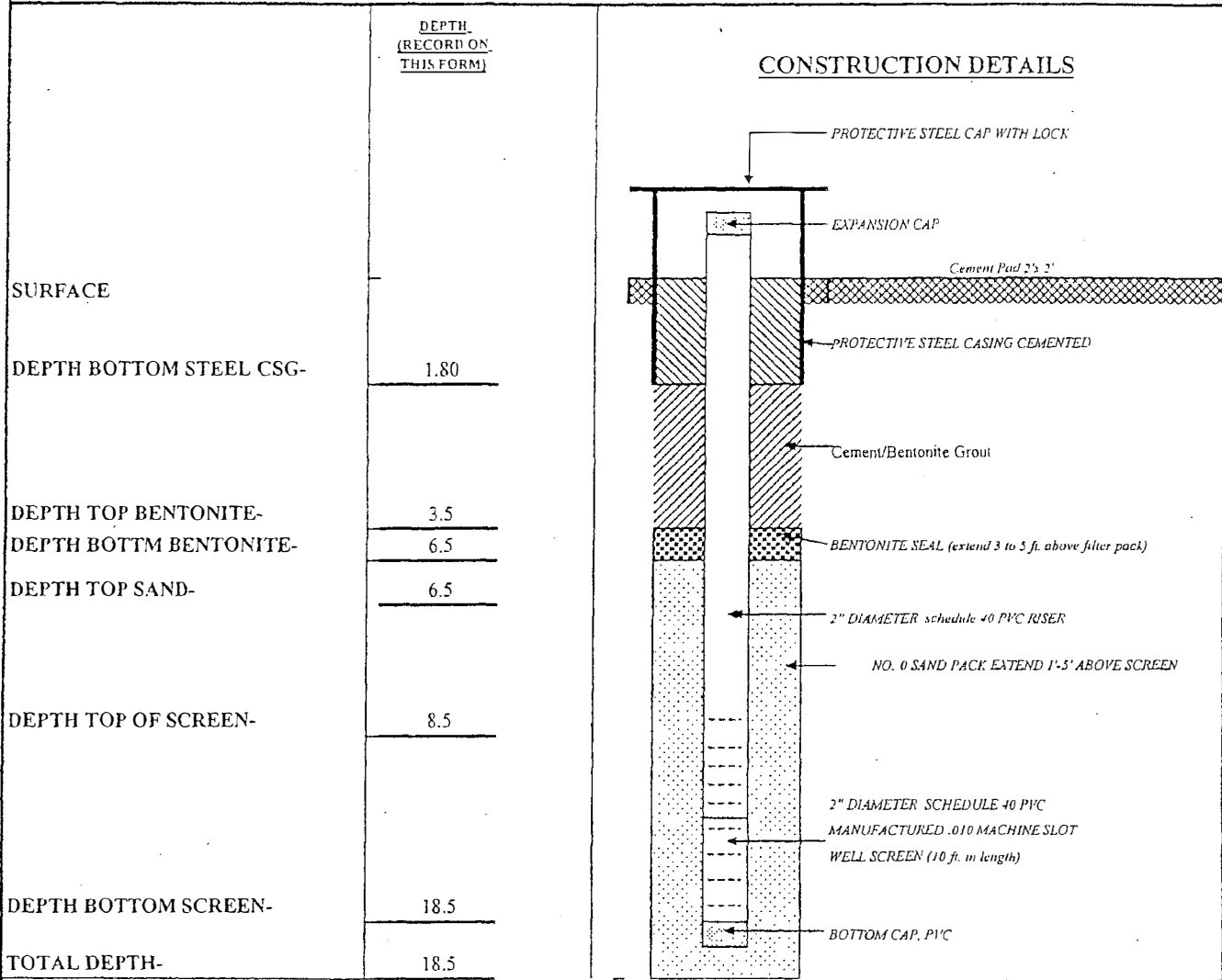
PROJECT NAME: COLONIE FUSRAP SITE

GEOLOGIST: M. Flanagan

SHEET: 2

DEPTH	BLOW COUNT	USCS SYMBOL	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	SAMPLE ID/DEPTH	REMARKS
						Augered down to 8'. No split spoons collected.
8---	5	ML	Brown to brown-gray silt, trace clay content, slight density, Wet	7.0		
- 3						
- 4						
- 2						
10---	3	ML	Gray-brown silt, trace clay content, slight density, Wet.	6.0		
- 3						
- 2						
- 3						
12---	2	ML	Gray-brown silt, trace clay content, slight density, Last ~4" gray silt, some clay, medium density, Wet.	10.0		
- 3						
- 2						
- 2						
14---	2	CL	Gray-brown clay, medium density, some silt interbedded, Wet.	15.0		
- 2						
- 3						
- 3						
16---	3	CL	Gray-brown clay, medium density, trace silt in 2 horizons, Wet.	15.0		
- 3						
- 3						
- 5						
18---						

FIELD FORM
 STICK-UP WELL CONSTRUCTION DIAGRAM
 COLONIE FUSRAP (to be completed in the field)
 WELL ID (MW - 34S)



GEOLOGIST: M. Flanagan
 DATE INSTALLED: 12-20-01
 DATE COMPLETED: 12-20-01
 BOREHOLE DIAMETER: 8 in.
 TYPE OF DRILLING: Hollow Stem Auger
 DRILLER/RIG: M. Marshall/Parrat Wolff
 LOCATION DESCRIPTION: "C"

Colonie FUSRAP Site		DISTRICT Baltimore		BORING NUMBER MW - 37S	
COMPANY NAME IT Corporation		DRILL SUBCONTRACTOR Parratt Wolff		SHEET 1 of 2	
PROJECT NAME TERC CONTRACT NO. DACA31-95-D-0083			SITE LOCATION 1130 Central Ave. Albany, NY		
NAME OF DRILLER Mickey Marshall			HOLE LOCATION See site map		
NAME OF GEOLOGIST Marc Flanagan			SIGNATURE OF GEOLOGIST		
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT Hollow Stem Auger / Split spoon sampler			DATE STARTED 1/27/2002	DATE COMPLETED 1/27/2002	
			SURFACE ELEVATION 220 (est.)		
			DEPTH TO FIRST ENCOUNTERED WATER NA		
DEPTH TO REFUSAL NA			DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
DEPTH DRILLED INTO BEDROCK NA			OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		
TOTAL DEPTH OF HOLE 22'			TOTAL FLUID LOSSES NA		
GEOTECHNICAL SAMPLES		SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES	
ENVIRONMENTAL SAMPLES		SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %	
DISPOSITION OF HOLE Monitoring well installed		BACKFILLED #0 Morie	MONITORING WELL MW - 37S	CASING TYPE 2" PVC	SCREENED INTERVAL 10'-20'
DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION	
SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS			SCALE:		
PROJECT TO 33, DC SCHOOLS			BORING.		
NOTE: ATTACH WELL CONSTRUCTION DIAGRAM			MW - 37S		

IT DRILLING LOG (CONTINUATION SHEET)

BORING NUMBER MW-37S

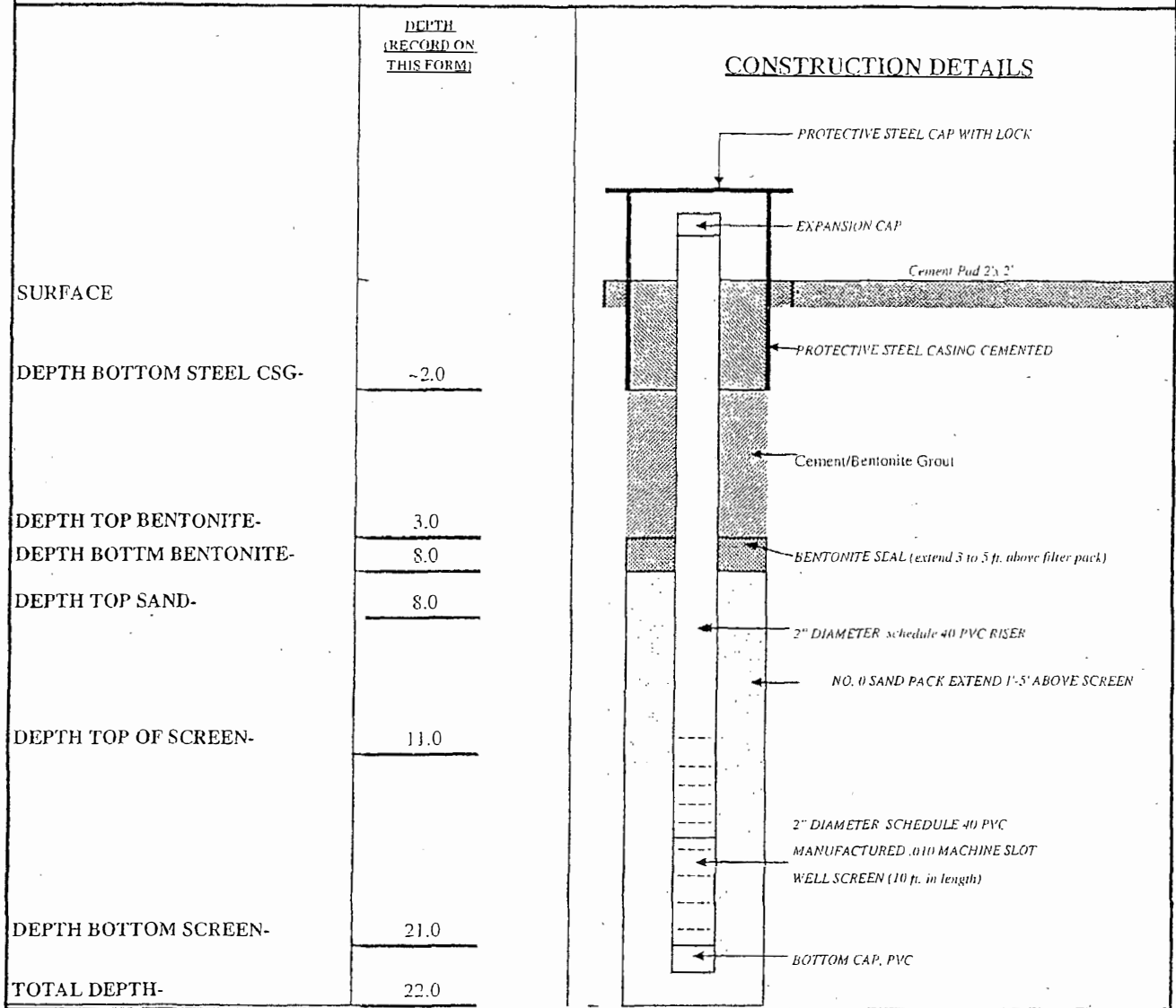
PROJECT NAME: COLONIE FUSRAP SITE

GEOLOGIST: M. Flanagan

SHEET: 2

DEPTH	BLOW COUNT	USCS SYMBOL	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	SAMPLE ID/DEPTH	REMARKS
						Augered down to 10'. No split spoons collected.
10---	4	ML	Brown-gray silt, trace fine grain sand, slight density, Wet.	<1.0		
-	4					
-	6					
-	4					
12---	4	ML	Brown-gray silt, slight density, Wet.	<1.0		
-	4					
-	4					
-	5					
14---	1	ML	Brown-gray silt, slight density, Wet.	<1.0		
-	3					
-	3					
-	2					
16---	3	ML	Brown-gray silt, slight density, trace brown-gray clay in 2" lens at bottom of spoon, Wet.	<1.0		
-	3					
-	2					
-	3					
18---	2	CL	Brown-gray silt, some clay, interbedded throughout spoon, medium density, Wet.	<1.0		
-	3					
-	2					
-	3					
20---	3	ML	Brown-gray silt, slight density, ~1" brown-gray clay lens, interbedded at bottom of spoon, Wet.	<1.0		
-	5					
-	4					
-	5					
22---						

