MOVE YOUR ENVIRONMENT FORWARD

CONSTRUCTION COMPLETION REPORT

222 Ferry Street Site
NYSDEC Site No. 447047
222 South Ferry Street
Schenectady, New York

Prepared For:

Contract# D009808, Work Assignment No. 12
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7012

Prepared By:

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Clifton Park, NY 12065

HRP #: DEC1012.RA

Issued On: March 1, 2022

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General Information

Project/Site Information:

222 South Ferry Street Site
NYSDEC Site No. 447047
222 South Ferry Street
Schenectady, New York

Consultant Information:

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Project Number: DEC1012.RA

Client Information:

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New York State Department of
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Report Author: Patrick Montuori
Senior Project Consultant

Client Manager: Mark E. Wright, CSP, PG
Project Manager

EP Certification:

I *Glenn Netuschil,* certify that I am currently a NYS registered professional engineer and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Glenn Netuschil, P.E., Senior Project Manager

1.0 EXECUTIVE SUMMARY

HRP Associates, Inc. (HRP) has prepared this Construction Completion Report (CCR) to document the remedial actions performed as an Interim Remedial Measure (IRM) at the 222 Ferry Street Site (Site #447047), located at 222 South Ferry Street in the City of Schenectady, Schenectady County, New York (hereinafter referred to as the "Site"). The Site location and Site layout are depicted on **Figure 1**. This CCR is prepared as part of New York State Department of Environmental Conservation (NYSDEC) Work Assignment (WA) No. 12 (D009808-12).

The Site has been the subject of previous investigations by others that determined chlorinated volatile organic compounds (VOCs) are present in the Site's groundwater above relevant standards, criteria, and guidance (SCGs). In December 2020, an IRM consisting of reagent injections was implemented to achieve in-situ treatment of chlorinated VOC concentrations in the Site groundwater. Based on a review of post-injection groundwater monitoring data, a second round of reagent injections was completed in November 2021 as part of the IRM. The purpose of this CCR is to document the implementation of the IRM in accordance with the requirements outlined in chapter 5.8 of DER-10 *Technical Guidance for Site Investigation and Remediation, May 2010* (DER-10).

1.1 Report Outline

The text of this report is divided into four sections. Immediately following the text are the references, tables, figures, and appendices. A summary of each report section is provided below.

Section 1.0 **Introduction:** The purpose of the CCR; the report organization; the Site background including Site description and Site history are discussed.

Section 2.0 **Summary of Site Remedy:** An overview of the IRM, including a brief description of the remedial actions performed, identification of Remedial Action Objectives (RAOs), and identification of remediation performance criteria.

Section 3.0 **Interim Remedial Measure Implementation:** A summary of IRM elements including descriptions of governing documents, detailed descriptions of the work performed and quantities of materials used, and deviations from the work plan.

Section 4.0 **Remedial Performance Documentation:** A summary of results from the quarterly groundwater monitoring and sampling events conducted following IRM implementation, including a comparison of contaminant concentrations before and after treatment.

1.2 Site Location Description

The Site is located at 222 South Ferry Street in the City of Schenectady in Schenectady County and is identified as Section 39.71 Block 1, Lot 14.11 on the Schenectady County Tax Map. The Site location and Site layout are depicted on **Figure 1**.

The 0.98-acre Site is comprised of an asphalted parking lot. The northwest and southeast corners of the Site are covered by a crushed stone (separated from native soil by a demarcation layer). The Site is bordered to the east by South Ferry Street and to the west by South Church Street. An apartment building and catering company are present immediately to the north of the subject Site and row-style apartments, two commercial businesses (Pantalon Construction & Stockade Storage and Mohawk Skill Games), and a vacant lot are located immediately to the south of the subject Site. Two catch-basins are located on the eastern portion of the Site and remnants of electrical gate systems are located at the Site access points along South Ferry Street and South Church Street.

Groundwater beneath the Site has been measured at 4 to 8 feet below grade (ft bg) and groundwater flow at the Site is generally to the north toward the Mohawk River, to which regional groundwater discharges. The Site topography is relatively flat with no discernable slope.

1.3 Site Background

Past uses of the Site have included residential dwellings and a crockery warehouse (1880s-early 1900s) and a trucking repair and storage facility, including a paint shop (1930s-1960s). Although exact date ranges for the Site's past uses are unknown, evidence from previous investigations indicate that Site buildings were demolished and developed into a parking lot by the early 1980s.

Findings of previous environmental investigations indicated that volatile organic compound (VOC) contamination is present in the groundwater beneath the Site, in excess of NYSDEC Class GA Criteria as defined NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1). In response to the discovery of chlorinated VOCs in Site groundwater, NYSDEC entered the Site into the Registry of Inactive Hazardous Waste Disposal Sites as a "Class 2" site.

Previous investigations included:

- Site Characterization (SC) Report prepared by Arcadis CE, Inc. (Arcadis), dated April 2014.
- Remedial Investigation (RI) Report prepared by Arcadis, dated June 2018.
- Focused Feasibility Study prepared by Arcadis, dated October 2019.
- Pre-Design Investigation (PDI) Report prepared by Precision Environmental Services, Inc. (PES), dated June 2020.

The SC identified chlorinated VOCs to the primary constituents of concern at the Site. During the SC, cis-1,2-dichloroethylene (cis-1,2-DCE) and vinyl chloride were detected in groundwater collected from monitoring well MW-8 (located in the central portion of the Site) at concentrations of 19,000 and 13,000 micrograms per liter (μg/L) respectively. Trichlorethylene (TCE) was also detected in onsite wells at concentrations up to 100 μg/L.

The 2017 RI confirmed the apparent source area of chlorinated VOCs was located in the central portion of the Site, in the area of MW-8. Chlorinated VOCs were not detected in offsite three monitoring wells, installed on the property to the north of the Site, leading the RI to conclude that chlorinated VOC impacts do not extend onto downgradient properties.

The 2019 Focused Feasibility Study was prepared to evaluate potential remedial action alternatives for the Site. The recommended remedy included in-situ treatment of groundwater. Following the completion of the Feasibility Study, NYSDEC determined in-situ groundwater treatment would be implemented as an IRM.

The 2020 PDI consisted of installation of additional soil borings and monitoring wells in the apparent source area (in the vicinity of MW-8), and sampling of new and existing monitoring wells to design an in-situ groundwater treatment program. Groundwater analytical results from the 2020 PDI were consistent with results from previous investigations.

Previous investigations are detailed further in the Site Management Plan (SMP).

2.0 SUMMARY OF SITE REMEDY

2.1 Remedial Action Objectives

The Remedial Action Objectives (RAOs) addressed by this IRM are described below:

Groundwater

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards
- Prevent contact with, or inhalation of volatiles, from contaminated water
- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable

2.2 Description of Selected Interim Remedial Measure

To achieve the RAOs identified above, NYSDEC requested in-situ groundwater treatment be implemented at the Site as an IRM. The initial round of in-situ treatment was completed in December 2020 and consisted of the following elements:

- Installation of 36 temporary injection points in the central area of the Site, identified as the source area of chlorinated VOCs in groundwater.
- Injection under pressure of 6,476 gallons of a 6% reagent solution in the 36 injection points. The reagent solution consisted of the following components:
    - 3-D Microemulsion® (3DME), a pH neutral, electron donor;
    - Bio-Dechlor Inoculum® Plus (BDI), an enriched natural microbial consortium containing species of *Dehalococcoides sp.* (DHC) which are capable of completely dechlorinating contaminants during in-situ anaerobic bioremediation processes; and
    - Sulfidated Zero Valent Iron® (S-MZVI), an in-situ chemical reduction (ISCR) reagent containing zero valance iron.
- Implementation of a groundwater monitoring and sampling plan which included the collection of samples for VOC and geochemical parameter analysis on a quarterly basis to evaluate the effectiveness of the in-situ treatment.

Based on groundwater monitoring and sampling data collected during post-treatment quarterly events, a second round of in-situ treatment was completed in November 2021 and consisted of the following elements:

- Installation of 28 temporary injection points in the area of MW-5 and MW-6R
- Installation of six temporary injection points in the area of MW-13
- Injection under pressure of 7,210 gallons of a 6% reagent solution in the 34 injection points and consisting of 3DME, BDI, and S-MZVI
- Implementation of quarterly groundwater monitoring and sampling to evaluate the effectiveness of the in-situ treatment

A more detailed description of the remedial action and a discussion of post-implementation monitoring results is presented in **Section 4.0**. The injection boring locations and onsite monitoring wells are depicted on **Figure 1**.

2.3 Remediation Performance Criteria

The performance of the IRM has been evaluated based on the groundwater monitoring and sampling conducted on a quarterly basis following the IRM implementation. An array of 12 monitoring wells across the Site were sampled for total compound list (TCL) VOCs using EPA method 8260 to monitor concentrations of the chlorinated VOCs over time and identify if dechlorination is occurring in the groundwater beneath the Site. VOC concentrations were compared to NYSDEC Class GA Criteria as outlined in TOGS 1.1.1 as the relevant SCGs. Groundwater samples from a subset of the monitoring wells, were also sampled for a selection of geochemical parameters to evaluate lines of evidence that biodegradation of the chlorinated VOCs is occurring. A discussion of post-implementation monitoring results is presented in **Section 4.0**.

3.0 INTERIM REMEDIAL MEASURE IMPLEMENTATION

3.1 Governing Documents

3.1.1 IRM Work Plan

The IRM scope of work was prepared by NYSDEC and finalized in December 2020. It included a proposal prepared by Regenesis Remediation Services (RRS) dated July 7, 2020, outlining the in-situ groundwater treatment scope of work to be performed by RRS under the direction of Precision Environmental Services (PES). The IRM scope of work included the following elements:

- A summary of materials, including descriptions and quantities of the chemical reagents to be utilized in the in-situ treatment application.
- The responsibilities of HRP, RRS, and PES in carrying out the remedial action.

3.1.2 Site-specific Health and Safety Plan

The Site-specific Health and Safety Plan (HASP) was prepared by HRP and dated December 6, 2020. The HASP established the minimum standards necessary to protect the health and safety of onsite personnel during IRM activities. The HASP was developed in accordance with OSHA's Hazardous Waste Operations Standard (29 CFR 1910.120). Provisions for the site-specific Community Air Monitoring Program (CAMP) are included in the HASP.

3.1.3 IRM Monitoring Plan

The IRM Monitoring Plan (IRMMP) was prepared by HRP and dated January 8, 2021 (Revised February 9, 2021). The IRMMP outlined the scope of work for groundwater monitoring and sampling conducted by HRP on a quarterly basis following the implementation of the IRM. The first three quarterly monitoring events were conducted in January, April, and July 2021, following the initial round of injections conducted in December 2020. The final quarterly monitoring event was conducted in December 2021, following the second round of injections in November 2021. The IRMMP included the following elements:

- A site-specific Monitoring Plan prepared in accordance with chapter 6.2.2 of DER-10 and outlining the scope of work for each quarterly groundwater monitoring and sampling event, including field procedures and laboratory analyses to be conducted
- A site-specific Quality Assurance Project Plan (QAPP) including QA/QC measures for sample collection, handling, and analysis, and responsibilities of the analytical laboratory and data validator for ensuring data quality and usability
- A schedule for completion of the quarterly monitoring and sampling events and submission of reports

3.2 Description of IRM – In-Situ Groundwater Treatment

The first of two in-situ groundwater treatment events was conducted on December 8-10, 2020. During the first treatment event, a total of 36 injection points were installed in a grid pattern, spaced 5 feet apart and covering a 3,600 square foot injection area in the vicinity of MW-8. The second in-

situ groundwater treatment event was conducted on November 10-12, 2021. During the second treatment event, a total of 34 injection points were installed in two areas. Twenty-eight injection points were installed in a grid pattern, spaced 8-12 feet apart and covering a 1,875 square foot area in the vicinity of MW-5 and MW-6R. Six injection points were installed in a row, spaced 8 feet apart, south of MW-13. The three injection point areas are depicted on **Figure 1**.

The injection point installation, in-situ treatment application and associated work was conducted during each event as described below. Deviations from the IRM scope of work are described in **Section 3.3**. PES and RRS were responsible for the injection point installation and in-situ treatment application at the Site. HRP was responsible for engineering oversight and health and safety monitoring (including CAMP) during all IRM activities.

A Geoprobe® 6620DT drill rig was used to install each injection point via the direct push method. At each injection point, a 3-foot long, 1.5-inch diameter steel screen was advanced directly into Site soils to a completion depth of 16 ft bg.

The reagent solution consisted of the following components:

- 3-D Microemulsion® (3DME), a pH neutral, electron donor;
- Bio-Dechlor Inoculum® Plus (BDI), an enriched natural microbial consortium containing species of *Dehalococcoides sp.* (DHC) which are capable of completely dechlorinating contaminants during in-situ anaerobic bioremediation processes; and
- Sulfidated Zero Valent Iron® (S-MZVI), an in-situ chemical reduction (ISCR) reagent containing zero valance iron.

The three components were stored in separate containers onsite. 3DME and S-MZVI were mixed with water to prepare a 6% solution. Water was supplied by hydrants located on South Ferry Street and South Church Street. Mixing was conducted onsite using a proprietary system housed in a trailer. BDI was added to the mixture using nitrogen gas to prevent aeration of the anaerobic culture. The reagent solution, containing all three components, was pumped from the trailer into three injection points simultaneously, using a manifold system. Each injection point was equipped with a flow meter and pressure gauge to record volume in gallons, and injection pressure in pounds per square inch (psi). Flow into the injection points ranged from 1.54 to 6.45 gallons per minute (gpm) and injection pressure ranged from 0 to 30 psi during the two events.

At each injection point, reagent solution was applied to a continuous 11-foot depth interval, extending from 16 ft bg to 5 ft bg. The reagent solution was applied from the bottom of the boring upward, in 2- and 3-foot intervals. Flow meter readings were used to determine the volume of reagent solution applied to each depth interval.

Back pressure was observed at several injection points during reagent application. When reagent solution was observed rising in the injection point, flow to the injection point was stopped to allow reagent solution to infiltrate. After the fluid level in the injection dropped to an acceptable level, reagent application was resumed.

Following completion of injections, injection point boreholes were backfilled with bentonite chips and finished with asphalt cold patch. No waste was generated from the in-situ groundwater treatment process.

The table below summarizes total quantities of solution and total quantities of reagent components applied to each injection area. The total volumes of solution and total quantities of reagent components applied to each injection point are presented in the RRS Summary Report included in **Appendix A**.

In-Situ Treatment Totals			
Injection Area – Total Injection Points	MW-8 – 36 points	MW-5/MW-6R – 28 points	MW-13 – 6 points
Reagent Solution (gallons)	6,476	5,571	1,639
3DME (pounds)	2,800	2,400	800
S-MicroZVI (pounds)	2,100	1,800	600
BDI (liters)	23	19	4

During the November 2021 in-situ treatment application, PES collected depth to water and in-situ (down-well) water quality readings from monitoring wells in the injection areas. Water quality readings included temperature, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), and conductivity. Monitoring well depth to water and water quality readings collected by PES are included in **Appendix B**.

3.3 Deviations from Work Plan/Problems Encountered

- During the December 2020 injection event, shallow refusal (5 ft bg) was encountered at the initial locations for injection points 23, 24, and 25. However, the location of each injection point was shifted by 1 foot and each was successfully advanced to its intended completion depth of 16 ft bg.
- During the December 2020 injection event PES did not collect in-situ water quality readings from injection area monitoring wells as outlined in the IRM scope of work.
- During the November 2021 injection event only 28 points were installed in the MW-5/MW-6R injection area. 30 injection points were originally planned for the area. The planned quantities of reagents were applied to the area and distributed among the 28 points.

3.4 Community Air Monitoring Program (CAMP)

A CAMP was implemented during IRM in-situ groundwater treatment activities in accordance with the HASP. Real-time monitoring was conducted for VOCs using a PID and particulates (i.e., dust), using a Dust Trak II, at the upwind and downwind perimeters of the work area for the duration of the work area. The purpose of the CAMP was to provide a measure of protection for the downwind community (i.e., offsite receptors including residences and businesses and onsite workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of IRM work activities. Additionally, the CAMP helped to confirm that work activities did not spread contamination offsite through the air. A VOC concentration of 5 parts per million (ppm), and

a particulate concentration of 100 micrograms per cubic meter (mcg/m^3), as a 15-minute average, for particulate concentrations were established in the HASP as action levels.

Downwind VOC and particulate concentrations recorded during the in-situ groundwater treatment did not exceed upwind background levels or the action levels outlined in the CAMP. During work activities on November 10, 2021, elevated VOC and particulate concentrations were recorded by the upwind CAMP station. The elevated readings were attributed to asphalt paving which was being conducted on South Church Street concurrent with the injection work. VOC and particulate concentrations recorded by the downwind CAMP station did not exceed the upwind concentrations, confirming the upwind readings were related to the street paving and not related to drilling and injection activities. Due to heavy rain, CAMP was not implemented on November 12, 2021. CAMP data, including readings recorded by the instrument data loggers and field readings recorded by HRP's onsite representative can be found in **Appendix C**.

4.0 REMEDIAL PERFORMANCE DOCUMENTATION

Following implementation of the IRM, quarterly groundwater monitoring and sampling was performed at the Site in accordance with the Site IRMMP. Sampling events were conducted on January 15 and 18, 2021 (quarter 1), April 5, 2021 (quarter 2), July 7, 2021 (quarter 3), and December 13 and 14, 2021 (quarter 4). The purpose of the quarterly groundwater monitoring and sampling events was to assess the progress and effectiveness of the in-situ groundwater treatment. This was accomplished by comparisons of pre- and post-treatment chlorinated VOC concentrations and analysis of geochemical parameters in groundwater samples collected from onsite monitoring wells. Quarterly groundwater analytical results were compared to pre-treatment analytical results collected as part of the Pre-Design Investigation conducted by PES in March and April of 2020.

A summary of well construction details and groundwater elevations from the quarterly monitoring events is included in **Table 1**. Groundwater elevation contour maps from the four quarterly monitoring events are included as **Figures 2A-2D**. A comparison of pre-treatment and quarterly post-treatment groundwater sample results for VOCs is presented in **Table 2**. A comparison of pre- and quarterly post-treatment groundwater sample results for geochemical parameters is presented in **Table 3**. Analytical results from the fourth and final quarterly monitoring event is depicted on **Figure 3**.

Results from the four quarterly monitoring events conducted following in-situ treatment indicate dechlorination is occurring in groundwater beneath the Site. Results from the 1st, 2nd, and 3rd quarterly sampling events provide evidence for dechlorination in the area of the December 2020 injections (MW-8, PES-MW-4, PES-MW-5, and PES-MW-6) and downgradient of the injection area (MW-10). Comparing results from the 4th quarterly monitoring event to previous monitoring events provides evidence for dechlorination in groundwater upgradient (MW-5, MW-6R), and cross-gradient (MW-13) of the initial injection area, following the additional in-situ treatment completed in November 2021.

Dechlorination is evidenced in Site groundwater by an overall decline in the primary species of chlorinated VOCs (TCE, cis-1,2-DCE, and vinyl chloride) and brief increase followed by a decline in the concentrations of breakdown species (cis-1,2-DCE and vinyl chloride). Results from geochemical analyses also provide evidence for dechlorination. Increasing trends in concentrations of ethylene, ethane, and methane, which are produced by the breakdown of chlorinated VOCs, were observed in MW-8 across the first three quarters of monitoring (MW-8 was not sampled for these parameters in the 4th quarter) and in MW-5 and MW-6R between the 3rd and 4th quarters, following completion of injections upgradient of the two wells. A trend of increasing total organic carbon concentrations was observed in each of the wells monitored for geochemical parameters, providing further evidence for breakdown of chlorinated compounds. Based on results from the 4th quarter, iron concentrations in the Site groundwater remain elevated relative to pre-treatment conditions, indicating potential for continued dechlorination in Site groundwater through redox reactions.

Results from MW-2 and MW-12 indicate concentrations of cis-1,2-DCE and vinyl chloride remain consistent with pre-treatment concentrations, marginally exceeding NYSDEC Class GA Criteria, but well below pre-treatment concentrations observed in source area wells (MW-8, PES-MW-4, PES-MW-5, PES-MW-6).

Based on the 2021 quarterly monitoring results the IRM injection events have effectively enhanced dechlorination and have significantly reduced concentrations of chlorinated VOCs in groundwater beneath the Site. In accordance with the SMP, groundwater monitoring and sampling (including sampling for chlorinated VOCs) is to continue at the Site on a semi-annual schedule.

5.0 REFERENCES

Published Resources

- Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, October 22, 1993, Reissued June 1998, Division of Water Technical and Operational Guidance Series, New York State Department of Environmental Conservation.

- DER-10/ Technical Guidance for Site Investigation and Remediation, May 3, 2010, New York State Department of Environmental Conservation.

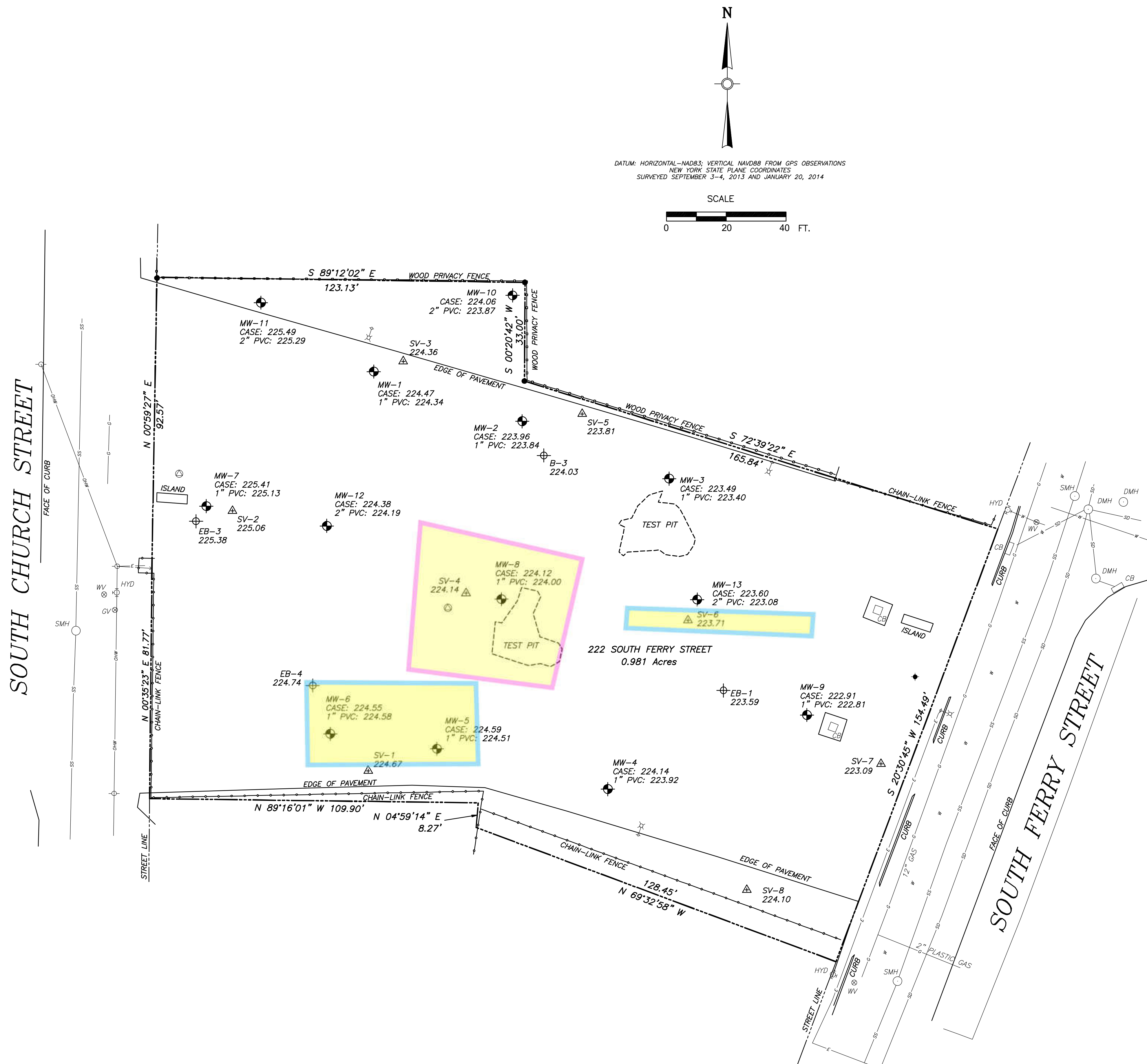
- Site Characterization Report Prepared by Arcadis of New York, Inc. for the New York State Department of Environmental Conservation, Work Assignment #D007618-24, Site No. 447047 – April 2014

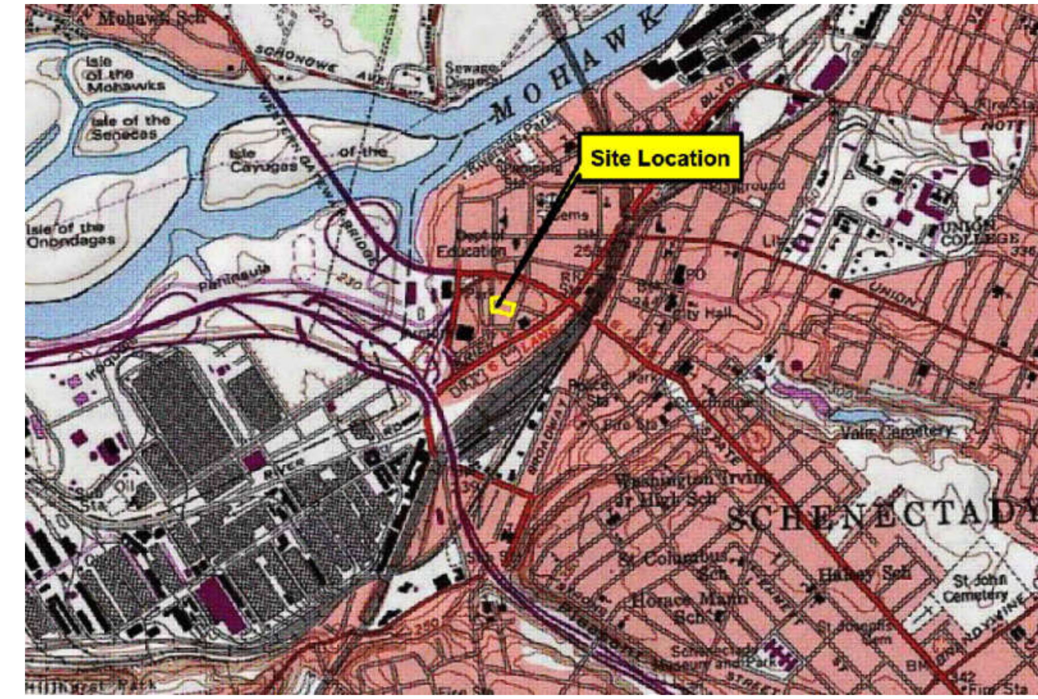
- Remedial Investigation Report – by Arcadis CE, Inc. for the New York State Department of Environmental Conservation, Work Assignment #D007618-50, Site No. 447047 - June 2018