FIELD FORM
 STICK-UP WELL CONSTRUCTION DIAGRAM
 COLONIE FUSRAP (to be completed in the field)
 WELL ID (MW - 37S)



GEOLOGIST: M. Flanagan
 DATE INSTALLED: 1-27-02
 DATE COMPLETED: 1-27-02
 BOREHOLE DIAMETER: 8 in.
 TYPE OF DRILLING: Hollow Stem Auger
 DRILLER/RIG: M. Marshall/Parrat Wolff
 LOCATION DESCRIPTION: "F"



Drilling Log

Monitoring Well **MW-41S**

Page: 1 of 1

Project Colonie FUSRAP Site Owner Shaw Environmental, Inc.
 Location Central Ave., Colonie, NY Proj. No. 837935
 Surface Elev. 223.0 ft. Total Hole Depth 23.0 ft. North _____ East _____
 Top of Casing NA Water Level Initial 14.0 ft. Static NA Diameter 6.25 in.
 Screen: Dia 2 in. Length 10 ft. Type/Size PVC Sch 40/0.010 in.
 Casing: Dia 2 in. Length 11 ft. Type PVC Sch 40
 Fill Material Morie Sand #1 Rig/Core _____
 Drill Co. ADT Method HSA
 Driller R.Comfort Log By R.Adams Date 12/11/06 Permit # NA

COMMENTS

Checked By _____ License No. _____

Depth (ft.)	Well Completion	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0							Grass, brown coarse grain SAND and GRAVEL, dry (fill).
2		0.09				SW	Brown, medium grain SAND, some subangular gravel, dry.
4		0.22				SP	Brown, medium grain SAND, little subangular gravel, moist.
6		0.92				SP	Brown, medium grain SAND, little subangular gravel, moist.
8		0.92				SM	Brown, fine to medium grain SAND, some silt, moist.
10		0.92				ML	Brown-gray, SILT, little clay, moist.
12		0.88				ML	Gray, SILT, trace clay, moist.
14		0.92					Gray, SILT, trace clay, saturated.
16		0.87					
18		0.33				MH	
20		0.92					
22		0.92					
24							

IT COMMERCIAL Rev. 12/6/98 COLONIE DEC05.GPJ IT CORP.GDT 1/10/07



Drilling Log

Monitoring Well **MW-42S**

Page: 1 of 1

Project Colonie FUSRAP Site Owner Shaw Environmental, Inc.
 Location Central Ave., Colonie, NY Proj. No. 837935
 Surface Elev. 223.0 ft. Total Hole Depth 23.0 ft. North _____ East _____
 Top of Casing NA Water Level Initial ▽ 10.0 ft. Static NA Diameter 6.25 in.
 Screen: Dia 2 in. Length 10 ft. Type/Size PVC Sch 40/0.010 in.
 Casing: Dia 2 in. Length 10 ft. Type PVC Sch 40
 Fill Material Morie Sand #1 Rig/Core _____
 Drill Co. ADT Method HSA
 Driller R. Comfort Log By R. Adams Date 12/12/06 Permit # NA
 Checked By _____ License No. _____

COMMENTS

Depth (ft.)	Well Completion	PI/D (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) <small>Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.</small>
0							Grass, brown, medium grain SAND, some gravel, dry.
2		0.22				SW	
4		0.14					
6		0.14					Brown, fine grain SAND, some silt, some gravel, moist.
8		0.29				SM	
10		0.98				SM	Brown-gray, SILT and fine grain SAND, trace gravel, wet.
12		1.12					Brown-gray, SILT and fine grain SAND, trace gravel, wet, slight petro-like odor.
14		1.78				ML	
16							Brown-gray, SILT and fine grain SAND, trace gravel, wet.
18						ML	
20		0.28					Gray, SILT, little fine grain sand, wet.
22		0.27				ML	
24							

IT_COMMERCIAL Rev. 12/6/99 COLONIE DEC06.GPJ IT_CORP.GDT 11/10/07



VISUAL CLASSIFICATION OF SOILS

BORING NUMBER		MW445		PROJECT NAME		Colonie FUSRAP		
PROJECT NUMBER		500304		COORDINATES		Northing 1405456.27, Easting 679685.18		
ELEVATION		Ground: 223.20 ft msl		TOC: 224.65 ft msl		STARTED	7/27/2015	
GEOLOGIST		B. Squire		GWL	Depth	Date/Time	COMPLETED	7/27/2015
DRILLING METHOD		HSA & Split Spoon				PAGE/PAGES	1/2	
DEPTH (ft)	SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION		USCS SYMBOL	REMARKS	
1				Brown f-c SAND, little silt, little rock, damp			Hand auger, log from cuttings	
2								
3								
4								
5								
6	1	1	0.0	Brown silty SAND, some gravel, loose, damp		SM		
7				-----				
8	2	1.5	0.0	As above, grading to gray-brown				
9				-----				
10	3	1.0	0.0	As above, moist		SP/SM		
11				-----				
12	4	1.5	0.0	As above				
13				Brown f SAND, few to little silt, loose, wet		SM		
14	5	0.0	0.0	As above (trace recovery)				
15				-----				
16	6	1.0	0.0	As above		SM		
17				Gray vf-f SAND, some silt, loose, saturated				
18	7	1.5	0.0	As above,		SM		
19				-----				
20	8	NR	0.0	As above				

Continued on page 2

NOTES:

c = coarse	ft = feet
m = medium	NA= not applicable
f = fine	NR= not recorded
vf = very fine	ppm = parts per million

Drilling Contractor: Parratt-Wolffe

Drilling Equipment: HSA and split spoon

Driller: M. Eaves

VISUAL CLASSIFICATION OF SOILS

BORING NUMBER		MW44S		PROJECT NAME		Colonie FUSRAP	
PROJECT NUMBER		500304		COORDINATES		Northing 1405456.27, Easting 679685.18	
ELEVATION		Ground: 223.20 ft msl		TOC: 224.65 ft msl		STARTED	
GEOLOGIST		B. Squire		GWL		Date/Time	
DRILLING METHOD		HSA & Split Spoon		PAGE/PAGES		2/2	
DEPT. H (ft)	SAMPLE TYPE & NUMBER	RECOVERY (ft)	PID / Oil Screen (ppm / pos-neg)	DESCRIPTION		USCS SYMBOL	REMARKS
21	8 (cont.)	NR	0.0	As above		SM	
22				----- Drilled interval			
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
39							
39							
40							

End of boring = 22 ft.

NOTES:

c = coarse	ft = feet
m = medium	NA= not applicable
f = fine	NR= not recorded
vf = very fine	ppm = parts per million

Drilling Contractor: Parratt-Wolffe

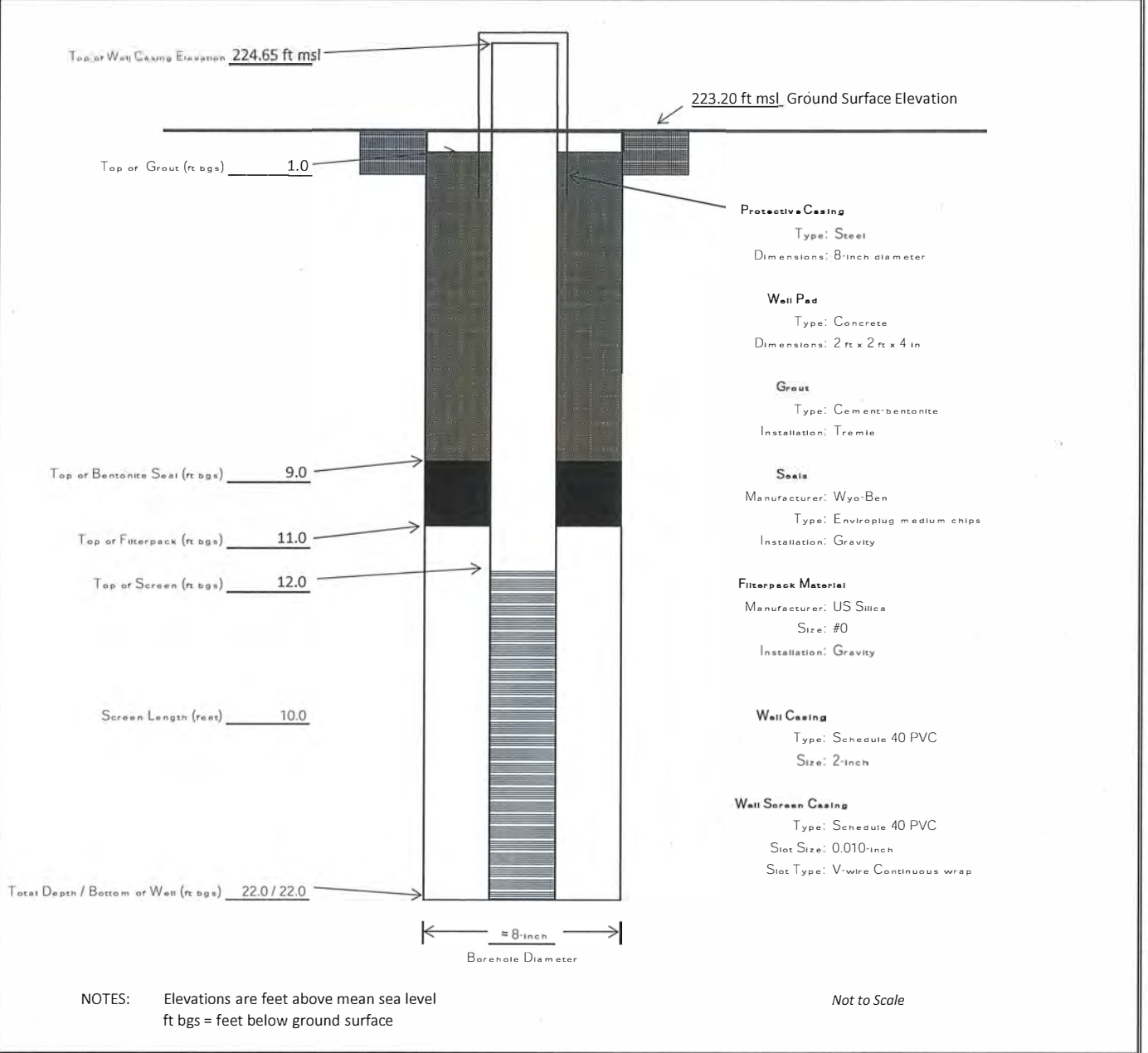
Drilling Equipment: HSA and split spoon

Driller: M. Eaves



MONITORING WELL CONSTRUCTION LOG

PROJECT	Colonie FUSRAP	WELL NUMBER	MW44S
LOCATION	Colonie, NY	SITE LOCATION	Main Site
CLIENT	USACE	DATE INSTALLED	7/27/2015
SUBCONTRACTOR	Parratt Wolff	NORTHING	1405456.27
DRILLER	M. Eaves	EASTING	679685.18
SHAW FIELD REPRESENTATIVE	B. Squire	NAD	NGVD