- Focused Feasibility Study – by Arcadis CE, Inc. for the New York State Department of Environmental Conservation, Work Assignment #D007618-50, Site No. 447047 - October 2019

- Pre-Design Investigation Report – by Precision Environmental Services for the New York State Department of Environmental Conservation, Contract#C100614

FIGURES





0 1,000 2,000 4,000 6,000 8,000

1 inch = 2,000 Feet

Section Lot and Block (SBL)
Property Tax Number:
039071000101401100000

LEGEND

MW	MONITORING WELL (ALL ARE FLUSH MOUNT) W/ELEVATIONS
B,EB	SOIL BORING W/ELEVATION
SV	SOIL VAPOR POINT W/ELEVATION
	EDGE OF TEST PIT
OHW	OVERHEAD WIRES
	UTILITY POLE
	LIGHT POLE
E	UNDERGROUND ELECTRIC LINE
GV	GAS VALVE
G	UNDERGROUND GAS LINE
CB	CATCH BASIN
DMH	STORM DRAIN MANHOLE
SD	UNDERGROUND STORM DRAIN LINE
SMH	SANITARY MANHOLE
SS	UNDERGROUND SANITARY SEWER LINE
WV	WATER VALVE
HYD	HYDRANT
W	UNDERGROUND WATER LINE
	CHAIN LINE FENCE
	WOOD PRIVACY FENCE
	PROPERTY LINE
	IRON ROD FOUND
	NAIL FOUND
	NAIL SET
	Remedial Injection Area (12/2020)
	Remedial Injection Area (11/2021)

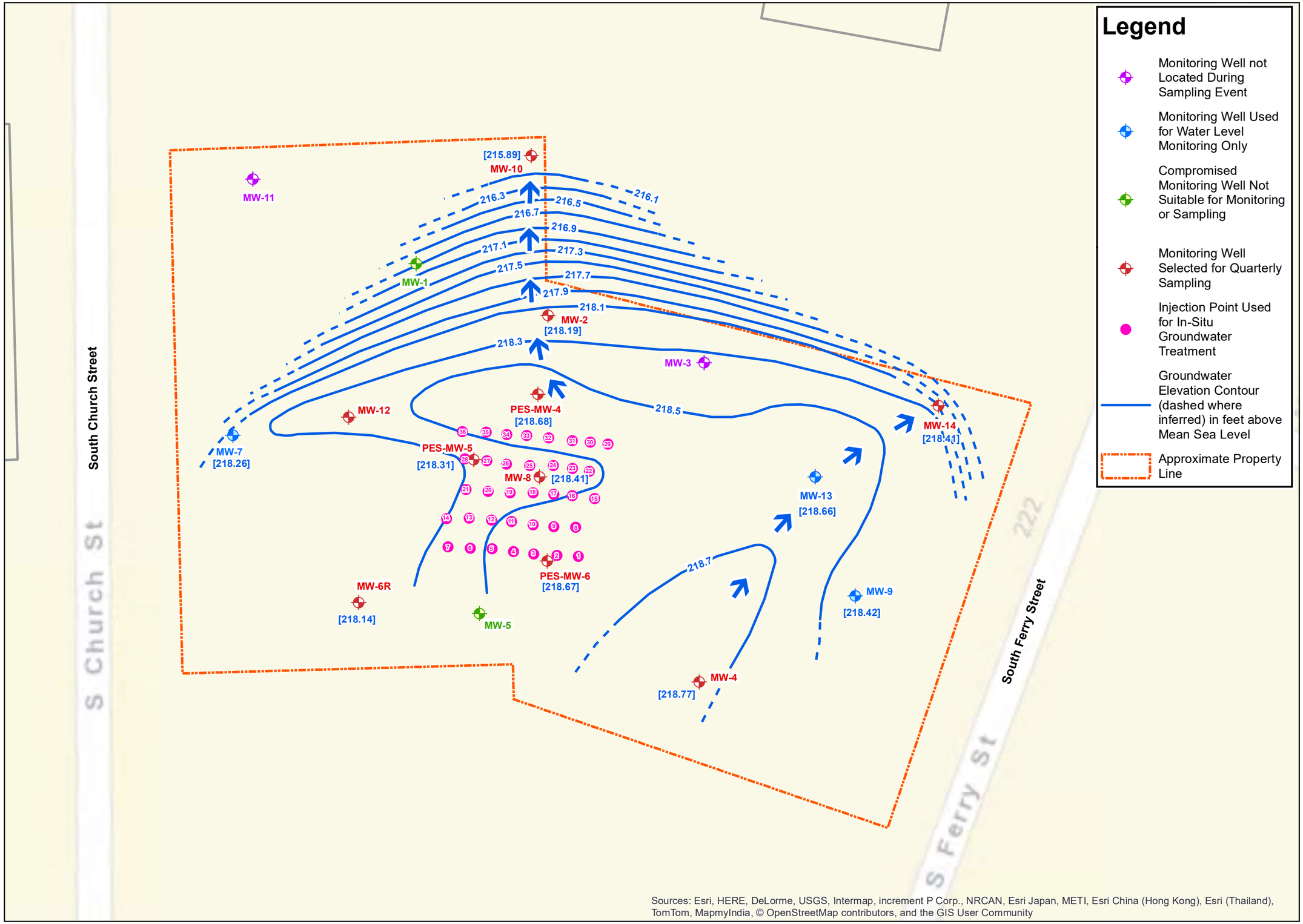
REVISIONS
1/27/14 ADD WELLS: MW–10 THRU MW–13; VAPOR POINTS: SV–1 THRU SV–8, BORINGS: EB–1, EB–3, EB–4, B–3; AND 2 TEST PITS SURVEYED 1/20/14

VALLEY COTTAGE — YEC, INC. — NEW YORK

222 SOUTH FERRY STREET SURVEY

CITY OF SCHENECTADY
SCHENECTADY COUNTY, NEW YORK

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	JOB NO.
SEPT 2013	1" = 20'	MBW	JD	A0474



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Legend

- Monitoring Well not Located During Sampling Event
- Monitoring Well Used for Water Level Monitoring Only
- Compromised Monitoring Well Not Suitable for Monitoring or Sampling
- Monitoring Well Selected for Quarterly Sampling
- Injection Point Used for In-Situ Groundwater Treatment
- Groundwater Elevation Contour (dashed where inferred) in feet above Mean Sea Level
- Approximate Property Line

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North

0 15 30 Feet

Revisions						
No.						
Date						

Designed By:	Drawn By:	Reviewed By:
PM	BOB	PM

Issue Date:	Project No:	Sheet Size:
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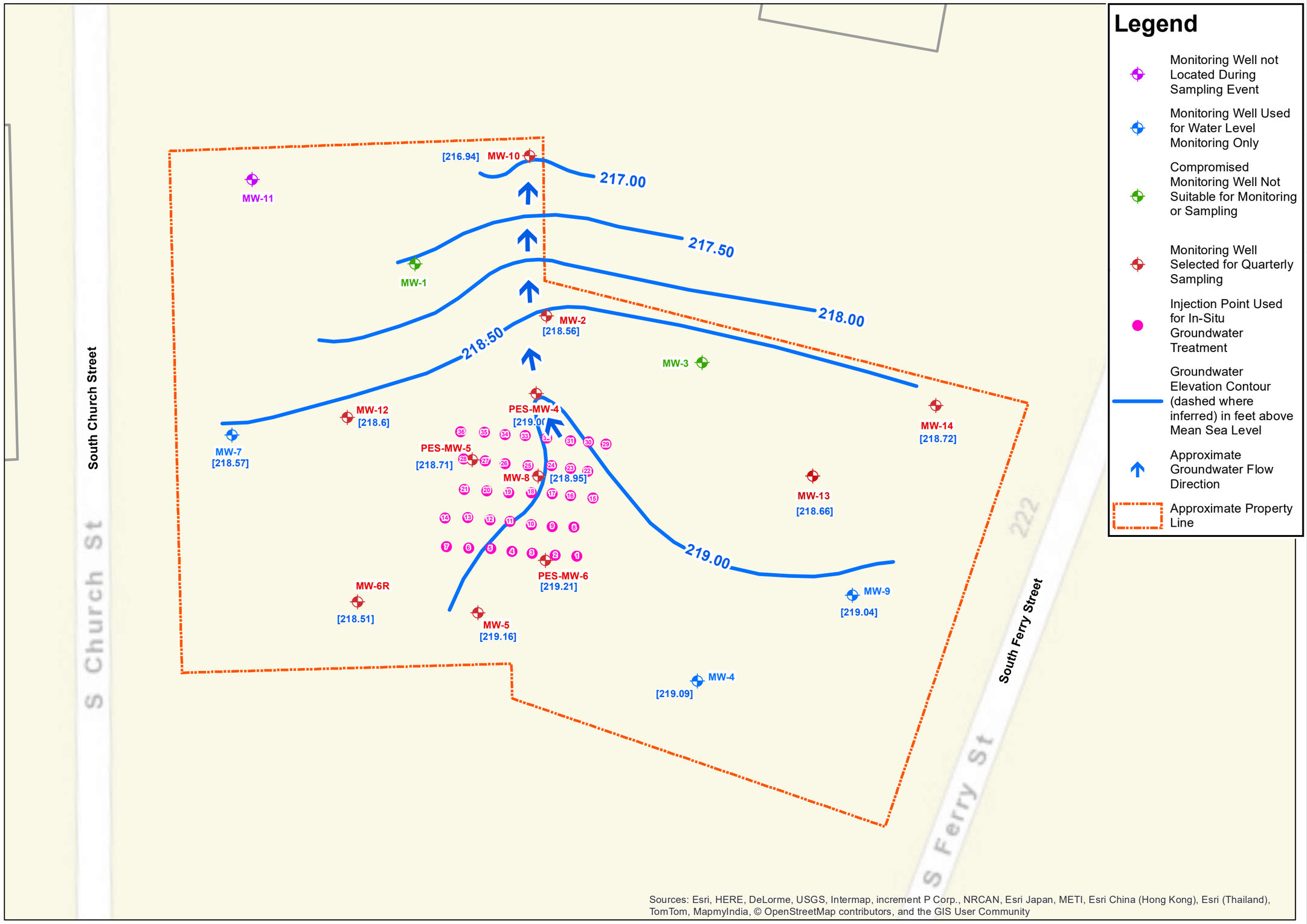
Groundwater Contours

January 15, 2021

222 South Ferry Street
Schenectady, New York

FIGURE

2A



Legend

- Monitoring Well not Located During Sampling Event
- Monitoring Well Used for Water Level Monitoring Only
- Compromised Monitoring Well Not Suitable for Monitoring or Sampling
- Monitoring Well Selected for Quarterly Sampling
- Injection Point Used for In-Situ Groundwater Treatment
- Groundwater Elevation Contour (dashed where inferred) in feet above Mean Sea Level
- Approximate Groundwater Flow Direction
- Approximate Property Line