Appendix D

Long-Term Monitoring Data Summary Tables

Table D-1

**Groundwater Elevations
2010 to Present**

Well ID	Date	Top of Casing Elevation [feet]	Depth to Water [feet]	Groundwater Elevation [feet]
MW-08S	11/1/2010	230.90	3.31	227.59
MW-08S	11/30/2010	230.90	3.60	227.30
MW-08S	2/21/2011	230.90	2.72	228.18
MW-08S	3/9/2011	230.90	1.99	228.91
MW-08S	5/9/2011	230.90	3.32	227.58
MW-08S	5/17/2011	230.90	1.98	228.92
MW-08S	8/22/2011	230.90	3.56	227.34
MW-08S	8/25/2011	230.90	4.37	226.53
MW-08S	9/6/2011	230.90	2.00	228.90
MW-08S	11/1/2011	230.90	3.90	227.00
MW-08S	11/14/2011	230.90	3.90	227.00
MW-08S	2/27/2012	230.90	4.14	226.76
MW-08S	5/21/2012	230.90	3.82	227.08
MW-08S	5/22/2012	230.90	3.55	227.35
MW-08S	8/27/2012	230.90	6.45	224.45
MW-08S	8/28/2012	230.90	6.34	224.56
MW-08S	8/25/2015	230.90	6.01	224.89
MW-08S	8/2/2016	230.90	2.02	228.88
MW-08S	4/3/2017	230.90	2.07	228.83
MW-08S	7/14/2020	230.90	5.09	225.81
MW-08S	7/20/2021	203.90	2.22	228.68
MW-08S	7/10/2023	203.90	1.98	228.92
MW-30S	11/1/2010	226.74	7.80	218.94
MW-30S	11/30/2010	226.74	7.78	218.96
MW-30S	2/21/2011	226.74	7.20	219.54
MW-30S	2/24/2011	226.74	7.45	219.29
MW-30S	5/9/2011	226.74	8.22	218.52
MW-30S	5/11/2011	226.74	8.22	218.52
MW-30S	5/18/2011	226.74	6.28	220.46
MW-30S	8/22/2011	226.74	9.12	217.62
MW-30S	11/1/2011	226.74	9.09	217.65
MW-30S	2/27/2012	226.74	9.11	217.63
MW-30S	5/21/2012	226.74	8.33	218.41
MW-30S	8/27/2012	226.74	10.40	216.34
MW-30S	8/28/2012	226.74	10.38	216.36
MW-30S	8/25/2015	226.74	9.78	216.96
MW-30S	8/26/2015	226.74	9.78	216.96
MW-30S	3/7/2016	226.74	7.55	219.19
MW-30S	8/2/2016	226.74	7.95	218.79
MW-30S	4/3/2017	226.74	6.05	220.69
MW-30S	4/4/2017	226.74	6.05	220.69
MW-30S	7/14/2020	226.74	9.10	217.64
MW-30S	7/20/2021	226.74	6.03	220.71
MW-30S	7/11/2023	226.74	6.30	220.44

Notes: 1 - MW-44S was repaired, then re-surveyed on 07/18/20.

Elevation reference- feet above mean sea level [North American Datum of 1983]

Table D-1

**Groundwater Elevations
2010 to Present**

Well ID	Date	Top of Casing Elevation [feet]	Depth to Water [feet]	Groundwater Elevation [feet]
MW-34S	11/1/2010	219.84	6.45	213.39
MW-34S	11/29/2010	219.84	6.46	213.38
MW-34S	2/21/2011	219.84	6.40	213.44
MW-34S	3/9/2011	219.84	6.02	213.82
MW-34S	5/9/2011	219.84	6.80	213.04
MW-34S	5/13/2011	219.84	6.29	213.55
MW-34S	8/22/2011	219.84	7.58	212.26
MW-34S	8/24/2011	219.84	7.58	212.26
MW-34S	11/1/2011	219.84	6.54	213.30
MW-34S	11/16/2011	219.84	6.58	213.26
MW-34S	2/27/2012	219.84	7.16	212.68
MW-34S	5/21/2012	219.84	6.40	213.44
MW-34S	5/23/2012	219.84	6.28	213.56
MW-34S	8/27/2012	219.84	9.15	210.69
MW-34S	8/28/2012	219.84	9.05	210.79
MW-34S	8/25/2015	219.84	8.81	211.03
MW-34S	8/26/2015	219.84	8.81	211.03
MW-34S	3/7/2016	219.84	6.20	213.64
MW-34S	3/8/2016	219.84	6.20	213.64
MW-34S	8/2/2016	219.84	7.71	212.13
MW-34S	8/3/2016	219.84	7.71	212.13
MW-34S	4/3/2017	219.84	5.40	214.44
MW-34S	7/14/2020	219.84	9.26	210.58
MW-34S	7/20/2021	219.84	5.58	214.26
MW-34S	7/11/2023	219.84	5.64	214.20
MW-37S	11/1/2010	219.96	6.22	213.74
MW-37S	11/30/2010	219.96	6.24	213.72
MW-37S	2/21/2011	219.96	6.02	213.94
MW-37S	3/10/2011	219.96	4.78	211.12
MW-37S	5/9/2011	219.96	6.12	213.84
MW-37S	5/17/2011	219.96	5.92	214.04
MW-37S	8/22/2011	219.96	6.76	213.20
MW-37S	8/25/2011	219.96	6.86	213.10
MW-37S	11/1/2011	219.96	6.30	213.66
MW-37S	11/17/2011	219.96	6.40	213.56
MW-37S	2/27/2012	219.96	6.68	213.28
MW-37S	5/21/2012	219.96	6.02	213.94
MW-37S	5/23/2012	219.96	6.08	213.88
MW-37S	8/27/2012	219.96	8.68	211.28
MW-37S	8/29/2012	219.96	8.63	211.33
MW-37S	8/25/2015	219.96	8.41	211.55
MW-37S	8/26/2015	219.96	8.41	211.55
MW-37S	3/7/2016	219.96	6.13	213.83
MW-37S	3/9/2016	219.96	6.13	213.83
MW-37S	8/2/2016	219.96	7.42	212.54
MW-37S	8/3/2016	219.96	7.42	212.54
MW-37S	4/3/2017	219.96	5.25	214.71
MW-37S	7/14/2020	219.96	7.90	212.06
MW-37S	7/20/2021	219.96	5.70	214.26
MW-37S	7/11/2023	219.96	5.95	214.01

Notes: 1 - MW-44S was repaired, then re-surveyed on 07/18/20.

Elevation reference- feet above mean sea level [North American Datum of 1983]

Table D-1

**Groundwater Elevations
2010 to Present**

Well ID	Date	Top of Casing Elevation [feet]	Depth to Water [feet]	Groundwater Elevation [feet]
MW-41S	11/1/2010	224.82	4.84	219.98
MW-41S	12/1/2010	224.82	4.10	220.72
MW-41S	2/21/2011	224.82	4.48	220.34
MW-41S	3/8/2011	224.82	3.67	221.15
MW-41S	3/17/2011	224.82	2.92	221.90
MW-41S	5/9/2011	224.82	5.36	219.46
MW-41S	5/12/2011	224.82	4.47	220.35
MW-41S	8/22/2011	224.82	4.99	219.83
MW-41S	8/23/2011	224.82	5.05	219.77
MW-41S	11/1/2011	224.82	4.87	219.95
MW-41S	11/17/2011	224.82	5.00	219.82
MW-41S	2/27/2012	224.82	5.36	219.46
MW-41S	5/21/2012	224.82	4.40	220.42
MW-41S	5/22/2012	224.82	4.35	220.47
MW-41S	8/27/2012	224.82	6.91	217.91
MW-41S	8/29/2012	224.82	7.03	217.79
MW-41S	8/25/2015	224.82	7.28	217.54
MW-41S	3/7/2016	224.82	4.13	220.69
MW-41S	3/8/2016	224.82	4.13	220.69
MW-41S	8/2/2016	224.82	6.31	218.51
MW-41S	8/3/2016	224.82	6.31	218.51
MW-41S	4/3/2017	224.82	2.90	221.92
MW-41S	7/14/2020	224.82	6.28	218.54
MW-41S	7/20/2021	224.82	3.62	221.20
MW-41S	7/11/2023	224.82	5.03	219.79
MW-42S	11/1/2010	225.77	6.99	218.78
MW-42S	12/1/2010	225.77	6.92	218.85
MW-42S	2/21/2011	225.77	6.95	218.82
MW-42S	2/22/2011	225.77	7.19	218.58
MW-42S	5/9/2011	225.77	7.48	218.29
MW-42S	5/12/2011	225.77	6.97	218.80
MW-42S	8/22/2011	225.77	7.50	218.27
MW-42S	8/23/2011	225.77	7.48	218.29
MW-42S	11/1/2011	225.77	7.11	218.66
MW-42S	11/15/2011	225.77	7.17	218.60
MW-42S	2/27/2012	225.77	7.71	218.06
MW-42S	5/21/2012	225.77	6.59	219.18
MW-42S	5/24/2012	225.77	6.75	219.02
MW-42S	8/27/2012	225.77	9.22	216.55
MW-42S	8/29/2012	225.77	9.30	216.47
MW-42S	8/25/2015	225.77	9.02	216.75
MW-42S	3/7/2016	225.77	6.35	219.42
MW-42S	8/2/2016	225.77	8.45	217.32
MW-42S	4/3/2017	225.77	5.35	220.42
MW-42S	7/14/2020	225.77	8.53	217.24
MW-42S	7/20/2021	225.77	5.78	219.99
MW-42S	7/11/2023	225.77	6.89	218.88

Notes: 1 - MW-44S was repaired, then re-surveyed on 07/18/20.

Elevation reference- feet above mean sea level [North American Datum of 1983]

Table D-1

Groundwater Elevations
2010 to Present

Well ID	Date	Top of Casing Elevation [feet]	Depth to Water [feet]	Groundwater Elevation [feet]
MW-44S	8/25/2015	224.65	6.61	218.04
MW-44S	8/26/2015	224.65	6.61	218.04
MW-44S	3/7/2016	224.65	4.15	220.50
MW-44S	3/8/2016	224.65	4.15	220.50
MW-44S	8/2/2016	224.65	4.60	220.05
MW-44S	8/3/2016	224.65	4.60	220.05
MW-44S	4/3/2017	224.65	2.75	221.90
MW-44S ¹	7/14/2020	225.11	5.98	219.13
MW-44S	7/20/2021	225.11	3.43	221.68
MW-44S	7/11/2023	225.11	4.23	220.88

Notes: 1 - MW-44S was repaired, then re-surveyed on 07/18/20.
Elevation reference- feet above mean sea level [North American Datum of 1983]

Table D-2

Well Stability Parameters
2008 to 2020

Well ID	Sample Date	Dissolved Oxygen [mg/L]	Oxidation Reduction Potential [mV]	pH [-]	Specific Conductance [uS/cm]	Temperature [°C]	Turbidity [NTU]
MW-08S	7/28/2008	0.95	520.3	5.52	401	16.61	1.3
MW-08S	10/29/2008	0.45	150.0	6.68	280	12.95	1.0
MW-08S	12/28/2008	0.97	161.4	6.36	486	13.90	10.4
MW-08S	2/18/2009	0	115.0	7.00	483	5.80	0
MW-08S	5/21/2009	4.08	198.1	6.20	418	13.19	0
MW-08S	11/30/2010	2.12	116.7	7.35	479	13.42	4.7
MW-08S	3/9/2011		113	7.10	470	8.67	0
MW-08S	5/17/2011	5.97	151.0	6.85	1084	11.22	1.10
MW-08S	8/25/2011	4.23	144.6	6.70	1112	17.90	1.60
MW-08S	9/6/2011	1.85	130.0	6.27	474	17.44	1.80
MW-08S	11/14/2011	4.13	173.2	6.55	491	11.94	0.30
MW-08S	2/29/2012	2.09	137.8				
MW-08S	5/22/2012	1.38	276.0	6.06	319	13.02	0.8
MW-08S	8/28/2012	0.02	66.9	6.78	524	18.19	5.0
MW-08S	8/25/2015	0.39	252.2	6.60	583	23.02	11.5
MW-08S	8/2/2016	3.18	85.5	6.31	696	18.7	0
MW-08S	4/3/2017	3.23	128.6	6.66	779	11.31	0.3
MW-08S	7/13/2020	0.18	72	6.74	1020	15.50	1.43
MW-08S	7/19/2021	0.46	108.9	6.41	683	19.34	1.03
MW-08S	7/10/2023	1.83	128.3	6.5	520	15.65	2.12
MW-30S	7/29/2008	0.93	452.2	5.80	1114	18.08	5.0
MW-30S	11/6/2008	2.23	273.6	6.22	869	14.56	16.0
MW-30S	2/17/2009	4.80	110.0	6.31	807	7.49	0
MW-30S	5/18/2009	9.67	239.0	6.37	956	9.14	60.5
MW-30S	11/30/2010	7.16	190.20	6.22	781	10.62	61.00
MW-30S	2/24/2011		228	6.69	659	8.41	3.60
MW-30S	5/11/2011	6.02	161.11	6.71	546	10.11	8.40
MW-30S	5/18/2011	7.34	194.4	6.49	423	9.98	20.10
MW-30S	8/25/2011	2.29	-140.2	6.33	647	17.99	32.7
MW-30S	11/14/2011	0.86	396.5	6.32	537	13.87	9.8
MW-30S	2/29/2012	2.72	222.0				
MW-30S	5/24/2012	2.88	220.3	6.31	513	12.03	17.6
MW-30S	8/28/2012	2.9	134.6	6.24	703	25.16	8.5
MW-30S	8/26/2015	0.27	211.4	6.69	536	17.34	8.0
MW-30S	3/7/2016	0.13	213.8	7.09	536	6.24	13.9
MW-30S	8/2/2016	0.95	74.1	7.17	376	16.61	1124.7
MW-30S	4/4/2017	9.17	220.5	6.68	532	6.05	21.1
MW-30S	7/14/2020	1.56	199	6.47	521	13.44	2.31
MW-30S	7/19/2021	4.44	172.5	6.57	514	15.63	17.5
MW-30S	7/10/2023	16.2 R	171	6.8	420	13.9	16.7

Notes: mg/L - milligram per liter; mV - millivolts; uS/cm - microsiemens per centimeter; °C - degree centigrade; NTU - nephelometric turbidity units

Table D-2

Well Stability Parameters
2008 to 2020

Well ID	Sample Date	Dissolved Oxygen [mg/L]	Oxidation Reduction Potential [mV]	pH [-]	Specific Conductance [uS/cm]	Temperature [°C]	Turbidity [NTU]
MW-34S	8/1/2008	0.48	283.0	6.42	414	13.58	0
MW-34S	10/30/2008	0.31	13.1	6.91	507	13.78	0
MW-34S	2/19/2009	0	150.0	7.15	582	8.90	
MW-34S	5/26/2009	0.61	121.8	7.10	527	10.73	1287.0
MW-34S	11/29/2010	1.88	120.50	6.68	784	11.01	254.00
MW-34S	3/9/2011		18	7.19	691	9.64	50.0
MW-34S	5/13/2011	2.26	-16.4	7.06	986	10.20	6.6
MW-34S	8/24/2011	1.73	-182.2	6.59	717	16.58	4.1
MW-34S	11/16/2011	1.87	48.0	6.87	650	13.10	4.9
MW-34S	2/28/2012	1.38	3.9				
MW-34S	5/23/2012	1.68	91.7	7.05	602	13.64	7.4
MW-34S	8/28/2012	2.47	12.1	7.20	748	16.15	1.4
MW-34S	8/26/2015	0.46	114.7	7.26	1025	24.78	5.0
MW-34S	3/8/2016	0.01	-14.0	7.03	699	9.14	30.8
MW-34S	8/3/2016	0.02	-75.3	7.44	630	13.12	30.2
MW-34S	4/3/2017	1.67	53.7	7.09	672	10.54	39.4
MW-34S	7/15/2020	1.07	23	7.58	863	12.02	2.58
MW-34S	7/20/2021	0.32	49.3	6.93	617	14.00	9.3
MW-34S	7/11/2023	1.54	68.6	6.94	500	12.96	nm *
MW-37S	8/1/2008	1.71	-77.9	6.67	676	12.30	54.2
MW-37S	10/1/2008	5.10	-96.4	7.25	630	12.62	6.5
MW-37S	2/1/2009	0.94	-48.9	7.05	565	10.09	2085.8
MW-37S	5/26/2009	1.14	-56.3	6.41	717	11.48	76.0
MW-37S	11/30/2010	0.68	-67.80	7.44	818	12.70	96.40
MW-37S	3/10/2011		-102	7.22	769	10.24	85.0
MW-37S	5/17/2011	1.64	-83.7	7.06	662	11.29	16.2
MW-37S	8/25/2011	1.81	-53.7	7.05	1398	14.47	1.8
MW-37S	11/17/2011	2.29	-74.0	6.89	1077	11.90	4.3
MW-37S	2/28/2012	3.00	-54.9				
MW-37S	5/23/2012	1.44	-86.2	7.15	482	12.27	18.2
MW-37S	8/29/2012	0.22	-93.8	7.01	460	16.35	1.3
MW-37S	8/26/2015	0.23	-64.4	6.84	500	12.76	4.7
MW-37S	3/9/2016	3.13	-61.8	7.04	471	11.34	22.6
MW-37S	8/3/2016	0.01	-94.0	6.99	350	12.12	26.7
MW-37S	4/3/2017	2.39	-55.7	7.15	489	10.73	75.6
MW-37S	7/15/2020	2.72	-46	7.49	523	12.31	9.67
MW-37S	7/20/2021	0.99	-96.5	7.07	508	13.92	35.5
MW-37S	7/11/2023	1.35	-88.6	7.04	439	13.25	nm *

Notes: mg/L - milligram per liter; mV - millivolts; uS/cm - microsiemens per centimeter; °C - degree centigrade; NTU - nephelometric turbidity units

Table D-2

Well Stability Parameters
2008 to 2020

Well ID	Sample Date	Dissolved Oxygen [mg/L]	Oxidation Reduction Potential [mV]	pH [-]	Specific Conductance [uS/cm]	Temperature [°C]	Turbidity [NTU]
MW-41S	8/1/2008	2.37	413.1	3.89	471	14.44	676.0
MW-41S	11/1/2008	0.31	-33.7	7.12	415	14.17	378
MW-41S	2/1/2009	2.74	-8.1	6.94	545	9.11	154.3
MW-41S	5/1/2009	3.18	18.0	6.92	773	10.19	17.6
MW-41S	12/1/2010	0.85	-101.10	7.10	991	12.67	607.70
MW-41S	3/8/2011		-35	6.88	948	9.92	80.0
MW-41S	3/17/2011		-20	7.04	816	10.69	894
MW-41S	5/12/2011	0.47	-70.2	6.94	1061	10.03	599.9
MW-41S	8/23/2011	0.76	-14.6	6.69	908	19.21	6.4
MW-41S	11/17/2011	0.57	-74.4	6.82	941	13.20	214.7
MW-41S	2/27/2012	6.09	-44.5				
MW-41S	5/22/2012	1.72	-33.5	6.85	791	15.07	87.9
MW-41S	8/29/2012	0.88	-52.8	6.93	884	15.74	203.0
MW-41S	8/25/2015	0.35	-12.6	6.47	1288	23.16	120.3
MW-41S	3/8/2016	0.02	-81.7	6.67	1241	10.72	51.7
MW-41S	8/3/2016	0.04	-47.0	6.62	719	14.17	192.8
MW-41S	4/3/2017	1.38	-21.6	6.72	1281	9.97	85.6
MW-41S	7/15/2020	0.82	-29	6.83	1060	19.40	57.5
MW-41S	7/20/2021	2.17	-39.3	6.66	1119	18.65	8.71
MW-41S	7/10/2023	0.84	-57.3	6.69	925	13.34	36
MW-42S	8/5/2008	1.11	-173.3	6.10	592	15.82	466.0
MW-42S	11/4/2008	6.38	-62.7	6.83	603	14.66	155
MW-42S	2/17/2009	0.89	-87.1	6.93	674	9.49	261.0
MW-42S	2/19/2009	17.39	-28.5	4.84	681	9.77	66.5
MW-42S	12/1/2010	0.84	-95.70	7.27	976	13.31	831.70
MW-42S	2/22/2011		-107	7.14	971	9.73	240
MW-42S	5/12/2011	0.92	-62.4	5.95	648	10.55	32.3
MW-42S	8/23/2011	1.09	-40.1	6.71	716	18.89	5.6
MW-42S	11/15/2011	1.09	-67.4	6.85	743	14.32	17.0
MW-42S	2/27/2012	0.26	-19.9				
MW-42S	5/24/2012	1.23	-88.4	6.87	600	15.64	84.0
MW-42S	8/29/2012	0.64	-82.7	7.06	588	18.00	60.0
MW-42S	8/25/2015	0.08	-52.2	6.76	564	19.58	30.0
MW-42S	3/7/2016	0	-129.9	7.19	536	8.17	162.8
MW-42S	8/2/2016	0.04	-87.6	6.91	313	14.14	40.0
MW-42S	4/3/2017	0.86	-65.9	7.00	540	9.34	86.7
MW-42S	7/14/2020	1.46	-54	7.15	495	14.61	48.3
MW-42S	7/19/2021	0.14	-88.1	6.98	474	16.25	13.0
MW-42S	7/10/2023	1.22	-112.2	7.08	428	14.79	14.0
MW-44S	8/26/2015	0.23	35.7	6.97	728	14.00	17.6
MW-44S	3/8/2016	0.01	-31.0	6.91	654	8.81	6.0
MW-44S	8/3/2016	0.15	-18.3	6.68	451	14.13	0.1
MW-44S	4/3/2017	0.60	52.6	6.43	632	9.51	41.3
MW-44S	7/15/2020	0.29	51	7.66	693	13.63	9.14
MW-44S	7/20/2021	0.55	58.5	6.74	1006	19.95	3.81
MW-44S	7/10/2023	3.95	125.3	6.78	812	16.03	9.25

Notes: mg/L - milligram per liter; mV - millivolts; uS/cm - microsiemens per centimeter; °C - degree centigrade; NTU - nephelometric turbidity units