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North

0 15 30
Feet

Revisions						
No.						
Date						

Designed By:	Drawn By:	Reviewed By:
JG	BOB	PM

Issue Date:	Project No:	Sheet Size:
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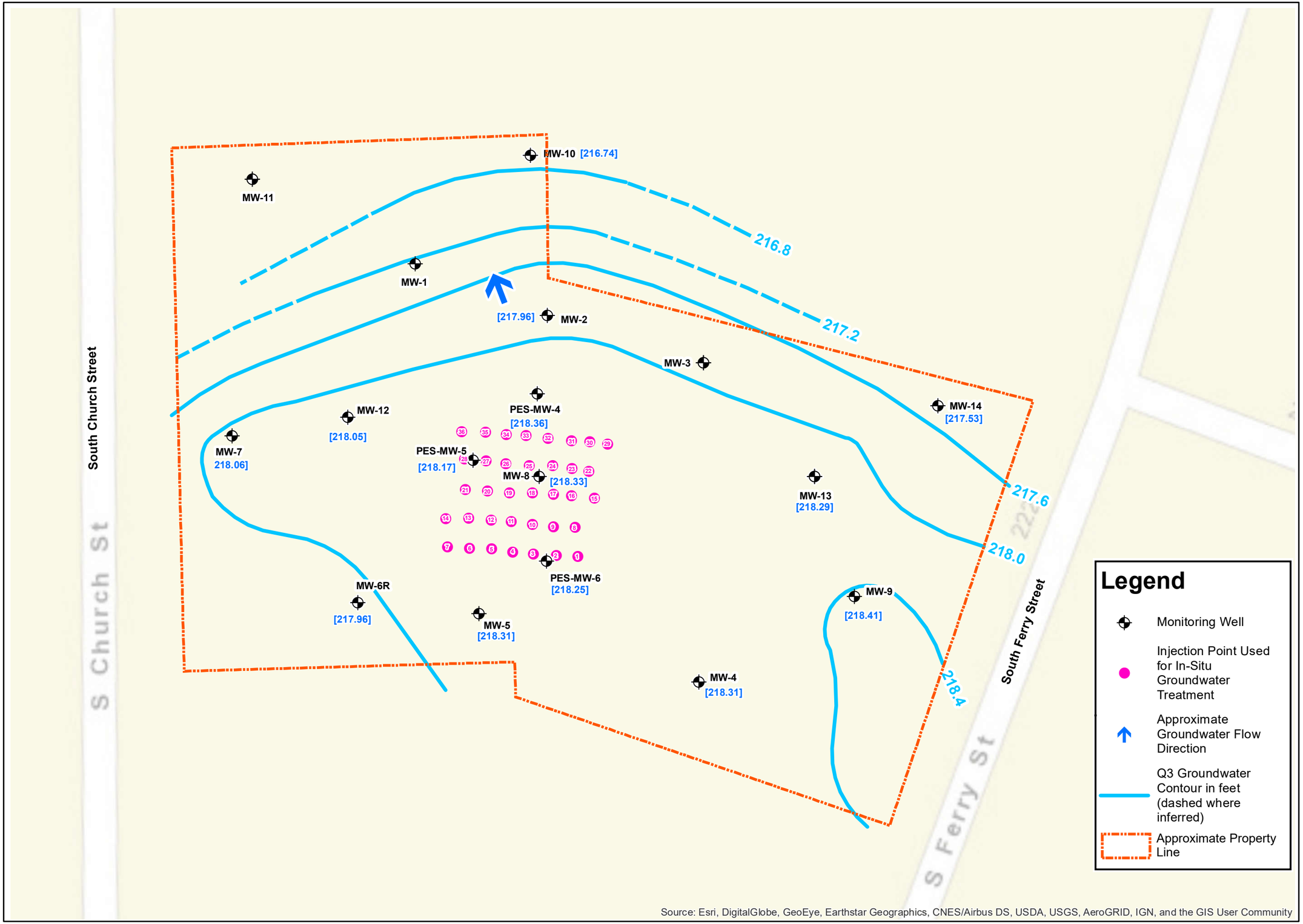
Groundwater Contours

April 5, 2021

222 South Ferry Street
Schenectady, New York

FIGURE

2B



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North

0 15 30
Feet

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Issue Date:	Project No:	Sheet Size:
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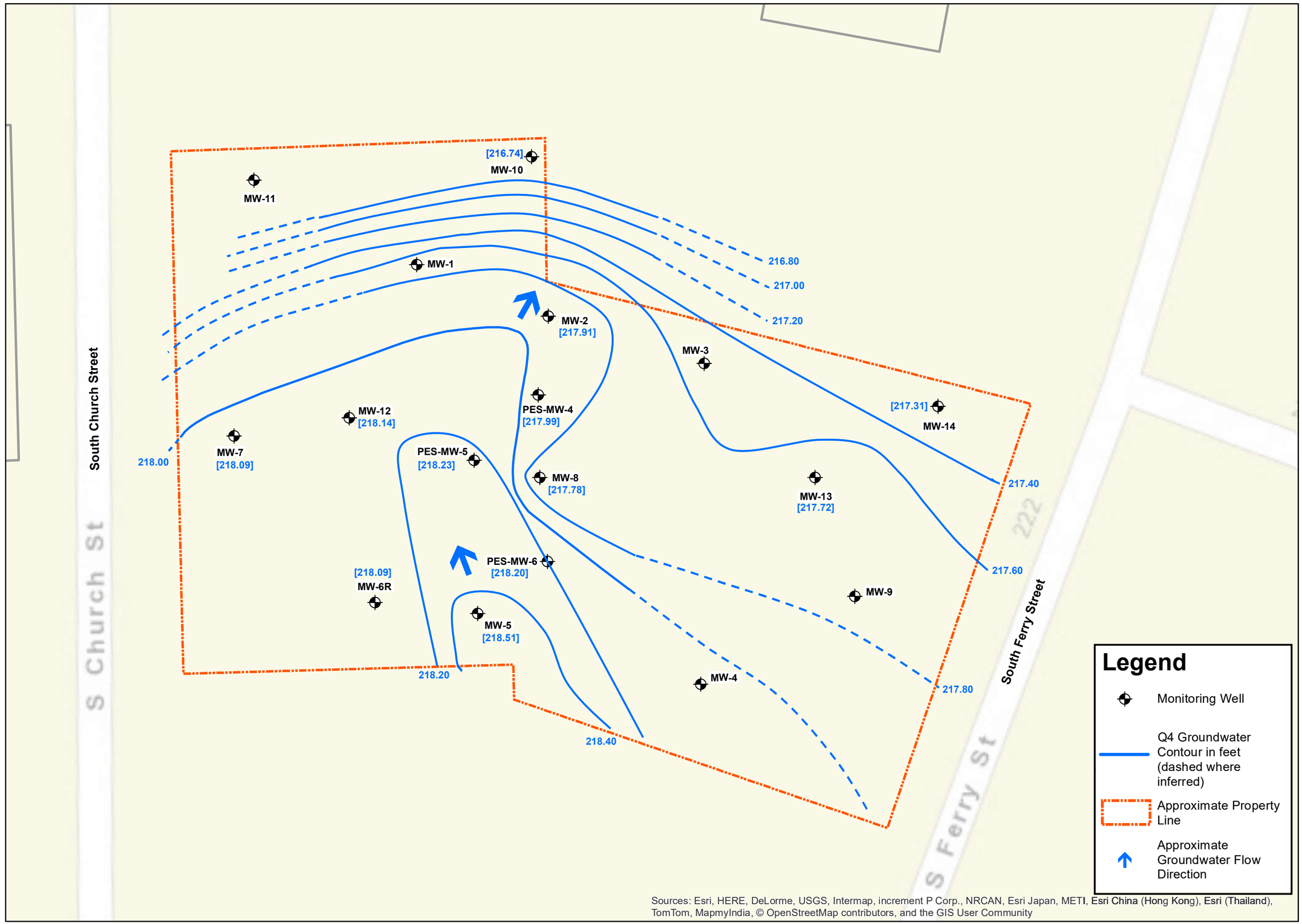
Groundwater Contours July 7, 2021

222 South Ferry Street
Schenectady, New York

Figure

2C



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(518) 877-7101
HRPASSOCIATES.COM

North

0 15 30 Feet

Revisions						
No.						
Date						

Designed By:	Drawn By:	Reviewed By:
PRL	PRL	PM

Issue Date:	Project No:	Sheet Size:
1/11/2021	DEC1012.RA	11x17

Groundwater Contours December 13, 2021

222 South Ferry Street
Schenectady, New York

Figure

2D

PES-MW-5					
Date Collected	4/9/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021
1,1-DCE	< 50	**6.2**	< 2.9	< 2.9	< 0.23
Chloromethane	NA	< 18	< 0.35	< 1.4	**1.3**
MEK	< 500	**42**	**44**	**34**	**2.6**
trans-1,2-DCE	< 50	**27**	**17**	< 9.0	< 0.19
TCE	**51**	**5.8**	< 4.6	< 4.6	<0.22
cis-1,2-DCE	**3,200**	**2,700**	**610**	**12**	**6.8**
VC	**1,500**	**1,400**	**610**	**16**	**6.3**

MW-10				
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021
MC	< 10	**5.3**	< 1.8	< 0.44
cis-1,2-DCE	**330**	**120**	**12**	**1.2**
VC	**420**	**610**	**160**	**8.3**

MW-2					
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021
cis-1,2-DCE	**3.9**	**2.3**	**2.2**	**6.9**	**3.8**
VC	**13**	**4**	**4**	**13**	**10.7**

PES-MW-4					
Date Collected	4/9/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021
Chloromethane	NA	< 18	< 0.35	< 1.4	**1.5**
MC	< 80	**44**	< 0.44	< 1.8	< 0.3
MEK	< 800	< 66	**5.2**	**8.9**	< 1.3
TCE	< 80	< 23	< 0.46	<0.46	**6.2**
cis-1,2-DCE	**310**	< 41	**3.1**	< 0.81	**35.9**
VC	**1,600**	**2,200**	**24**	**7.1**	**23.5**

MW-13				
Date Collected	3/27/2020	4/5/2021	7/7/2021	12/14/2021
Chloromethane	NA	< 2.8	< 2.8	**2.4**
cis-1,2-DCE	**43**	**49**	**79**	**1.9**
VC	**280**	**170**	**500**	**12**

MW-14				
Date Collected	1/18/2021	4/5/2021	7/7/2021	12/14/2021
PCE	**1.1**	**1.2**	< 0.36	< 0.28

MW-5				
Date Collected	3/27/2020	4/5/2021	7/7/2021	12/14/2021
CD	NA	< 0.95	< 0.95	**6.4**
MEK	< 40	< 6.6	< 6.6	**194**
TCE	**150**	**260**	**200**	**49.6**
cis-1,2-DCE	**41**	**160**	**160**	**191**
VC	< 4.0	**22**	**45**	**70.9**

MW-6R					
Date Collected	3/27/2020	1/18/2021	4/5/2021	7/7/2021	12/14/2021
1,1-DCE	< 2	< 0.29	**0.34**	< 1.2	< 0.23
MEK	< 20	< 1.3	< 5.3	< 1.2	**31.8**
trans-1,2-DCE	< 2	< 0.90	**1.2**	< 3.6	**1.9**
cis-1,2-DCE	**130**	**51**	**150**	**170**	**199**
VC	**22**	**14**	**19**	**30**	**86.5**

PES-MW-6					
Date Collected	4/9/2020	1/18/2021	4/5/2021	7/7/2021	12/14/2021
MC	< 10	**3.9**	< 1.8	< 4.4	< 0.3
MEK	<100	< 6.6	**100**	**100**	< 1.3
trans-1,2-DCE	**28**	**33**	< 3.6	**42**	**67**
TCE	**17**	**13**	**5.5**	< 4.6	< 0.22
cis-1,2-DCE	**60**	**170**	**27**	**330**	**242**
VC	**240**	**200**	**26**	**360**	**377**

MW-4	
Date Collected	1/15/2021
No Detections or Exceedances	

MW-8					
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021
Benzene	**NA**	< 210	< 16	< 41	**1.4**
MC	< 500	**250**	**18**	<18	< 0.3
MEK	< 5000	< 660	< 53	< 53	10.9
Toluene	NA	< 260	< 20	< 51	**7.3**
TCE	<500	< 230	**95**	**25**	< 0.22
trans-1,2-DCE	< 500	< 450	< 36	< 36	**1.1**
cis-1,2-DCE	**25,000**	**11,000**	**2,100**	**250**	**649**
VC	**14,000**	**6,200**	**930**	**5,900**	**6,170**

<1	Parameter not detected above the laboratory method detection limit
<1	Indicates the laboratory method detection limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than applicable regulatory standard/criterion
1	Parameter reported above the laboratory method detection limit but below the applicable regulatory standard/criterion

Volatile Organic Compounds (VOCs) (µg/L)	NYSDEC CLASS GA CRITERIA
1,1-Dichloroethylene (1,1-DCE)	**5**
2-Butanone (MEK)	**50**
Benzene	**1**
Carbon disulfide (CD)	**60**
Chloromethane	**5**
cis-1,2-Dichloroethylene (cis-1,2-DCE)	**5**
Methylene chloride (MC)	**5**
Tetrachloroethylene (PCE)	**5**
Toluene	**5**
trans-1,2-Dichloroethylene (trans-1,2-DCE)	**5**
Trichloroethylene (TCE)	**5**
Vinyl chloride (VC)	**2**

Legend

- Monitoring Well
- December 2020 Injection Points
- November 2021 Injection Points
- Approximate Groundwater Flow Direction
- Approximate Property Line

MW-10, MW-11, MW-1, MW-2, MW-3, MW-12, PES-MW-4, MW-7, PES-MW-5, MW-8, MW-13, MW-14, PES-MW-6, MW-9, MW-6R, MW-5, MW-4

South Church Street

South Ferry Street

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
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0 15 30 Feet

Revisions

No.	Date

Designed By: PRL

Drawn By: PRL

Reviewed By: PM

Issue Date: 01/10/2022

Project No: DEC1012.RA

Sheet Size: 11x17

Remaining Groundwater Contamination
December 2021
222 South Ferry Street
Schenectady, New York