Table D-3

Monitored Natural Attenuation Parameters
2008 to 2020

Well ID	Sample Date	Ethane [ug/L]	Ethene [ug/L]	Ferrous Iron [mg/L]	Man-ganese (II) [mg/L]	Methane [ug/L]	Nitrate + Nitrite [mg/L]	Field Nitrite [mg/L]	Sulfate [mg/L]	Sulfide [mg/L]	Total Organic Carbon [mg/L]
MW-08S	11/30/2010	2.0 U	2.0 U	0.20 U	0.05 U	650	0.10 U		31.1		1.91
MW-08S	3/9/2011	2.0 U	2.0 U	0.10 U	0.54	270	0.10 U		38.0		1.91
MW-08S	5/17/2011	2.0 U	2.0 U	0.09	0.795	71.0	0.10 U		46.4		2.18
MW-08S	8/25/2011	2.0 U	2.0 U	0.09	0.795	25.0	0.0578 J		31.3		1.80
MW-08S	2/29/2012	2.0 U	2.0 U	0.03 U	2.990	12	0.0591 J		22.4		1.61
MW-08S	5/22/2012	2.0 U	2.0 U	0.43	4.23	4.1	0.0601 J		16.1		1.57
MW-08S	8/28/2012	2.0 U	2.0 U	0.15	4.50	24.0	0.0617 J		25.6		1.24 J
MW-08S	7/13/2020			0		11.1 J	0.0214 J	0	23.1	0.0330 U	1.31
MW-30S	11/30/2010	2.0 U	2.0 U	0.80	0.15	1.2 J	2.86		113		1.91
MW-30S	2/24/2011	2.0 U	2.0 U	0.10	0.36	2.9	2.21		97.6		1.87
MW-30S	5/18/2011	2.0 U	2.0 U	0.11	0.136	2.0 U	1.48		43.8		1.79
MW-30S	8/25/2011	2.0 U	2.0 U	0.11	0.136	9.9	0.244		104		1.73
MW-30S	2/29/2012	2.0 U	2.0 U	0.30	0.540	5.5	0.37		93.4		2.29
MW-30S	5/24/2012	2.0 U	2.0 U	0.64	0.768	4.3	0.189		90.5		1.70
MW-30S	8/28/2012	2.0 U	2.0 U	0.14	0.511	24.0	0.0666 J		104		1.83
MW-30S	7/14/2020			0		37.9	0.0170 U	0.02	29.8	0.0330 U	1.79
MW-34S	8/1/2008	2 U	2 U	0	1	13	0.161		92		2.31 J
MW-34S	10/30/2008	2 U	2 U	0	1	13	0.13 J		95		2.25 J
MW-34S	2/19/2009	2 U	2 U	0	0 U	13	0.239		79		2.16
MW-34S	5/26/2009	2 U	2 U	0 U	1	15	0.229		84		2.19 J
MW-34S	11/29/2010	2.0 U	2.0 U	0.01	0.60	11.0	0.132		76.3		1.92
MW-34S	3/9/2011	2.0 U	2.0 U	0.10 U	0.61	7.2	0.108		78.0		2.12
MW-34S	5/13/2011	2.0 U	2.0 U	0.18	0.554	12.0	0.0949 J		75.7		2.12
MW-34S	8/24/2011	2.0 U	2.0 U	0.18	0.554	14.0	0.0917 J		78.9		2.11
MW-34S	2/28/2012	2.0 U	2.0 U	0.14	0.765	15	0.0976 J		70.5		2.13
MW-34S	5/23/2012	2.0 U	2.0 U	0.03 U	0.469	14	0.0932 J		65.7		1.88
MW-34S	8/28/2012	2.0 U	2.0 U	0.03 U	0.484	21.0	0.0777 J		72.6		2.22
MW-34S	7/15/2020			1.71		12.3 J	0.0170 U	0	39.0	0.0330 U	1.26

Notes: U - not detected at stated detection limit; J - estimated result below detection limit; ug/L - micrograms per liter; mg/L - milligrams per liter

Table D-3

Monitored Natural Attenuation Parameters
2008 to 2020

Well ID	Sample Date	Ethane [ug/L]	Ethene [ug/L]	Ferrous Iron [mg/L]	Man-ganese (II) [mg/L]	Methane [ug/L]	Nitrate + Nitrite [mg/L]	Field Nitrite [mg/L]	Sulfate [mg/L]	Sulfide [mg/L]	Total Organic Carbon [mg/L]
MW-37S	8/1/2008	2 U	2 U	0 U	0	2 U	0.1 U		11		1.01 J
MW-37S	10/1/2008	2 U	2 U	0 U	0 U	2 U	0.0571 J		12		1.53
MW-37S	2/1/2009	2 U	2 U	0 U	0 U	2 U	0.0588 J		10		1.13 J
MW-37S	5/26/2009	2 U	2 U	0 U	0 U	2 U	0.1 U		18		0.847 J
MW-37S	11/30/2010	2.0 U	2.0 U	2.00	0.60	80.0	0.10 U		33.8		3.10
MW-37S	3/10/2011	2.0 U	2.0 U	1.20	0.60	76	0.0563 J		34.0		4.27
MW-37S	5/17/2011	2.0 U	2.0 U	0.67	0.713	130	0.10 U		32.2		4.38
MW-37S	8/25/2011	2.0 U	2.0 U	0.67	0.713	80.0	0.10 U		36.4		3.38
MW-37S	2/28/2012	2.0 U	2.0 U	1.51	5.06	59	0.0615 J		36.5		2.66
MW-37S	5/23/2012	2.0 U	2.0 U	2.59	7.42	74	0.100 U		38.0		3.56
MW-37S	8/29/2012	2.0 U	2.0 U	0.03 U	6.12	56.0	0.10 U		33.4		2.74
MW-37S	7/15/2020			1.35		56.1	0.0170 U	0	21.7	0.0330 U	1.52
MW-41S	8/1/2008	1.4 J	2.0 U	0.6	0.68	78.0	0.114 J		75.6		2.89
MW-41S	11/1/2008	0.84 J	2.0 U	0.6	0.68	56	0.106 J		80.1		2.64 J
MW-41S	2/1/2009	2.0 U	2.0 U	0.8	0.05	66	0.112 J		74.2		2.72
MW-41S	5/1/2009	0.65 J	2.0 U	1.8	0.68	110	0.10 U		70.8		2.88
MW-41S	12/1/2010	1.2 J	2.0 U	2.00	0.70 E	110	0.10 U		76.3		2.88
MW-41S	3/8/2011	2.2	2.0 U	0.80	0.70 E	170	0.0571 J		78.8		2.62
MW-41S	5/12/2011	2.40	2.0 U	0	1.536	220	0.050 J		70.7		2.78
MW-41S	8/23/2011	2.0 U	2.0 U	0	1.536	190	0.139		80.0		2.79
MW-41S	2/27/2012	0.89 J	2.0 U	3.04	11.26	210	0.073 J		79.4		2.79
MW-41S	5/22/2012	0.73 J	2.0 U	2.05	12.16	210	0.0583 J		75.0		2.50
MW-41S	8/29/2012	2.0 U	2.0 U	3.20	14.24	150	0.0510 J		75.1		2.77
MW-41S	7/15/2020			0.34		134	0.0170 U	0.004	74.6	0.0330 U	3.24

Notes: U - not detected at stated detection limit; J - estimated result below detection limit; ug/L - micrograms per liter; mg/L - milligrams per liter

Table D-3

**Monitored Natural Attenuation Parameters
2008 to 2020**

Well ID	Sample Date	Ethane [ug/L]	Ethene [ug/L]	Ferrous Iron [mg/L]	Man-ganese (II) [mg/L]	Methane [ug/L]	Nitrate + Nitrite [mg/L]	Field Nitrite [mg/L]	Sulfate [mg/L]	Sulfide [mg/L]	Total Organic Carbon [mg/L]
MW-42S	8/5/2008	1.2 J	2.0 U	2.2	0.70	230	0.10 U		98.6		14.5
MW-42S	11/4/2008	2.0 U	2.0 U	2.2	0.70	400	0.118 J		96.1		12.1
MW-42S	2/17/2009	2.0 U	2.0 U	2.6	0.05	510	0.0789 J		75.2		9.53
MW-42S	2/19/2009	1.2 J	2.0 U	1.2	0.68	470	0.10 U		66.3		8.79
MW-42S	12/1/2010	1.4 J	2.0 U	3.40	0.69	150	0.10 U		65.8		6.10
MW-42S	2/22/2011	2.0 U	2.0 U	2.60	0.68	150	0.0605 J		68.6		5.85
MW-42S	5/12/2011	0.77 J	2.0 U	0.53	1.106	130	0.10 U		53.2		5.96
MW-42S	8/23/2011	2.0 U	2.0 U	0.53	1.106	100	0.0536 J		54.0		6.05
MW-42S	2/27/2012	2.0 U	2.0 U	7.00	6.80	100	0.0717 J		46.2		5.01
MW-42S	5/24/2012	1.3 J	2.0 U	11.90	8.58	81	0.0549 J		35.7		4.34
MW-42S	8/29/2012	2.0 U	2.0 U	2.07	2.24	11.0	0.0571 J		23.6		4.84
MW-42S	7/14/2020			0.65		105	0.0170 U	0.02	4.96	0.0330 U	2.10
MW-44S	7/15/2020			0		57.0	0.0170 U	0.013	32.9	0.0330 U	1.84

Notes: U - not detected at stated detection limit; J - estimated result below detection limit; ug/L - micrograms per liter; mg/L - milligrams per liter

Table D-4

**Volatile Organic Compounds
2008 to Present**

Well ID	Sample Date	Tetrachloro- ethene [ug/L]	Trichloro- ethene [ug/L]	cis-1,2- Dichloroethene [ug/L]	Vinyl Chloride [ug/L]
TCG:		5.5	18	1800	1.4
MW-08S	7/28/2008	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	10/29/2008	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	12/28/2008	1.0 U	1.0 U	1.0 U	2.0 U
MW-08S	2/18/2009	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	5/21/2009	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	11/30/2010	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	3/9/2011	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	5/17/2011	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	8/25/2011	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	2/29/2012	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	5/22/2012	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	8/28/2012	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	8/25/2015	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	8/2/2016	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	4/3/2017	1.0 U	1.0 U	1.0 U	1.0 U
MW-08S	7/13/2020	0.333 U	0.333 U	0.333 U	0.333 U
MW-08S	7/19/2021	0.333 U	0.333 U	0.333 U	0.333 U
MW-08S	7/11/2023	0.333 U	0.333 U	0.333 U	0.333 U
MW-30S	7/29/2008	14.0	5.8	3.2	1.0 U
MW-30S	11/6/2008	12.0	5.4	2.7	1.0 U
MW-30S	2/17/2009	9.0	2.9	1.4	1.0 U
MW-30S	5/18/2009	7.8	3.1	2.4	1.0 U
MW-30S	11/30/2010	5.6	1.4	0.56 J	1.0 U
MW-30S	2/24/2011	4.7	1.1	0.67 J	1.0 U
MW-30S	5/18/2011	3.6	0.5 J	1.0 U	1.0 U
MW-30S	8/25/2011	4.4	1.6	1.3	1.0 U
MW-30S	2/29/2012	4.5	1.7	1.4	1.0 U
MW-30S	5/24/2012	4.6	1.6	1.3	1.0 U
MW-30S	8/28/2012	6.0	2.4	2.3	1.0 U
MW-30S	8/26/2015	2.8	1.6	2.0	1.0 U
MW-30S	3/7/2016	1.5	0.52 J	0.76 J	1.0 U
MW-30S	8/2/2016	3.9	1.2	0.96 J	1.0 U
MW-30S	4/4/2017	3.1	1.0 U	1.0 U	1.0 U
MW-30S	7/14/2020	6.67	1.54	0.540 J	0.333 U
MW-30S	7/19/2021	2.88	0.333 U	0.333 U	0.333 U
MW-30S	7/10/2023	0.8 J	0.49 J	0.52 J	0.333 U

Notes: TCG - target concentration goal; ug/L - microgram per liter; U - not detected at reporting limit; J - estimated result, detected below reporting limit. Shaded results exceed the TCG.

Table D-4

**Volatile Organic Compounds
2008 to Present**

Well ID	Sample Date	Tetrachloro- ethene [ug/L]	Trichloro- ethene [ug/L]	cis-1,2- Dichloroethene [ug/L]	Vinyl Chloride [ug/L]
TCG:		5.5	18	1800	1.4
MW-34S	8/1/2008	0.92 J	1.0 U	0.93 J	1.6
MW-34S	10/30/2008	1.0	1.0 U	1.3	1.8
MW-34S	2/19/2009	0.94 J	1.0 U	0.89 J	1.6
MW-34S	5/26/2009	0.85 J	1.0 U	0.85 J	2.0
MW-34S	11/29/2010	0.96 J	1.0 U	1.6	2.5
MW-34S	3/9/2011	0.75 J	1.0 U	0.96 J	1.8
MW-34S	5/13/2011	0.66 J	1.0 U	0.93 J	2.4
MW-34S	8/24/2011	0.71 J	1.0 U	1.2	2.2
MW-34S	2/28/2012	0.70 J	1.0 U	1.1 J	2.3
MW-34S	5/23/2012	0.72 J	1.0 U	0.86 J	2.0
MW-34S	8/28/2012	0.73 J	1.0 U	1.5	3.4
MW-34S	8/26/2015	0.45 J	1.0 U	0.91 J	1.7 J
MW-34S	3/8/2016	0.49 J	1.0 U	0.79 J	1.1
MW-34S	8/3/2016	0.61 J	1.0 U	1.3	1.6
MW-34S	4/3/2017	0.75 J	0.29 J	1.2	1.1
MW-34S	7/15/2020	0.470 J	0.333 U	1.34	0.970 J
MW-34S	7/20/2021	0.51 J	0.333 U	1.09	0.86 J
MW-34S	7/11/2023	0.37 J	0.333 U	1.04	0.74 J
MW-37S	8/1/2008	0.22 J	0.33 J	1.6	0.99 J
MW-37S	10/1/2008	0.23 J	0.38 J	2.3	1.1 J
MW-37S	2/1/2009	0.51 J	0.71 J	3.6	0.85 J
MW-37S	5/26/2009	0.27 J	0.36 J	1.9	1.2 J
MW-37S	11/30/2010	0.25 J	0.36 J	17.0	0.50 J
MW-37S	3/10/2011	1.0 U	0.33 J	27	0.66 J
MW-37S	5/17/2011	0.25 J	0.41 J	27.0	0.91 J
MW-37S	8/25/2011	0.39 J	0.63 J	34.0	0.53 J
MW-37S	2/28/2012	0.58 J	0.68 J	28	0.40 J
MW-37S	5/23/2012	0.21 J	0.31 J	39	0.63 J
MW-37S	8/29/2012	0.37 J	0.53 J	48.0	0.69 J
MW-37S	8/26/2015	0.49 J	0.58 J	52.0	0.59 J
MW-37S	3/9/2016	0.38 J	0.62 J	39	0.35 J
MW-37S	8/3/2016	1.0 U	0.28 J	51	0.48 J
MW-37S	4/3/2017	0.50 J	0.42 J	49	0.65 J
MW-37S	7/15/2020	0.333 U	0.333 U	45.6	0.333 U
MW-37S	7/20/2021	0.333 U	0.333 U	41.6	0.62 J
MW-37S	7/11/2023	0.48 J	0.48 J	33.3	0.86 J

Notes: TCG - target concentration goal; ug/L - microgram per liter; U - not detected at reporting limit; J - estimated result, detected below reporting limit. Shaded results exceeded the TCG.

Table D-4

**Volatile Organic Compounds
2008 to Present**

Well ID	Sample Date	Tetrachloro- ethene [ug/L]	Trichloro- ethene [ug/L]	cis-1,2- Dichloroethene [ug/L]	Vinyl Chloride [ug/L]
TCG:		5.5	18	1800	1.4
MW-41S	8/1/2008	33.0	7.3	4.7	0.78 J
MW-41S	11/1/2008	31.0	6.7	4.6	0.77 J
MW-41S	2/1/2009	37	6.9	4.7	1.0 U
MW-41S	5/1/2009	37	6.5	4.7	0.56 J
MW-41S	12/1/2010	26.0	8.3	6.6	0.66 J
MW-41S	3/17/2011	15	5.3	3.5	0.58 J
MW-41S	5/12/2011	39.0	11.0	6.8	0.92 J
MW-41S	8/23/2011	24	7.1	5.2	0.69 J
MW-41S	2/27/2012	30.0	6.8	4.4	1.0
MW-41S	5/22/2012	28	7.4	5.2	1.2
MW-41S	8/29/2012	30.0	8.6	5.1	1.0
MW-41S	8/25/2015	14.0	4.5	4.2	0.90 J
MW-41S	3/8/2016	25	6.1	4.7	0.53 J
MW-41S	8/3/2016	18	5.3	4.7	0.62 J
MW-41S	4/3/2017	24	5.1	4.8	0.58 J
MW-41S	7/15/2020	15.0	4.93	5.77	0.333 U
MW-41S	7/20/2021	12.7	4.86	6.35	0.76 J
MW-41S	7/10/2023	8.05	2.53	4.71	1.4
MW-42S	8/5/2008	0.51 J	1.1	2.2	1.0 U
MW-42S	11/4/2008	0.34 J	1.0 J	2.3	1.0 U
MW-42S	2/17/2009	0.30 J	1.0	2.0	1.0 U
MW-42S	2/19/2009	0.28 J	0.78 J	1.5	1.0 U
MW-42S	12/1/2010	0.43 J	1.3	4.3	1.0 U
MW-42S	2/22/2011	0.20 J	1.0	3.4	1.0 U
MW-42S	5/12/2011	0.37 J	0.75 J	9.2	0.22 J
MW-42S	8/23/2011	0.23 J	0.73 J	12	1.0 U
MW-42S	2/27/2012	0.22 J	0.54 J	6.6	0.22 J
MW-42S	5/24/2012	1.0 U	0.73 J	7.4	1.0 U
MW-42S	8/29/2012	1.0 U	0.59 J	11.0	0.21 J
MW-42S	8/25/2015	1.0 U	0.65 J	13.0	1.0 U
MW-42S	3/7/2016	1.0 U	0.44 J	7.2	1.0 U
MW-42S	8/2/2016	1.0 U	0.45 J	8.5	1.0 U
MW-42S	4/3/2017	0.34 J	0.75 J	7.6	1.0 U
MW-42S	7/14/2020	0.333 U	0.520 J	7.00	0.333 U
MW-42S	7/19/2021	0.333 U	0.333 U	5.31	0.333 U
MW-42S	7/10/2023	0.333 U	0.333 U	4.88	0.333 U
MW-44S	8/26/2015	3.1	4.0	3.1	1.0 U
MW-44S	3/8/2016	13	7.7	2.8	1.0 U
MW-44S	8/3/2016	15	9.9	3.5	1.0 U
MW-44S	4/3/2017	18	9.9	3.3	1.0 U
MW-44S	7/15/2020	0.333 U	0.333 U	0.510 J	0.333 U
MW-44S	7/20/2021	0.333 U	0.333 U	0.333 U	0.333 U
MW-44S	7/10/2023	0.333 U	0.333 U	0.333 U	0.333 U

Notes: TCG - target concentration goal; ug/L - microgram per liter; U - not detected at reporting limit; J - estimated result, detected below reporting limit. Shaded results exceeded the TCG.

Appendix E

Data Validation Memo

To: Carl Young, RSI
From: Daniel Ohlson, RSI
CC: Gretchen Baer, RSI
Steve Donovan, RSI
Janice McDonald, RSI
Daniel Ohlson, RSI
Date: August 31, 2023
Re: Validation of July 2023 Groundwater Sampling Data from the Colonie, New York, Site

Validation of data generated from the July 2023 Groundwater sampling event at the Colonie, New York, Site has been completed. This Level 3 validation was conducted according to the *Environmental Data Validation Procedure (LMS/PRO/S15870)*.

The samples were submitted for analysis identified by Task Code CLN01-01.2307004. Planned monitoring locations are shown in the Sampling and Analysis Work Order (Enclosure 1). Samples were collected at 7 of the 7 planned locations. An additional sample called “Effluent1” was collected from the GAC effluent. See the Trip Report (Enclosure 2) for additional details.

All environmental data from this sampling event are considered validated and available for use. Site data are available for viewing with dynamic mapping via the GEMS (Geospatial Environmental Mapping System) website at <http://gems.lm.doe.gov/#>. The Field Data Assessment (Enclosure 3) includes discussion of the field data and field quality control samples. The Laboratory Performance Assessment (Enclosure 4) documents the review of the laboratory data. An assessment of anomalous data is included in Enclosure 5. Summaries of Enclosures 3, 4, and 5 are presented below.

Sampling and Analysis Work Order (Enclosure 1)

Trip Report (Enclosure 2)

Field Data Assessment (Enclosure 3)

Verification of Field Activities

A Field Activities Verification Checklist was completed with no issues identified.

Assessment of Field Quality Control Samples

Assessment of field quality control samples was conducted. Trip blanks were prepared and analyzed to document contamination attributable to the shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organic samples. One trip blank was submitted with these samples. No analytes were detected in the trip blank.

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. A duplicate sample was collected from location MW-41S. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20%. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The duplicate results met the criteria, demonstrating acceptable overall precision.

Laboratory Performance Assessment (Enclosure 4)

Laboratory analytical quality control criteria were met except as qualified in the Laboratory Performance Assessment. Analytical data and the associated qualifiers can be viewed in reports from the environmental database.

Assessment of Anomalous Data (Enclosure 5)

One dissolved oxygen result at location MW-30S was identified as an outlier. The result was higher than the physical limit for dissolved oxygen at standard temperature and pressure. Possible field data entry error is suspected for this anomalous result. The result was qualified with an R flag and was rejected from the database. See the Data Validation Outliers Report, below. Assessment of anomalous data is documented in Enclosure 5.

Enclosures (5)

Enclosure 1
Sampling and Analysis Work Order

From: [Goodknight, Lauren \(CONTR\)](#)
To: [Baer, Gretchen \(CONTR\)](#)
Subject: FW: TO 2 July 2023 23-1219 Environmental Sampling at the Colonie, New York, Site
Date: Wednesday, July 5, 2023 9:09:48 AM
Attachments: [image001.png](#)
[23-1219 Colonie, NY Sampling Analytes.pdf](#)
[23-1219 Colonie, NY Sampling Locations.pdf](#)

This is what Susan sent to DOE.

From: Berg, Susan (CONTR) <Susan.Berg@lm.doe.gov>
Sent: Wednesday, June 21, 2023 7:10 AM
To: Eichelberger, Shawn <Shawn.Eichelberger@lm.doe.gov>
Cc: Bale, Jeff (CONTR) <jeff.bale@lm.doe.gov>; Barker, Brandee (CONTR) <Brandee.Barker@lm.doe.gov>; Brown, Karen (CONTR) <Karen.Brown@lm.doe.gov>; Browning, Stephen (CONTR) <Stephen.Browning@lm.doe.gov>; Carpenter, Cliff <Cliff.Carpenter@lm.doe.gov>; Castillo, Darina <Darina.Castillo@lm.doe.gov>; Deyo, Yvonne (CONTR) <Yvonne.Deyo@lm.doe.gov>; Diei-Anene, Obiajulum <obiajulum.diei-anene@hq.doe.gov>; Document Determination <Document_Determination@lm.doe.gov>; Hart, Mark (CONTR) <Mark.Hart@lm.doe.gov>; Jordan, Mary Ann (CONTR) <Mary.Jordan@lm.doe.gov>; Krull, Connie (CONTR) <connie.krull@lm.doe.gov>; Kuhlman, Alison <Alison.Kuhlman@lm.doe.gov>; Medina, Melissa (CONTR) <Melissa.Medina@lm.doe.gov>; Milush, Jenise (CONTR) <Jenise.Milush@lm.doe.gov>; Owen, Ronald (CONTR) <ronald.owen@lm.doe.gov>; Roberts, Rebecca <Rebecca.Roberts@lm.doe.gov>; Romano, Elizabeth (CONTR) <elizabeth.romano@lm.doe.gov>; Snider, Scott (CONTR) <scott.snider@lm.doe.gov>; Spicer, Emily (CONTR) <Emily.Spicer@lm.doe.gov>; Sumrell, Michelle (CONTR) <Michelle.Sumrell@lm.doe.gov>; Cardinal, Tammera <tammera.cardinal@emcbc.doe.gov>; Vance, Rockelle (CONTR) <Rockelle.Vance@lm.doe.gov>; Whitmill, Cindy (CONTR) <Cindy.Whitmill@lm.doe.gov>; Whysner, Kathleen <kathleen.whysner@lm.doe.gov>; Young, Carl (CONTR) <Carl.Young@lm.doe.gov>; Goodknight, Lauren (CONTR) <Lauren.Goodknight@lm.doe.gov>; Gault, Stacie (CONTR) <Stacie.Gault@lm.doe.gov>; Donovan, Steve (CONTR) <Steve.Donivan@lm.doe.gov>
Subject: TO 2 July 2023 23-1219 Environmental Sampling at the Colonie, New York, Site

The RSI Team respectfully submits the map and tables specifying sample locations and analytes for monitoring at the Colonie site. Water quality data will be collected from this site as part of the routine environmental sampling and is currently scheduled to begin the week of July 10, 2023.