FIGURE
3

TABLES

Table 1
Well Construction and Groundwater Elevation
222 South Ferry Street Site, Site # 447047
222 South Ferry Street, Schenectady, New York

Monitoring Well Designation		MW-2	MW-4	MW-5	MW-6R	MW-7	MW-8	MW-9	MW-10	MW-12	MW-13	MW-14	PES-MW-4	PES-MW-5	PES-MW-6
Installation Date		12/1/2007	12/1/2007	12/1/2007	11/15/2017	12/1/2007	12/1/2007	12/1/2007	1/14/2014	1/15/2014	1/16/2014	11/14/2017	4/3/2020	4/3/2020	4/3/2020
Top of Casing Elevation (ft amsl)		223.84	223.92	224.51	224.06	225.13	224.00	222.81	223.87	224.19	223.08	222.36	223.88	224.07	224.3
Screened Interval (ft btoc)		5 - 15	Unknown	Unknown	5 to 15	Unknown	Unknown	Unknown	10 - 20	5 - 15	5 - 15	2 - 12	5 - 10	8 - 13	4 - 14
Well Diameter (inches)		1	1	1	2	1	1	1	2	2	2	2	2	2	2
Measurement Date	**Gauging Data**														
1/15/2021	Depth to Water (ft btoc)	5.65	5.15	ND	5.92	6.87	5.59	4.39	7.98	ND	4.42	3.95	5.20	5.76	5.63
	Groundwater Elevation (ft amsl)	218.19	218.77	ND	218.14	218.26	218.41	218.42	215.89	ND	218.66	218.41	218.68	218.31	218.67
	Measured Depth to Bottom (ft btoc)	12.75	11.65	ND	14.65	12.27	12.46	12.27	18.60	14.15	13.70	11.89	9.58	12.90	13.85
4/5/2021	Depth to Water (ft btoc)	5.28	4.83	5.35	5.55	6.56	5.05	3.77	6.93	5.59	4.23	3.64	4.88	5.36	5.09
	Groundwater Elevation (ft amsl)	218.56	219.09	219.16	218.51	218.57	218.95	219.04	216.94	218.60	218.85	218.72	219.00	218.71	219.21
	Measured Depth to Bottom (ft btoc)	12.71	9.72	12.20	14.65	12.25	12.50	11.90	18.39	14.10	13.60	11.90	8.35	12.65	14.25
7/7/2021	Depth to Water (ft btoc)	5.88	5.61	6.20	6.10	7.07	5.67	4.40	7.13	6.14	4.79	4.83	5.52	5.90	6.05
	Groundwater Elevation (ft amsl)	217.96	218.31	218.31	217.96	218.06	218.33	218.41	216.74	218.05	218.29	217.53	218.36	218.17	218.25
	Measured Depth to Bottom (ft btoc)	12.75	9.65	12.11	14.65	12.29	12.50	11.93	18.35	14.10	13.60	11.82	9.35	12.64	14.26
12/13/2021	Depth to Water (ft btoc)	5.93	ND	6.00	5.97	7.04	5.75	5.03	7.13	6.05	5.36	5.05	5.89	5.84	6.10
	Groundwater Elevation (ft amsl)	217.91	ND	218.51	218.09	218.09	218.25	217.78	216.74	218.14	217.72	217.31	217.99	218.23	218.20
	Measured Depth to Bottom (ft btoc)	12.75	ND	12.11	14.65	12.29	12.50	11.93	18.35	14.10	13.60	11.82	9.35	12.64	14.26

LEGEND

ft btoc	feet below top of casing
ft amsl	feet above mean sea level
ND	No Data - MW-5, MW-12 not accessible on 1/15/21 for gauging during synoptic groundwater level monitoring. MW-4 Not located on 12/13/21 for gauging synoptic groundwater level monitoring.

Top of casing elevations surveyed by Advanced Engineering and Surveying, LLC (2019) based on NAVD 88 datum. PES-MW wells tied into previous survey by Precision, 2020 (not licensed surveyor)

Table 2
Summary of Groundwater Sample Results
Volatile Organic Compounds - Detected Analytes Only

222 South Ferry Street Site, Site # 447047
222 South Ferry Street, Schenectady, New York

Well ID	Date Collected	NYSDEC Class GA Criteria	Benzene	Carbon disulfide	Chloromethane	Toluene	2-Butanone (MEK)	1,1-Dichloro-ethylene	Methylene chloride	trans-1,2-Dichloro-ethylene	Tetrachloro-ethylene	Trichloro-ethylene	cis-1,2-Dichloro-ethylene	Vinyl chloride
			1	**60**	**5**	**5**	**50**	**5**	**5**	**5**	**5**	**5**	**5**	**2**
MW-2	3/27/2020	Volatile Organic Compounds (VOCs) (ug/L)	NA	NA	NA	NA	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**3.9**	**13**
	1/15/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**2.3**	**4**
	4/5/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**2.2**	**4**
	7/7/2021		< 0.41	< 0.19	**0.54**	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**6.9**	**13**
	12/14/2021		< 0.22	< 0.25	< 0.2	< 0.2	< 1.3	< 0.23	< 0.3	< 0.19	< 0.28	< 0.22	**3.8**	**10.7**
MW-4	1/15/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 0.29	< 0.36	< 0.44	< 0.46	< 1.3	< 0.81	< 0.90	< 0.90
MW-5	3/27/2020		NA	NA	NA	NA	< 40	< 4.0	< 4.0	< 4.0	< 4.0	**150**	**41**	< 4.0
	4/5/2021		< 2.1	< 0.95	< 1.8	< 2.6	< 6.6	< 1.5	< 2.2	< 4.5	< 1.8	**260**	**160**	**22**
	7/7/2021		< 2.1	< 0.95	< 1.8	< 2.6	< 6.6	< 1.5	< 2.2	< 4.5	< 1.8	**200**	**160**	**45**
	12/14/2021		< 0.22	**6.4**	< 0.2	< 0.2	**194**	**1.2**	< 0.3	**4.3**	< 0.28	**49.6**	**191**	**70.9**
MW-6R	3/27/2020		NA	NA	NA	NA	< 20	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	**130**	**22**
	1/18/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**51**	**14**
	4/5/2021		< 1.6	< 0.76	< 1.4	< 2	< 5.3	**0.34 J**	< 1.8	**1.2**	< 1.4	< 1.8	**150**	**19**
	7/7/2021		< 1.6	< 0.76	< 1.4	< 2	< 1.2	< 1.2	< 1.8	< 3.6	< 1.4	< 1.8	**170**	**30**
	12/14/2021		< 0.22	< 0.25	< 0.2	< 0.2	**31.8**	< 0.23	< 0.3	**1.9**	< 0.28	< 0.22	**199**	**86.5**
MW-8	3/27/2020		NA	NA	NA	NA	< 5000	< 500	< 500	< 500	< 500	< 500	**25,000**	**14,000**
	1/15/2021		< 210	< 95	< 180	< 260	< 660	< 150	**250**	< 450	< 180	< 230	**11,000**	**6,200**
	4/5/2021		< 16	< 7.6	< 14	< 20	< 53	< 12	**18 J**	< 36	< 14	**95**	**2,100 F1**	**930 F1**
	7/7/2021		< 41	< 19	< 35	< 51	< 53	< 12	< 18	< 36	< 14	**25**	**250**	**5,900**
	12/14/2021		**1.4**	< 0.25	< 0.2	**7.3**	**10.9**	< 0.23	< 0.3	**1.1**	< 0.28	< 0.22	**649**	**6,170**
MW-10	3/27/2020		NA	NA	NA	NA	< 100	< 10	< 10	< 10	< 10	< 10	**330**	**420**
	1/15/2021		< 4.1	< 1.9	< 3.5	< 5.1	< 13	< 2.9	**5.3**	< 9.0	< 3.6	< 4.6	**120**	**610**
	4/5/2021		< 1.6	< 0.76	< 1.4	< 2	< 5.3	< 1.2	< 1.8	< 3.6	< 1.4	< 1.8	**12**	**160**
	7/7/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**1.2**	**8.3**
MW-12	3/27/2020		NA	NA	NA	NA	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**6.9**	**4.1**
	1/18/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**7.8**	**3**
	4/5/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**5.9**	**2**
	7/7/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**9**	**4.4**
	12/14/2021		< 0.22	< 0.25	< 0.2	< 0.2	< 1.3	< 0.23	< 0.3	< 0.19	< 0.28	< 0.22	**7.6**	**3.1**
MW-13	3/27/2020		NA	NA	NA	NA	< 100	< 10	< 10	< 10	< 10	< 10	**43**	**280**
	4/5/2021		< 3.3	< 1.5	< 2.8	< 4.1	< 11	< 2.3	< 3.5	< 7.2	< 2.9	< 3.7	**49**	**170**
	7/7/2021		< 3.3	< 1.5	< 2.8	< 4.1	< 11	< 2.3	< 3.5	< 7.2	< 2.9	< 3.7	**79**	**500**
	12/14/2021		< 0.22	< 0.25	**2.4**	< 0.2	2.3	< 0.23	< 0.3	< 0.19	< 0.28	< 0.22	**1.9**	**12**

Table 2
Summary of Groundwater Sample Results
Volatile Organic Compounds - Detected Analytes Only

222 South Ferry Street Site, Site # 447047
222 South Ferry Street, Schenectady, New York

Well ID	Date Collected	NYSDEC Class GA Criteria	Benzene	Carbon disulfide	Chloromethane	Toluene	2-Butanone (MEK)	1,1-Dichloro-ethylene	Methylene chloride	trans-1,2-Dichloro-ethylene	Tetrachloro-ethylene	Trichloro-ethylene	cis-1,2-Dichloro-ethylene	Vinyl chloride
		Volatile Organic Compounds (VOCs) (ug/L)	**1**	**60**	**5**	**5**	**50**	**5**	**5**	**5**	**5**	**5**	**5**	**2**
MW-14	1/18/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	**1.1**	< 0.46	< 0.81	< 0.90
	4/5/2021		< 0.41	< 0.19	< 0.35	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	**1.2**	< 0.46	< 0.81	< 0.90
	7/7/2021		< 0.41	< 0.19	**0.37**	< 0.51	< 1.3	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	< 0.81	< 0.90
	12/14/2021		< 0.22	< 0.25	< 0.2	< 0.2	< 1.3	< 0.23	< 0.3	< 0.19	< 0.28	< 0.22	< 0.24	< 0.33
PES-MW-4	4/9/2020		NA	NA	NA	NA	< 800	< 80	< 80	< 80	< 80	< 80	**310**	**1,600**
	1/15/2021		< 21	< 9.5	< 18	< 26	< 66	< 15	**44 J F1**	< 45	< 18	< 23	< 41	**2,200 F1**
	4/5/2021		< 0.41	< 0.19	< 0.35	< 0.51	**5.2 J**	< 0.29	< 0.44	< 0.90	< 0.36	< 0.46	**3.1**	**24**
	7/7/2021		< 1.6	< 0.76	< 1.4	< 2	**8.9 J**	< 1.2	< 1.8	< 3.6	< 0.36	<0.46	< 0.81	**7.1**
	12/14/2021		< 0.22	< 0.25	**1.5**	< 0.2	< 1.3	< 0.23	< 0.3	< 0.19	< 0.28	**6.2**	**35.9**	**23.5**
PES-MW-5	4/9/2020		NA	NA	NA	NA	< 500	< 50	< 50	< 50	< 50	**51**	**3,200**	**1,500**
	1/15/2021		< 16	< 7.6	< 14	< 20	**42**	**6.2**	**2.2**	**27**	< 1.4	**5.8**	**2,700**	**1,400**
	4/5/2021		< 4.1	< 1.9	< 3.5	< 5.1	**44 J**	< 2.9	< 4.4	**17**	< 3.6	< 4.6	**610**	**610**
	7/7/2021		< 4.1	< 1.9	< 3.5	< 5.1	**34 J**	<2.9	< 4.4	< 9.0	< 3.6	< 4.6	**12**	**16**
	12/14/2021		< 0.22	< 0.25	**1.3**	< 0.2	**2.6**	< 0.23	< 0.3	< 0.19	< 0.28	< 0.22	**6.8**	**6.3**
PES-MW-6	4/9/2020		NA	NA	NA	NA	< 100	< 10	< 10	**28 J**	< 10	**17**	**60**	**240**
	1/18/2021		< 2.1	< 0.95	< 1.8	< 2.6	**47 J**	< 1.5	**3.9 J**	**33**	< 1.8	**13**	**170**	**200**
	4/5/2021		< 1.6	< 0.76	< 1.4	< 2	**100**	< 1.2	< 1.8	< 3.6	< 1.4	**5.5**	**27**	**26**
	7/7/2021		< 4.1	< 1.9	< 3.5	< 5.1	**100**	< 2.9	< 4.4	**42**	< 3.6	< 4.6	**330**	**360**
	12/14/2021		< 0.22	< 0.25	< 0.2	< 0.2	< 1.3	< 0.23	< 0.3	**67**	< 0.28	< 0.22	**242**	**377**

Legend

<1	Parameter not detected above the laboratory method detection limit
<1	Indicates the laboratory method detection limit is greater than one or more applicable criteria
1	Parameter reported at a concentration greater than applicable regulatory criteria
1	Parameter reported above the laboratory method detection limit but below the applicable regulatory criteria

Notes:

ug/L = micrograms per liter
NP= Non-promulagted. No applicable standard
J - indicates that the estimated value is greater than or equal to the MDL and less than the LOQ
F1 - MS and/or MSD recovery exceeds control limits
For samples collected 3/27/20, results shown are detections above laboratory reporting limits.
NYSDEC CLASS GA Criteria = Groundwater Class 'GA' Technical and Operational Guidance Series (TOGS) 1.1.1 criteria

Table 3
Summary of Groundwater Sample Results
Geochemical Parameters
222 South Ferry Street Site, Site # 447047
222 South Ferry Street, Schenectady, New York

ID:	NYSDEC CLASS GA CRITERIA	MW-4	MW-5			MW-6R		MW-8				
Date Collected:		1/15/2021	4/5/2021	7/7/2021	12/14/2021	7/7/2021	12/14/2021	3/27/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021
Alkalinity, Total by EPA Method 8260C (mg/L)												
Alkalinity (CaCO3)	NP	314	410	430	647	538	657	360	436	547	782	477
Chloride and Sulfate EPA Method 300.0_28D (mg/L)												
Chloride	500	19.9	21.1	23.1	28.2	18	16.3	114	129	139	84.9	251
Sulfate	250	41.9	412	386	155	418	< 0.11	19.4	<10	11.7	3.5	1.5
Iron & Manganese (Total and Dissolved) by EPA Method 6010C (mg/L)												
Iron (Total)	0.3	3.2	0.063	2.3	127	34.5	216	22.2	66.2	53.1	101	105
Iron (Dissolved)	0.3	< 0.019	< 0.019	< 0.019	161	< 0.019	248	< 0.050	6.8	< 0.019	1.7	113
Manganese (Total)	0.6	0.37	0.088	0.14	10.5	5	9.01	2.5	4.1	5.7	5.6	5.51
Manganese (Dissolved)	0.6	0.41	0.082	0.09	9.46	4.3	10.4	2.5	4	5.1	4.8	6.34
Carbon Dioxide- Dissolved Gases (GC) by Method RSK_175_CO2 (ug/L)												
Carbon Dioxide	NP	39,000	120,000	120,000	NA	160,000	NA	120,000	140,000	140,000	210,000	NA
Ethylene/Ethane/Methane- Dissolved Gases (GC) by Method RSK_175_ (ug/L)												
Ethylene	NP	<7.5	1.8	<1.5	1.4	<1.5	6.9	3,400	6,200	110	11,000	NA
Ethane	NP	<7.5	< 1.5	<1.5	5.8	<1.5	3.0	320	1,000	13	1,000	NA
Methane	NP	25	210	260	725	770	1110	490	1,500	13	2,900	NA
Sulfide by SM4500-S2-F (mg/L)												
Sulfide	0.05	<1.0	< 0.67	<0.67	< 0.43	<0.67	< 0.43	NA	<1.0	< 0.67	1.2	< 0.43
Nitrate by EPA Method 353.2 (mg/L)												
Nitrate ion	10	0.06	0.48	<0.020	< 0.037	0.029	< 0.037	0.15	0.13	< 0.020	0.13	0.042
Total Organic Carbon (TOC) by EPA Method 5310C (mg/L)												
TOC	NP	3.3	2.6	4.2	1130	7.3	754	5.1	34.1	44.3	168	163

ID:	NYSDEC CLASS GA CRITERIA	MW-10			MW-13	
Date Collected:		1/15/2021	4/5/2021	7/7/2021	7/7/2021	12/14/2021
Alkalinity, Total by EPA Method 8260C (mg/L)						
Alkalinity (CaCO3)	NP	493	468	538	386	452
Chloride and Sulfate EPA Method 300.0_28D (mg/L)						
Chloride	500	110	153	124	57.9	64.2
Sulfate	250	17	3.1	<10.0	8.6	0.18
Iron & Manganese (Total and Dissolved) by EPA Method 6010C (mg/L)						
Iron (Total)	0.3	25	22.4	31	20	26
Iron (Dissolved)	0.3	< 0.019	0.072	0.088	< 0.019	0.0068
Manganese (Total)	0.6	1.3	1.1	1.5	0.81	1.01
Manganese (Dissolved)	0.6	1.5	0.97	1.4	0.61	0.647
Carbon Dioxide- Dissolved Gases (GC) by Method RSK_175_CO2 (ug/L)						
Carbon Dioxide	NP	120,000	120,000	130,000	100,000	NA
Ethylene/Ethane/Methane- Dissolved Gases (GC) by Method RSK_175_ (ug/L)						
Ethylene	NP	86	41	170	24	<195
Ethane	NP	110	35	<17	170	270
Methane	NP	8,500	13,000	5,800	6,800	6110
Sulfide by SM4500-S2-F (mg/L)						
Sulfide	0.05	<1.0	< 0.67	<0.67	<0.67	<0.43
Nitrate by EPA Method 353.2 (mg/L)						
Nitrate ion	10	9.9	0.025	0.039	<0.020	<0.037
Total Organic Carbon (TOC) by EPA Method 5310C (mg/L)						
TOC	NP	0.089	6.2	16.4	6.6	72.1

Legend

<1	Parameter not detected above the laboratory method detection limit
<1	Indicates the laboratory method detection limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than applicable regulatory standard/criterion
1	Parameter reported above the laboratory method detection limit but below the applicable regulatory standard/criterion

Notes:
mg/L = miligrams per Liter
ug/L = micorgrams per Liter
VOCs = volatile organic compounds
NYSDEC CLASS GA Criteria = Groundwater Class 'GA' Technical and Operational Guidance Series
NP= Not Promulgated; no applicable NYSDEC Criteria
NA= Not analyzed

APPENDIX A

Regenesis Remediation Services Summary Reports

REGENESIS
REMEDIATION SERVICES
Technology-Based Solutions for the Environment

Global Headquarters
1011 Calle Sombra
San Clemente, CA 92673
Ph: (949) 366-8000
Fax: (949) 366-8090

December 22, 2020

REGENESIS Proposal No. MaD66695

Brian Neumann
Precision Environmental Services
13 British American Boulevard
Ballston Spa, NY 12020

SUBJECT: Application Summary Report for Remedial Services at the Ferry Street Site

Brian,

REGENESIS Remediation Services (RRS) has recently completed an *in-situ* injection application of 3-D Microemulsion® (3DME), Sulfidated Zero-Valent Iron® (S-MicroZVI), and Bio-Dechlor INOCULUM® Plus (BDI Plus) at the Ferry Street Site (Site) located at 222 S Ferry Street, Schenectady, NY 12305. The goal of the remedial application was to remediate concentrations of trichloroethylene (TCE). RRS employed *in-situ* chemical reduction technologies to meet remediation goals.

RRS mobilized a support pickup truck, injection trailer, and personnel to the site to begin work over 3 days on December 8th through December 10th. RRS staffed this project with an experienced Project Supervisor who ensured a safe, successful injection application. RRS applied remediation chemistries through thirty-six direct push injection points set in a grid. Please review the attached application summary page, injection log, map, and photo log for more detail on the application.

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RRS appreciates the opportunity to work at this site with Precision Environmental Services. RRS will be available to interpret the field data as it is collected or answer any questions. If you need additional information regarding the application process or attached field notes, please contact Will Clogan at 724.766.1811 or Josh Grasser at 267.473.0360.

Sincerely,

William Clogan

William Clogan
East Region Project Manager
REGENESIS Remediation Services

Josh Grasser
Project Supervisor
REGENESIS Remediation Services

cc: mdooley@regenesis.com; bhenderson@regenesis.com;

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Application Summary Page

3-D MICROEMULSION S-MicroZVI Sulfidated Zero-Valent Iron BDI PLUS BIO-DECHLOR INOCULUM

OVERVIEW

Client: Precision Environmental Services

Site Address: 222 S Ferry Street, Schenectady, NY 12305

Client PM: Brian Neumann
Site Name: Ferry Street
Project Dates: 12/8/20 to 12/11/20

Project Name: Ferry Street
RRS Project Manager: Will Clogan
RRS Project Supervisor: Josh Grasser

TREATMENT TECHNOLOGY

RRS used the 3DME, S-MicroZVI, and BDI Plus to remediate the plume stemming from the dry cleaner on Ferry Street. Application of these products are designed to abiotically biodegrade chlorinated volatile organic compounds through reductive dechlorination by altering groundwater chemistry into a reducing environment and augmenting the microbial population to bioremediate contaminants into harmless byproducts such as ethane and methane.

RRS employed remediation design specifications as outlined in the design dated 7/2/20. This report discusses the 3,600 square-feet grid remediation on-site.

APPLICATION

Prior to the arrival of RRS, barricades were staged around the application area by Precision Environmental Services. Product was received and stored offsite by Precision Environmental Services to be brought to site as needed. Application began on 12/8/20 by marking out injection locations and advancing steel retractable screens into the subsurface. Remedial agents were administered into

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the aquifer and vadose zone to address concentrations of trichloroethylene (TCE). This treatment consists of chemically reducing TCE contaminants through a synergistic combination of biotic (3DME and BDI) and abiotic (S-MZVI) degradation processes. S-MicroZVI and 3DME were mixed with water supplied by hydrants on S Ferry Street and S Church Street. Once mixed S-MicroZVI and 3DME were applied simultaneously while the liquid culture of BDI Plus was injected via slip-stream method whereby the inoculum was injected into delivery lines during each interval. As this culture is anaerobic, it was injected via nitrogen to ensure the inoculum was never exposed to an aerated environment. The mixture of S-MicroZVI and 3DME was injected using the RRS injection trailer through direct push borings drilled with a leading 1.5" retractable stainless-steel screen 3' in length.

Injection pressures were observed between 0 and 20 pound per square inch (PSI) and flow rates were maintained between 1.54 and 4.96 gallons per minute (GPM). Injection was completed by pumping on up to 3 injection points at a time using the RRS injection trailer manifold system. Although pressures were observed under 20 PSI, the RRS trailer is equipped with a pressure bypass valve that will re-route fluids back into the trailer tanks if downhole pressures reach 125 PSI in order to keep pressures at safe levels for field personnel. Soil borings were backfilled with sodium bentonite chips after injection to seal the boring.

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Injection Area (3,600 square-feet)

Total Amount Applied:

3DME	2,800 lbs.
S-MicroZVI	2,100 lbs.
BDI Plus	23 Liters

Amount Applied Per Point:

3DME	78 lbs.
ZVI	58 lbs.
BDI Plus	0.64 Liters

3DME was mixed and applied as an 6% solution.

A total of 6,476 gallons of remedial reagent solution was applied in this treatment area.

Application Method: Direct push drilling with retractable injection screens — 3' feet screens
Injection Depth: 16 to 5 feet below ground surface
Number of Injection Points: 36
Deviations From Proposal:

- No deviations from proposal.

General Observations:

- refusal at 5' bgs was experienced and points were offset 1' South to rectify.

Please see Appendix A –Injection Log for details on injection flow rates and pressures observed

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Appendix A

3-D MICROEMULSION
Factory Emulsified

Precision Environmental Services-Ferry Street
3DME Injection Summary Log
Injection Area
Table 1