Listed below are the monitoring wells scheduled to be sampled during this event.

MW-08S, MW-30S, MW-34S, MW-37S, MW41S, MW-42S, and MW-44S

Submitted on behalf of Carl Young, LMS FUSRAP Site Lead.

Susan Berg
FUSRAP Administrative Specialist
RSI Team | *Contractor to the U.S. Department of Energy Office of Legacy Management*
Mobile | 727-420-0107

Constituent Sampling Breakdown

Site	Colonia Site		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water			
Analyte					
Approx. No. Samples/yr	7	0			
<i>Field Measurements</i>					
Total Alkalinity					
Dissolved Oxygen	X				
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
<i>Laboratory Measurements</i>					
Aluminum					
Ammonia as N (NH3-N)					
Calcium					
Chloride					
Chromium					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Selenium					
Silica					
Sodium					
Strontium					
Uranium					
VOCs	X		0.001	SW-846 8260	VOA-A-008
Zinc					
Total Analyses	1				

Note: All analyte samples are considered unfiltered unless stated otherwise. All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

**Sampling Frequencies for Locations at
Colonie, New York**

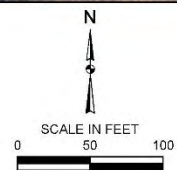
Location ID	Quarterly	Annually	Biennially	Triennially	Not Sampled	Notes
Monitoring Wells						
MW-08S			X			Next in 2023
MW-30S			X			Next in 2023
MW-32S					X	Decommissioned in 2022
MW-34S			X			Next in 2023
MW-37S			X			Next in 2023
MW-41S			X			Next in 2023
MW-42S			X			Next in 2023
MW-44S			X			Next in 2023

Sampling conducted in July.



Aerial Imagery: State of New York (2021)

- LEGEND**
- WELL TO BE SAMPLED
 - - - SITE BOUNDARY



U.S. DEPARTMENT OF ENERGY OFFICE OF LEGACY MANAGEMENT	Work Performed by RSI EnTech, LLC <small>Under DOE Contract 9950303L M1000001</small>
Planned Sample Locations Colonie, NY, Site July 2023	
DATE PREPARED: May 31, 2023	FILE NAME: 044677

Enclosure 2
Trip Report

memo



To: Carl Young, RSI EnTech
 From: Chelsie Creps, RSI EnTech
 Date: July 27, 2023
 CC: Gretchen Baer, RSI EnTech
 Steve Donivan, RSI EnTech
 Janice McDonald, RSI EnTech
 Re: Sampling Trip Report

Site: Colonie, New York

Dates of Event: July 10–11, 2023

Team Members: Chelsie Creps and Carl Young, RSI EnTech

Number of Locations Sampled: Samples were collected from all seven of the locations identified in an email from S. Berg to S. Eichelberger on June 21, 2023. Note that this email was sent in lieu of a Sampling Notification Letter. A copy of the email can be found in \\lm\raapps\sms\CLN01-01.2307004.

Location Specific Information: Location specific information is presented in Table 1.

Table 1. Location Specific Information

Location IDs	Comments
MW-30S MW-42S	The Category I turbidity criteria of 10 NTUs was not met during the purge. The final turbidity measurements were <20 NTUs. Humid conditions caused condensation to form quickly on the sample vials, which caused these readings to be biased high.
MW-34S	Turbidimeter error; no turbidity readings could be collected. Water was visibly clear.
MW-37S	Possible iron floc in well. Could not draw water through the installed bladder pump because it was clogged. Collected water using peristaltic and new tubing installed to same depth as the pump intake. Turbidimeter error; no turbidity readings could be collected. Water was visibly turbid.
MW-41S	The Category I turbidity criteria of 10 NTUs was not met during the purge. Turbidity issues. Noticed sediment in vials.

Quality Control Sample Cross Reference: A summary of the quality control samples collected is shown in Table 2.

Table 2. Quality Control Sample Summary

False Location	False Sample ID	Parent Location	Parent Sample ID	Sample Type	Associated Matrix
2332	CLN01-01.2307004-001	MW-41S	CLN01-01.2307004-010	Duplicate	Groundwater
2333	CLN01-01.2307004-002	NA	NA	Trip Blank	Water

Task Codes Assigned: Samples were assigned to CLN01-01.2307004. Field data sheets can be found in \\lm\raapps\sms\CLN01-01.2307004\RECORDS.

Sample Shipment: All samples were shipped overnight via FedEx from Albany, NY, to GEL Laboratories in Charleston, SC, on July 11, 2023.

Water Level Measurements: Water levels were measured at all sampled wells upon arrival at the well.

Well Inspection Summary: All wells were in good condition.

Sampling Method: Samples were collected according to the *Sampling and Analysis Plan (SAP) for the U. S. Department of Energy Office of Legacy Management Sites (LMS/PRO/S04351, continually updated)*. All purge water was treated on-site with granular activated carbon (GAC) as described in Program Directive PD-2023-02-CLN. A sample (called 'Effluent1') was collected from the GAC effluent.

Field Variance:

- The samplers from the Grand Junction site could not attend this sampling event as planned due to a cancelled flight. The issues are documented in an email chain that can be found in \\lm\raapps\sms\CLN01-01.2307004. C. Creps and C. Young collected samples using Grand Junction equipment that had been shipped to a FedEx office in Albany.
- The turbidity measurements at Category I locations MW-30S, MW-37S, MW-41S, and MW-42S were higher than 10 NTUs. Turbidity measurements could not be collected at MW-34S and MW-37S because of equipment error.

Equipment: A peristaltic pump was used to purge and sample all wells. Silicone pump head tubing (MasterFlex 96410-15) was used. All equipment functioned properly with this exception: at location MW-37S, the bladder pump was clogged, as described in Table 1. At this location, the water was purged and sampled through newly installed tubing rather than through the bladder pump/tubing.

Stakeholder/Regulatory/DOE: The DOE Site Manager, S. Eichelberger, was present for all activities on July 10, 2023. One regulator from the New York State Department of Environmental Conservation was present for some activities on July 9, 2023.

Institutional Controls:

Fences, Gates, and Locks: The main gate was locked and in good condition.

Signs: All signage was intact and present.

Trespassing/Site Disturbances: A second break in the barbed wire on the south side of the site was still present. A hole on the north side of the fence behind the restaurant was noted.

Safety Issues: (A) When sampling wells MW-34S and MW-37S, which are accessed by crossing railroad tracks, sampling personnel must be accompanied by an Amtrak engineer. Sampling personnel must have completed Amtrak Contractor Orientation Training and must wear all

required PPE, including hard hats, eye protection, safety-toe boots, and orange high-vis vests.
(B) Wasps were nesting under the MW-08S well cover.

Access Issues: All gate and well locks use the new LM site key.

General Information: There are 3 rights-of-entry used for offsite sampling: Amtrak/LMS, Amtrak /DOE, and LM/private party.

Immediate Actions Taken: None.

Future Actions Required or Suggested: Nothing to note.



Figure 1. Purging Monitoring Well MW-08S

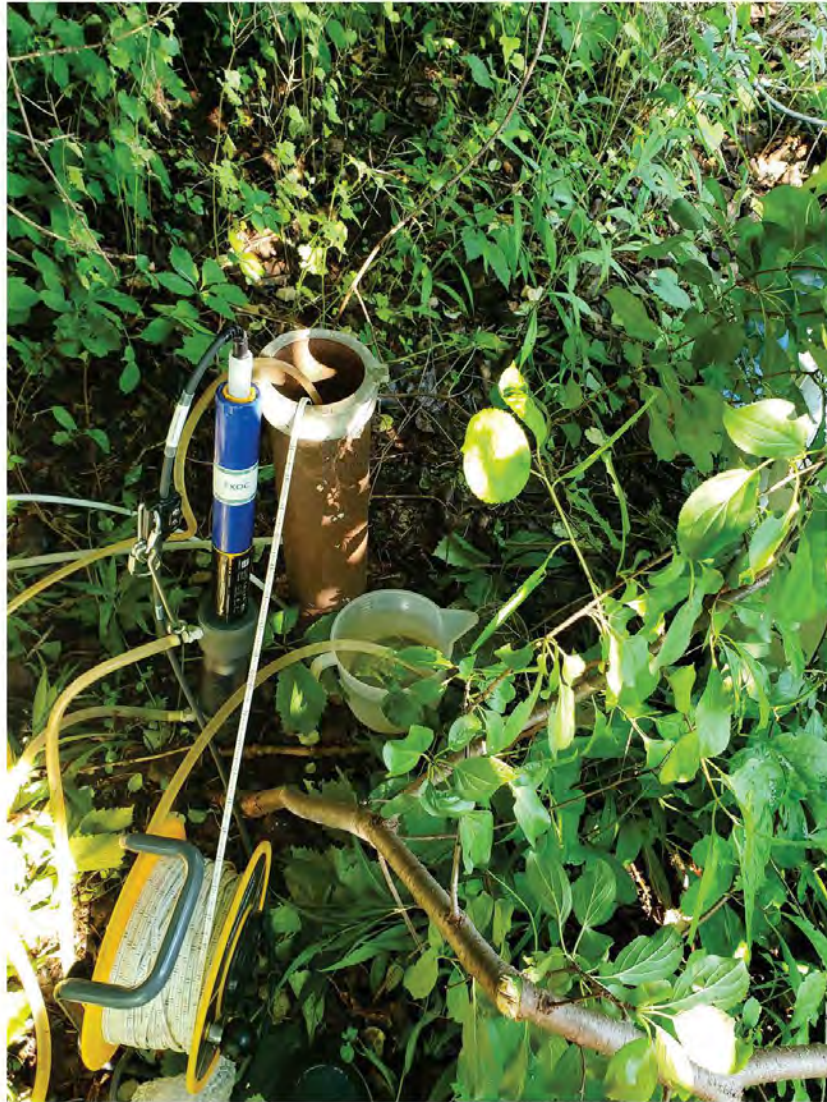


Figure 2. Purging Monitoring Well MW-34S

Enclosure 3
Field Data Assessment

Water Sampling Field Activities Verification Checklist

Project	Colonie, New York Site	Date(s) of Water Sampling	July 10 and 11, 2023
Date(s) of Verification	August 30, 2023	Name of Verifier	Daniel Ohlson
		Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List any Program Directives or other documents, SOPs, instructions.	Yes	PD-2023-02-CLN	
2. Were the sampling locations specified in the planning documents sampled?	Yes		
3. Were field equipment calibrations conducted as specified in the above-named documents?	Yes		
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	Yes No	 ORP solution not available in the field for operational checks. Turbidity operational checks not performed on 7/11/2023 field sampling day. ORP and turbidity passed the end-of-event operational check on July 13, 2023.	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	No	Turbidity measurements were not collected on 7/11/2023, for locations MW-34S and MS-37S.	
6. Were wells categorized correctly?	Yes		
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	Yes		
Did the water level stabilize prior to sampling?	No	Water level did not stabilize at location MW-41S.	
Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling?	No	Specific conductance did not stabilize at location MW-34S.	
Was the flow rate less than 500 mL/min?	Yes		

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	NA	
Was one pump/tubing volume removed prior to sampling?	NA	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	Yes	
12. Were the true identities of the QC samples documented?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Was all pertinent information documented on the field data sheets?	Yes	
18. Was the presence or absence of ice in the cooler documented at every sample location?	No	Ice presence left blank for locations Effluent1, MW-30S, and 2332
19. Were water levels measured at the locations specified in the planning documents?	Yes	

Data Qualifier Summary

Analytical results and field measurements were qualified as listed in the following tables. Refer to the sections below for an explanation of the data qualifiers applied.