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Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of 3DME Injected			Total Gallons Per Location	Pounds of 3DME Injected Per Location	Pounds of ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval						
1	12/8/2020	9:46	16-14	10	2.03	0.00	32.75	32.75	180	78	58	0.12		3-Foot Screen
	12/8/2020	10:06	14-11	0	2.34	32.75	81.76	49.01				0.17		
	12/8/2020	10:36	11-8	0	2.46	81.76	134.38	52.62				0.17		
	12/8/2020	10:55	8-5	0	2.42	134.38	180.34	45.96				0.17		
2	12/8/2020	11:19	16-14	0	2.53	0.00	34.56	34.56	180	78	58	0.12		3-Foot Screen
	12/8/2020	11:41	14-11	0	2.34	34.56	81.34	46.78				0.17	Back pressure, let rest	
	12/8/2020	12:20	11-8	0	2.37	81.34	130.98	49.64				0.17		
	12/8/2020	12:42	8-5	0	2.65	130.98	180.30	49.32				0.17		
3	12/8/2020	9:43	16-14	15	2.23	0.00	31.86	31.86	180	78	58	0.12		3-Foot Screen
	12/8/2020	10:06	14-11	0	2.36	31.86	82.44	50.58				0.17		
	12/8/2020	10:36	11-8	0	2.42	82.44	131.68	49.24				0.17	Daylighting around rod, Stopped with bentonite	
	12/8/2020	10:55	8-5	0	2.38	131.68	179.86	48.18				0.17		
4	12/8/2020	11:19	16-14	0	1.54	0.00	32.46	32.46	180	78	58	0.12		3-Foot Screen
	12/8/2020	11:39	14-11	0	2.46	32.46	82.64	50.18				0.17	Back pressure, let rest	
	12/8/2020	12:20	11-8	0	2.33	82.64	132.86	50.22				0.17		
	12/8/2020	12:40	8-5	0	2.06	132.86	180.40	47.54				0.17		
5	12/8/2020	9:42	16-14	0	2.14	0.00	32.18	32.18	180	78	58	0.12		3-Foot Screen
	12/8/2020	10:05	14-11	0	2.41	32.18	82.46	50.28				0.17		
	12/8/2020	10:36	11-8	0	2.16	82.46	132.86	50.40				0.17		
	12/8/2020	10:56	8-5	0	2.64	132.86	180.07	47.21				0.17		
6	12/8/2020	11:19	16-14	0	2.33	0.00	32.42	32.42	180	78	58	0.12		3-Foot Screen
	12/8/2020	11:41	14-11	0	1.99	32.42	82.39	49.97				0.17	Back pressure, let rest	
	12/8/2020	12:21	11-8	0	2.47	82.39	131.99	49.60				0.17		
	12/8/2020	12:42	8-5	0	2.22	131.99	180.25	48.26				0.17		
7	12/8/2020	13:08	16-14	0	2.36	0.00	32.65	32.65	180	78	58	0.12		3-Foot Screen
	12/8/2020	13:24	14-11	0	2.61	32.65	81.53	48.88				0.17	Back pressure, let rest	
	12/8/2020	13:51	11-8	0	2.25	81.53	131.22	49.69				0.17		
	12/8/2020	14:17	8-5	0	2.67	131.22	179.53	48.31				0.17		
8	12/9/2020	8:22	16-14	20	3.24	0.00	31.46	31.46	180	78	58	0.12		3-Foot Screen
	12/9/2020	8:37	14-11	0	3.26	31.46	83.14	51.68				0.17		
	12/9/2020	8:59	11-8	0	3.05	83.14	131.34	48.20				0.17		
	12/9/2020	9:17	8-5	0	3.46	131.34	180.21	48.87				0.17		
9	12/9/2020	8:22	16-14	10	3.16	0.00	32.07	32.07	180	78	58	0.12		3-Foot Screen
	12/9/2020	8:39	14-11	0	2.98	32.07	82.99	50.92				0.17		
	12/9/2020	8:59	11-8	0	3.22	82.99	130.60	47.61				0.17		
	12/9/2020	9:17	8-5	0	3.11	130.60	179.86	49.26				0.17		
10	12/8/2020	14:39	16-14	0	2.76	0.00	32.45	32.45	180	78	58	0.12		3-Foot Screen
	12/8/2020	14:51	14-11	0	2.74	32.45	85.34	52.89				0.17		
	12/8/2020	15:14	11-8	0	3.31	85.34	131.73	46.39				0.17		
	12/8/2020	18:02	8-5	0	3.31	131.73	179.68	47.95				0.17		
11	12/8/2020	14:39	16-14	0	2.64	0.00	31.86	31.86	180	78	58	0.12		3-Foot Screen
	12/8/2020	14:57	14-11	0	2.66	31.86	81.71	49.85				0.17		
	12/8/2020	15:14	11-8	0	3.26	81.71	134.25	52.54				0.17		
	12/8/2020	15:29	8-5	0	3.57	134.25	180.06	45.81				0.17		
12	12/8/2020	14:39	16-14	0	2.76	0.00	32.46	32.46	180	78	58	0.12		3-Foot Screen
	12/8/2020	14:55	14-11	0	2.61	32.46	82.28	49.82				0.17		
	12/8/2020	15:14	11-8	0	3.46	82.28	131.08	48.80				0.17		
	12/8/2020	15:32	8-5	0	3.23	131.08	179.64	48.56				0.17		
13	12/8/2020	13:08	16-14	0	2.46	0.00	31.83	31.83	180	78	58	0.12		3-Foot Screen
	12/8/2020	13:24	14-11	0	2.55	31.83	80.88	49.05				0.17	Back pressure, let rest	
	12/8/2020	14:03	11-87	0	2.36	80.88	131.62	50.74				0.17		
	12/8/2020	14:15	8-5	0	2.56	131.62	180.20	48.58				0.17		
14	12/8/2020	13:08	16-14	0	2.45	0.00	32.18	32.18	180	78	58	0.12		3-Foot Screen
	12/8/2020	13:24	14-11	0	2.53	32.18	81.76	49.58				0.17	Back pressure, let rest	
	12/8/2020	13:50	11-8	0	2.30	81.76	131.42	49.66				0.17		
	12/8/2020	14:15	8-5	0	2.48	131.42	179.94	48.52				0.17		
15	12/9/2020	8:22	16-14	10	3.12	0.00	31.76	31.76	180	78	58	0.12		3-Foot Screen
	12/9/2020	8:37	14-11	0	3.22	31.76	82.54	50.78				0.17		
	12/9/2020	9:02	11-8	0	3.18	82.54	130.32	47.78				0.17		
	12/9/2020	9:17	8-5	0	2.96	130.32	179.92	49.60				0.17		

3-D MICROEMULSION
Factory Emulsified

Precision Environmental Services-Ferry Street
3DME Injection Summary Log
Injection Area
Table 1

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Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of 3DME Injected			Total Gallons Per Location	Pounds of 3DME Injected Per Location	Pounds of ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval						
16	12/9/2020	9:34	16-14	10	3.11	0.00	32.18	32.18	180	78	58	0.12		3-Foot Screen
	12/9/2020	9:48	14-11	0	3.14	32.18	81.91	49.73				0.17		
	12/9/2020	10:08	11-8	0	3.31	81.91	132.96	51.05				0.17		
	12/9/2020	10:28	8-5	0	3.34	132.96	179.96	47.00				0.17		
17	12/9/2020	9:34	16-14	0	3.27	0.00	31.82	31.82	180	78	58	0.12		3-Foot Screen
	12/9/2020	9:49	14-11	0	3.16	31.82	81.92	50.10				0.17		
	12/9/2020	10:08	11-8	0	3.26	81.92	132.22	50.30				0.17		
	12/9/2020	10:28	8-5	0	3.33	132.22	180.31	48.09				0.17		
18	12/9/2020	9:34	16-14	0	3.41	0.00	32.67	32.67	180	78	58	0.12		3-Foot Screen
	12/9/2020	9:47	14-11	0	3.41	32.67	81.82	49.15				0.17		
	12/9/2020	10:09	11-8	0	3.38	81.82	132.98	51.16				0.17		
	12/9/2020	10:29	8-5	0	3.41	132.98	180.04	47.06				0.17		
19	12/9/2020	10:44	16-14	0	3.56	0.00	31.86	31.86	180	78	58	0.12		3-Foot Screen
	12/9/2020	11:00	14-11	0	3.44	31.86	81.96	50.10				0.17		
	12/9/2020	11:30	11-8	0	3.26	81.96	131.26	49.30				0.17		
	12/9/2020	12:03	8-5	0	3.21	131.26	180.00	48.74				0.17		
20	12/9/2020	10:44	16-14	0	3.04	0.00	31.65	31.65	180	78	58	0.12		3-Foot Screen
	12/9/2020	10:59	14-11	0	3.45	31.65	82.34	50.69				0.17		
	12/9/2020	11:30	11-8	0	3.23	82.34	132.15	49.81				0.17		
	12/9/2020	12:02	8-5	0	3.11	132.15	180.00	47.85				0.17		
21	12/9/2020	10:45	16-14	0	3.18	0.00	32.42	32.42	180	78	58	0.12		3-Foot Screen
	12/9/2020	10:59	14-11	0	3.20	32.42	82.16	49.74				0.17		
	12/9/2020	11:30	11-8	0	3.26	82.16	132.00	49.84				0.17		
	12/9/2020	12:02	8-5	0	3.13	132.00	180.00	48.00				0.17		
22	12/10/2020	10:25	16-14	0	3.26	0.00	31.56	31.56	178	77	58	0.12		3-Foot Screen
	12/10/2020	10:44	14-11	0	3.46	31.56	81.68	50.12				0.17		
	12/10/2020	10:53	11-8	0	4.96	81.68	131.10	49.42				0.17		
	12/10/2020	11:10	8-5	0	4.83	131.10	178.38	47.28				0.17		
23	12/9/2020	14:19	16-14	0	3.19	0.00	32.64	32.64	180	78	58	0.12	Refusal at 5'. Step out 1' and redrill.	3-Foot Screen
	12/9/2020	14:34	14-11	0	3.10	32.64	80.93	48.29				0.17		
	12/9/2020	14:53	11-8	0	3.11	80.93	131.42	50.49				0.17		
	12/9/2020	15:14	8-5	0	3.46	131.42	179.69	48.27				0.17		
24	12/9/2020	14:19	16-14	0	3.29	0.00	31.83	31.83	180	78	58	0.12	Refusal at 5'. Step out 1' and redrill.	3-Foot Screen
	12/9/2020	14:34	14-11	0	3.35	31.83	82.16	50.33				0.17		
	12/9/2020	14:51	11-8	0	3.48	82.16	131.72	49.56				0.17		
	12/9/2020	15:14	8-5	0	3.26	131.72	180.03	48.31				0.17		
25	12/9/2020	14:19	16-14	0	3.65	0.00	33.08	33.08	180	78	58	0.12	Refusal at 5'. Step out 1' and redrill.	3-Foot Screen
	12/9/2020	14:34	14-11	0	3.41	33.08	81.96	48.88				0.17		
	12/9/2020	14:52	11-8	0	3.26	81.96	131.23	49.27				0.17		
	12/9/2020	15:14	8-5	0	3.28	131.23	180.13	48.90				0.17		
26	12/9/2020	12:13	16-14	0	3.15	0.00	31.25	31.25	180	78	59	0.12		3-Foot Screen
	12/9/2020	12:33	14-11	0	3.20	31.25	81.83	50.58				0.17		
	12/9/2020	12:58	11-8	0	3.18	81.83	132.44	50.61				0.17		
	12/9/2020	13:36	8-5	0	3.36	132.44	180.46	48.02				0.17		
27	12/9/2020	12:13	16-14	0	3.51	0.00	32.49	32.49	180	78	58	0.12		3-Foot Screen
	12/9/2020	12:33	14-11	0	3.36	32.49	81.99	49.50				0.17		
	12/9/2020	12:57	11-8	0	3.46	81.99	132.50	50.51				0.17		
	12/9/2020	13:36	8-5	0	3.22	132.50	179.68	47.18				0.17		
28	12/9/2020	12:14	16-14	0	3.38	0.00	32.42	32.42	180	78	58	0.12		3-Foot Screen
	12/9/2020	12:32	14-11	0	3.45	32.42	81.69	49.27				0.17		
	12/9/2020	12:57	11-8	0	3.62	81.69	132.54	50.85				0.17		
	12/9/2020	13:36	8-5	0	3.28	132.54	179.68	47.14				0.17		
29	12/10/2020	10:25	16-14	0	3.58	0.00	32.48	32.48	179	77	58	0.12		3-Foot Screen
	12/10/2020	10:45	14-11	0	3.67	32.48	82.82	50.34				0.17		
	12/10/2020	10:59	11-8	0	3.52	82.82	132.45	49.63				0.17		
	12/10/2020	11:13	8-5	0	4.39	132.45	178.61	46.16				0.17		
30	12/10/2020	10:25	16-14	0	3.57	0.00	31.94	31.94	179	77	58	0.12		3-Foot Screen
	12/10/2020	10:45	14-11	0	3.76	31.94	82.67	50.73				0.17		
	12/10/2020	11:00	11-8	0	3.48	82.67	131.67	49.00				0.17		
	12/10/2020	11:18	8-5	0	7.69	131.67	178.56	46.89				0.17		

3-D MICROEMULSION
Factory Emulsified

Precision Environmental Services-Ferry Street
3DME Injection Summary Log
Injection Area
Table 1

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Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of 3DME Injected			Total Gallons Per Location	Pounds of 3DME Injected Per Location	Pounds of ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval						
31	12/10/2020	9:21	16-14	0	3.26	0.00	31.25	31.25	180	78	58	0.12		3-Foot Screen
	12/10/2020	9:33	14-11	0	3.48	31.25	81.67	50.42				0.17		
	12/10/2020	10:00	11-8	0	3.16	81.67	130.86	49.19				0.17		
	12/10/2020	10:10	8-5	0	3.45	130.86	180.02	49.16				0.17		
32	12/10/2020	9:21	16-14	0	3.25	0.00	31.65	31.65	180	78	58	0.12		3-Foot Screen
	12/10/2020	9:35	14-11	0	3.37	31.65	81.89	50.24				0.17		
	12/10/2020	10:00	11-8	0	3.58	81.89	132.47	50.58				0.17		
	12/10/2020	10:10	8-5	0	3.26	132.47	180.12	47.65				0.17		
33	12/10/2020	9:22	16-14	0	3.46	0.00	31.65	31.65	180	78	58	0.12		3-Foot Screen
	12/10/2020	9:35	14-11	0	3.67	31.65	82.61	50.96				0.17		
	12/10/2020	10:00	11-8	0	3.52	82.61	131.21	48.60				0.17		
	12/10/2020	10:10	8-5	0	3.46	131.21	180.22	49.01				0.17		
34	12/10/2020	8:13	16-14	0	3.41	0.00	31.96	31.96	180	78	58	0.12		3-Foot Screen
	12/10/2020	8:29	14-11	0	3.36	31.96	82.42	50.46				0.17		
	12/10/2020	8:47	11-8	0	3.51	82.42	132.16	49.74				0.17		
	12/10/2020	9:04	8-5	0	3.42	132.16	180.14	47.98				0.17		
35	12/10/2020	8:13	16-14	0	2.92	0.00	32.05	32.05	180	78	58	0.12		3-Foot Screen
	12/10/2020	8:29	14-11	0	3.28	32.05	82.52	50.47				0.17		
	12/10/2020	8:46	11-8	0	3.41	82.52	131.25	48.73				0.17		
	12/10/2020	9:05	8-5	0	3.32	131.25	179.88	48.63				0.17		
36	12/10/2020	8:13	16-14	0	3.16	0.00	32.58	32.58	180	78	58	0.12		3-Foot Screen
	12/10/2020	8:28	14-11	0	3.62	32.58	82.35	49.77				0.17		
	12/10/2020	8:47	11-8	0	3.24	82.35	132.43	50.08				0.17		
	12/10/2020	9:04	8-5	0	3.80	132.43	179.76	47.33				0.17		