Table 1. Data Qualifiers for Sampling Protocol

Locations	Analytes	Flag	Reason
All monitoring well locations	All analytical results and field measurements	F	Category I or II low-flow sampling
MW-41S	All analytical results and field measurements	Q	Category II purging criteria

Table 2. Data Qualifiers for Field Measurements

Location	Analyte(s)	Flag	Reason
MW-30S	Dissolved Oxygen	R	Nonreal result. Suspected field data entry error.
MW-34S	Specific Conductance	J	Did not meet purge stability criteria

Sampling Protocol

Sample results for all monitoring wells were qualified with an F flag, indicating the wells were purged and sampled using the low-flow method. At all monitoring well locations, purging and sampling met the Category I criteria, with one exception. The water level at location MW-41S did not stabilize during purging and sampling. This location was classified as Category II because it produced water at a rate less than the minimum low-flow purging rate. The sample results for this well were qualified with a Q flag (qualitative), indicating the samples were not collected under the optimal conditions of the Category I stability criteria.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. A duplicate sample was collected from location MW-41S. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20%. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The duplicate results met the criteria, demonstrating acceptable overall precision.

Trip Blank

Trip blanks were prepared and analyzed to document contamination attributable to the shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organic samples. One trip blank was submitted with these samples. No analytes were detected in the trip blank.

Field Measurements

Daily calibration checks were performed as required with acceptable results. The pre-sampling purge criteria were met for all wells, with one exception. Specific conductance at location MW-34S did not stabilize within 10% for its final three measurements. The final specific conductance value at this location was qualified with a J flag as an estimated value. The Category I turbidity criteria could not be met at locations MW-30S, MW-41S, and MW-42S. Turbidity measurements were not recorded for locations MW-34S and MW-37S.

Validation Report: Field Duplicates

Page 1 of 1

29-Aug-2023

Project: Colonie Site

Task Code: CLN01-01.2307004

Lab Code: GEN

Analyte	Duplicate: CLN01-01.2307004-001				Sample: CLN01-01.2307004-010 MW-41S				RPD	RER	Units
	Result	Qualifiers	Uncert.	Dilution	Result	Qualifiers	Uncert.	Dilution			
cis-1,2-Dichloroethene	4.93			1	4.71			1	4.6		ug/L
Tetrachloroethene	8.63			1	8.05			1	7.0		ug/L
Trichloroethene	2.88			1	2.53			1	12.9		ug/L
Vinyl chloride	1.10			1	1.09			1			ug/L

QC Checks: RPD: Relative Percent Difference RER: Relative Error Ratio

Enclosure 4
Laboratory Performance Assessment

General Information

Task Code: CLN01-01.2307004
Sample Event: July 10 and 11, 2023
Site(s): Colonie, New York
Laboratory: GEL Laboratories, Charleston, South Carolina
Work Order No.: 628811
Analysis: Organics
Validator: Daniel Ohlson
Review Date: August 30, 2023

This validation was performed according to the *Environmental Data Validation Procedure* (LMS/PRO/S15870), which is available at https://documentmanagement.share.lm.doe.gov/ControlledDocuments/Controlled%20Documents/S15870_Env_DV_Procedure.pdf. The procedure was applied at Level 3, Data Validation.

This validation includes the evaluation of data quality indicators (DQIs) associated with the data. DQIs are the quantitative and qualitative descriptors that are used to interpret the degree of acceptability or utility of data. Indicators of data quality include the analysis of laboratory control samples to assess accuracy; duplicates and replicates to assess precision; and interference check samples to assess bias (see attached Data Validation Worksheets). The comparability, completeness, and sensitivity of the data are also evaluated in the sections to follow.

All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Volatile Organic Compounds	VOA-A-007	SW-846 5030B	SW846 8260D

Data Qualifier Summary

Analytical results were qualified as listed in Table 4 . Refer to the attached validation worksheets and the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifiers

Sample ID	Location	Analyte	Flag	Reason
CLN01-01.2307004-008	MW-34S	Vinyl chloride	J	CCV % drift
CLN01-01.2307004-009	MW-37S	Vinyl chloride	J	CCV % drift

Sample Shipping/Receiving

GEL Laboratories, in Charleston, South Carolina, received ten water samples on July 12, 2023. The Chain of Custody (COC) forms that accompanied the sample shipments were checked to confirm that all the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form included two sample IDs, samples CLN01-01.2307004-003 and CLN01-01.2307004-004, that were not collected. The COC listed samples CLN01-01.2307004-001 and CLN01-01.2307004-002 as having 3 sample vials. However, one vial of each sample had been broken in the field, leaving two sample vials for these samples.

Preservation and Holding Times

The sample shipments were received intact with the temperature inside the iced coolers at 5 °C and 6 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all analytes as required. The MDL, as defined in Title 40 *Code of Federal Regulations* Section 136, is the minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured and is defined as 5 times the MDL. All reported MDLs demonstrate compliance with contractual requirements.

Laboratory Instrument Calibration

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the analytes of interest. Initial calibration verification demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing calibration verification demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis. Initial and continuing calibration standards must be prepared from independent sources to ensure the validity of the calibration. All laboratory instrument calibrations and calibration verifications were performed correctly in accordance with the cited methods.

Method SW-846 8260D, Volatile Organics

Initial calibration of instruments “VOA2” and “VOA3” were performed on May 15, 2023, and June 29, 2023, respectively, using nine calibration standards. Calibration curves are established using linear regression or the average response factor approach. Calibrations using average response factors had relative standard deviations of less than 15%. Linear regression calibrations had correlation coefficient values greater than 0.99 and intercepts less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. Vinyl chloride had a percent drift value greater than 20%. Associated sample results were qualified with a J flag as estimated values. The mass spectrometer calibration and resolution were checked at the beginning of each analytical run, in accordance with the procedure.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and calibration blank results were below the PQL for all analytes. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a U flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration (and less than 10 times the blank concentration for common laboratory contaminants).

VOA Internal Standard and Surrogate Recoveries

Laboratory performance for individual samples is evaluated by means of surrogate spikes. All samples are spiked with surrogate compounds prior to sample preparation. Surrogate recoveries are used to monitor factors such as interference and high concentrations of analytes. Surrogate recoveries may also be influenced by the success in recoveries of the internal standards. All surrogate recoveries were within the acceptance ranges. The recovery of the internal standards added to the samples is monitored to measure the purging efficiency. Internal standard recoveries were stable and within acceptance ranges.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike. The spike recoveries met the acceptance criteria for all analytes evaluated.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference (RPD) for results that are greater than 5 times the PQL should be less than 20% (or less than the laboratory-derived control limits for organics). For results that are less than 5 times the PQL, the range should be no greater than the PQL. The replicate results met the criteria, demonstrating acceptable overall precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. All control sample results were acceptable for all analytes.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all chromatography sample data. All peak integrations, including manual integrations, were satisfactory.

Compound Identification

The mass spectral data were reviewed for each reported organic compound to verify that analytes were identified correctly. Compounds that were reported with results above the MDL but that do not meet the mass spectra compound identification criteria are qualified with a U flag as not detected.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable (EDD) File

The EDD file arrived on August 8, 2023. The EDD was examined to verify that the file was complete and in compliance with requirements. The contents of the file were compared to the requested analyses to ensure all and only the requested data were delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Report Prepared By: _____
Daniel Ohlson
Data Validator

General Data Validation Report

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Task Code: CLN01-01.2307004 **Lab Code:** GEN **Validator:** Daniel Ohlson **Validation Date:** 08-29-2023

Project: Colonie Site

Samples: 10

Analysis Type: General Chemistry Metals Organics Radiochemistry

Chain of Custody

Sample

Present: <u>OK</u> Signed: <u>OK</u> Dated: <u>OK</u>	Integrity: <u>OK</u> Preservation: <u>OK</u> Temperature: <u>OK</u>
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Check

Summary

Holding Times:	All analyses were completed within the applicable holding times.
Detection Limits:	The reported detection limits are equal to or below the contract required limits.
Field Blanks:	There was 1 field blank associated with this task.
Field Duplicates:	There was 1 duplicate evaluated.

Organics Data Validation Summary

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29-Aug-2023

Task Code: CLN01-01.2307004

Project: Colonie Site

Lab Code: GEN

Surrogate Recovery: All surrogate recoveries were within the laboratory acceptance limits.

LCS/LCSD Performance: All LCS/LCSD results were within the laboratory acceptance limits.

MS/MSD Performance: All MS/MSD results were within the laboratory acceptance limits.

Method Blank Performance: All method blanks were below the MDL.

Enclosure 5
Assessment of Anomalous Data

Potential Outliers Report

Potential outliers are results that lie outside the historical range, possibly due to transcription errors, data calculation errors, or measurement system problems. However, outliers can also represent true values outside the historical range. Potential outliers are identified by generating the Data Validation Outliers Report from data in the environmental database. The new data are compared to historical values and data that fall outside the historical data range are listed on the report along with the historical minimum and maximum values. The potential outliers are further reviewed and may be subject to statistical evaluation using the ProUCL application developed by the EPA (<https://www.epa.gov/land-research/proucl-software>). The review also includes an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

There were nine values outside the historical range. None of these values were identified as statistical outliers. Further review of the data for the remaining outliers did not indicate any laboratory errors.

Potential anomalies in the field parameters were also examined for patterns of repeated high or low bias, which suggest a systematic error due to instrument malfunction. One dissolved oxygen result at location MW-30S was identified as an outlier. The result was higher than the physical limit for dissolved oxygen at standard temperature and pressure. Possible field data entry error is suspected for this anomalous result. The result was qualified with an R flag and was rejected from the database. See the Data Validation Outliers Report, below.

Data Validation Outliers Report - No Field Parameters Report Date: 08/29/2023

Comparison to Historical Data Since: 7/1/2013 12:00:00 AM Fraction: Any

Task: CLN01-01.2307004

Analyte	Location	Analysis Location	Units	Fraction	Result	Lab Qualifier(s)	Type	HistMIN	HistMAX	HistSetSize	Outlier?
Vinyl chloride	MW-41S	LB	ug/L	N	1.10		> HistMAX	0.333	1.09	7	No
Tetrachloroethene	MW-30S	LB	ug/L	N	0.800	J	< HistMIN	1.5	6.67	7	No
Tetrachloroethene	MW-34S	LB	ug/L	N	0.370	J	< HistMIN	0.45	0.75	6	No
Vinyl chloride	MW-34S	LB	ug/L	N	0.740	J	< HistMIN	0.86	1.7	6	No
cis-1,2-Dichloroethene	MW-37S	LB	ug/L	N	33.3		< HistMIN	39	52	6	No
Vinyl chloride	MW-37S	LB	ug/L	N	0.860	J	> HistMAX	0.333	0.65	6	No
Tetrachloroethene	MW-41S	LB	ug/L	N	8.05		< HistMIN	8.63	25	7	No
Trichloroethene	MW-41S	LB	ug/L	N	2.53		< HistMIN	2.88	6.1	7	No
cis-1,2-Dichloroethene	MW-42S	LB	ug/L	N	4.88		< HistMIN	5.31	13	6	No

FRACTION: D = Dissolved N = NA T = Total

Data Validation Outliers Report - Field Parameters Only Report Date: 08/29/2023

Comparison to Historical Data Since: 7/1/2013 12:00:00 AM Fraction: Any

Task: CLN01-01.2307004

Analyte	Location	Analysis Location	Units	Fraction	Result	Lab Qualifier(s)	Type	HistMIN	HistMAX	HistSetSize	Outlier?
Dissolved Oxygen	MW-30S	FI	mg/L	N	16.2		> HistMAX	0.13	9.17	7	Yes, Rejected

FRACTION: D = Dissolved N = NA T = Total