Total Gallons:	Total Lbs. 3DME	Total Lbs. of ZVI:	Total Litres of BDI:
6476	2800	2100	23

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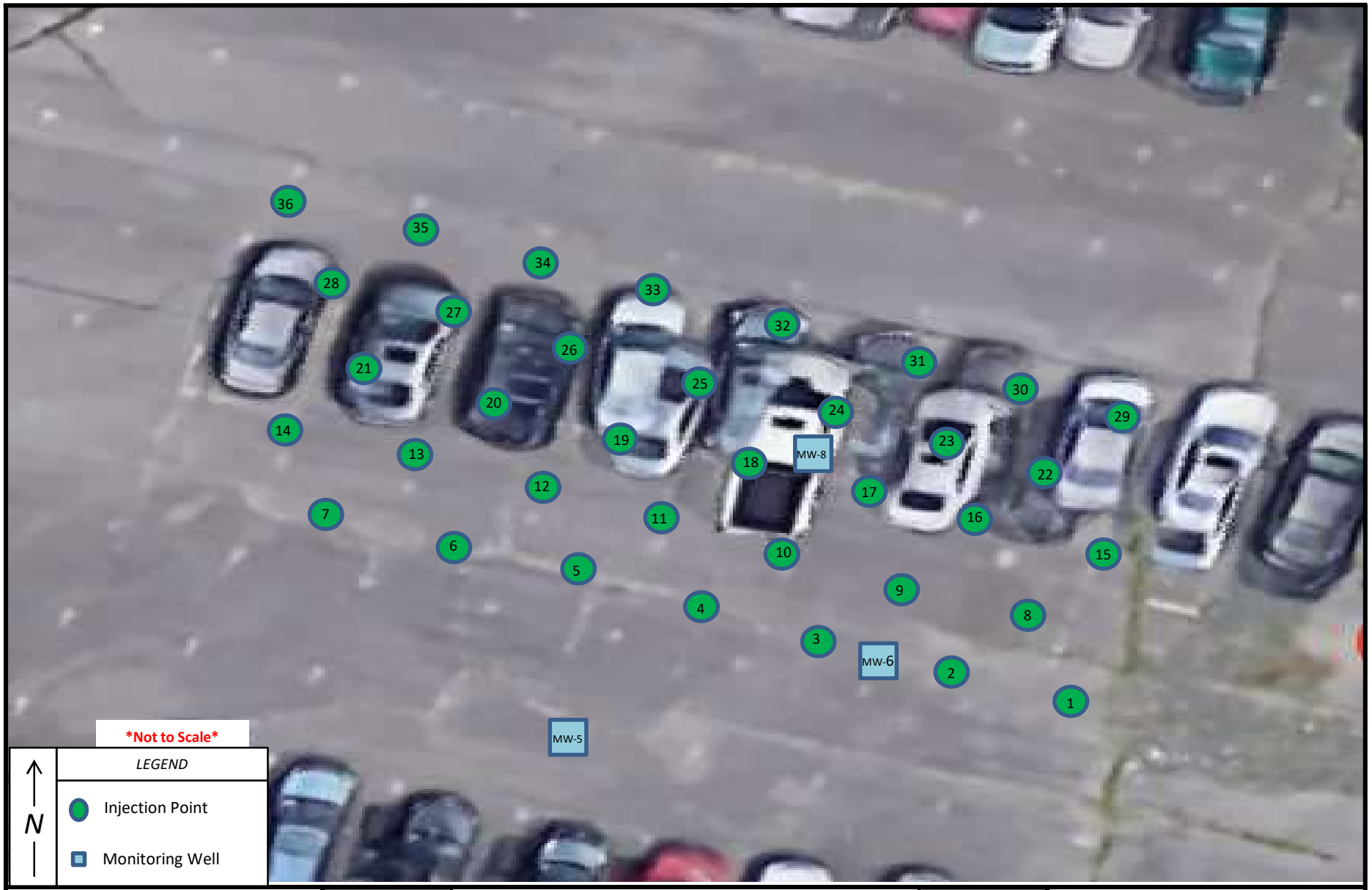
Appendix B



S-Micro ZVI™
Sulfidated Zero-Valent Iron

Prepared By: *JRG*

Figure 1
Injection Locations
Ferry Street

Date Prepared: ***January 2021***

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Appendix C

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Photo Log

Photo 1: Injection area with Geoprobe and RRS trailer. Looking West.

Photo 2: Injection area. Looking South.

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Photo 3: Injection area. Looking SE.

Photo 4: Injection area covered in snow. Looking West.

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Photo 5: Water hydrant on S Ferry Street.

Photo 6: Injections around previous excavation. Looking North.

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January 4, 2022

REGENESIS Proposal No. idoli66695

Brian Neuman
Precision Environmental Services – Ferry St.
222 S Ferry Street
Schenectady, NY 12305

SUBJECT: Application Summary Report for Remedial Services at the Ferry Street Site

Brian Neuman,

REGENESIS Remediation Services (RRS) has recently completed an *in-situ* injection application of 3DMicroemulsion®(3DME), Sulfidated-MicroZVI (S-MZVI®), and Bio-Dechlor Inoculum®(BDI Plus) at the Ferry Street site located at 222 S Ferry Street, Schenectady, NY. The goal of the remedial application was to reduce the contaminants of concern (COC) concentrations within the defined treatment area. RRS employed *in-situ* sorption, chemical reduction, and bioaugmentation technologies to meet remediation goals.

RRS mobilized a support pickup truck, injection trailer, and personnel to the site to begin work over 3 days from November 10th, 2021 to November 12th, 2021. RRS staffed this project with an experienced Project Supervisor who ensured a safe, successful injection application. A grid pattern for two areas was installed on the parking lot within the property.

Please review the attached application summary page, injection log, map, and photo log for more detail on the application.

RRS appreciates the opportunity to work at this site with Precision. RRS will be available to interpret the field data as it is collected or answer any questions. If you need additional information regarding the application process or attached field notes, please contact Will Clogan at 724.766.1811 or Chase Cann at 470.7020682.

Sincerely,

Chase Cann

William Clogan

Chase Cann
Staff Scientist
REGENESIS Remediation Services

Will Clogan
East Region Project Manager
REGENESIS Remediation Services

cc: giosue@regenesis.com, kgaskill@regenesis.com, tslaughter@regenesis.com

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REGENESIS REMEDIATION SERVICES
Technology-Based Solutions for the Environment

Summary Page

3-D MICROEMULSION S-Micro ZVI Sulfidated Zero-Valent Iron BDI PLUS BIO-DECHLOR INOCULUM

OVERVIEW

Client: Precision Environmental Services
Client PM: Brian Neumann
RRS Project Manager: Will Clogan
RRS Project Supervisor: Chase Cann

Site Address: 222 S Ferry St. Schenectady, NY 12305
Project Name: Ferry Street
Project Dates: 11/10/21-11/12/21

REGENESIS Remediation Services (RRS) appreciates the opportunity to complete an in-situ application of 3DME, S-Micro ZVI, and BDI Plus at the Ferry Street site in Schenectady, New York. The application of these products is designed to abiotically biodegrade chlorinated volatile organic compounds through reductive dechlorination by altering groundwater chemistry into a reducing environment and augmenting the microbial population to bioremediate contaminants into harmless byproducts such as ethane and methane. The grid application consisted of 34 injection locations in a 3,600 sq. ft. area within the parking lot onsite.

RRS employed remediation design specifications as outlined in the design dated 6/18/2021.

On-Site Work Summary

Product was received and stored by Precision Environmental Services prior to RRS mobilization. RRS arrived onsite the morning of 11/10/21. A total of 3,200 lb. of 3DME, 2,400 lb. of S-Micro ZVI, and 23 liters of BDI Plus was on-site and prepared for the application. RRS field personnel marked out the injection locations that comprised the application grid. Mix water was obtained from a hydrant on the corner of Ferry St. Using this hydrant water 3DME and S-Micro ZVI were mixed into a homogenous solution using the RRS injection trailers dual batch 350-gallon mixing tanks. The mixed remedial chemistry was injected in a bottom-up fashion across the interval utilizing 3-foot, stainless steel retractable screen tooling.

MW-13 Area

Average Flowrate (GPM)	Standard Deviation of Flowrate (GPM)	Median Flowrate (GPM)	Average Pressure (PSI)	Standard Deviation of Pressure (PSI)	Median Pressure (PSI)
4.48	1.07	4.08	23	5	22

Table 1: Average and median flowrates and average pressures.

A total of **800 pounds of 3DME, 600 pounds of ZVI, and 4 liters of BDI** was mixed and applied as a 6%**,** with a total volume of **1,639 gallons** applied in the area.

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Application Method: 3 ft. retractable screens
Injection Depth: 5 to 16 feet below ground surface
Number of Injection Points: 6

Please see attached Table 3 (of injection logbook) for details on injection flow rates and pressures observed.

MW-5 and MW-6R Area

Average Flowrate (GPM)	Standard Deviation of Flowrate (GPM)	Median Flowrate (GPM)	Average Pressure (PSI)	Standard Deviation of Pressure (PSI)	Median Pressure (PSI)
4.28	0.67	4.23	21	3.7	20

Table 1: Average and median flowrates and average pressures.

A total of **2,400 pounds of 3DME, 1,800 pounds of ZVI, and 19 liters of BDI** was mixed and applied as a 6%**,** with a total volume of **5,571 gallons** applied in the area.

Application Method: 3 ft. retractable screens
Injection Depth: 5 to 16 feet below ground surface
Number of Injection Points: 28

Deviations from proposal:

1. Reduction of number of points from 30 to 28.

Please see attached Table 4 (of injection logbook) for details on injection flow rates and pressures observed.

Precision-Ferry Site Phase 2
MW-5 &MW-6R Log
Injection Area Description
Table 1

Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of 3DME Injected			Total Gallons Per Location	Pounds of 3DME Injected Per Location	Pounds of ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval						
1	11/10/2021	10:42	16-13	14	3.27	0.00	54.21	54.21	199	86	64	0.16		3-Foot Screen
	11/10/2021	11:54	13-10	20	5.42	0.00	54.00	54.00				0.16		
	11/10/2021	12:20	10-7	20	4.56	0.00	54.06	54.06				0.16		
	11/10/2021	12:38	7-5	30	5.21	0.00	36.85	36.85				0.16		
2	11/10/2021	10:39	16-13	20	3.21	0.00	54.11	54.11	199	86	64	0.16		3-Foot Screen
	11/10/2021	11:53	13-10	30	5.01	0.00	54.03	54.03				0.16		
	11/10/2021	12:20	10-7	20	4.64	0.00	54.08	54.08				0.16		
	11/10/2021	12:38	7-5	20	5.04	0.00	36.72	36.72				0.16		
3	11/10/2021	10:35	16-13	20	3.20	0.00	54.01	54.01	199	86	64	0.16		3-Foot Screen
	11/10/2021	11:53	13-10	30	4.98	0.00	54.04	54.04				0.16		
	11/10/2021	12:20	10-7	20	5.32	0.00	54.21	54.21				0.16		
	11/10/2021	12:39	7-5	20	4.94	0.00	36.50	36.50				0.16		
4	11/10/2021	10:33	16-13	22	3.07	0.00	54.02	54.02	199	86	64	0.16	2'25 inch tooling.	3-Foot Screen
	11/10/2021	11:54	13-10	30	4.97	0.00	54.05	54.05				0.16		
	11/10/2021	12:20	10-7	20	4.99	0.00	54.03	54.03				0.16		
	11/10/2021	12:39	7-5	20	4.80	0.00	36.46	36.46				0.16		
5	11/10/2021	13:09	16-13	18	3.56	0.00	54.11	54.11	199	86	64	0.16		3-Foot Screen
	11/10/2021	13:29	13-10	20	4.78	0.00	54.14	54.14				0.16		
	11/10/2021	13:47	10-7	20	4.98	0.00	54.01	54.01				0.16		
	11/10/2021	14:01	7-5	18	4.87	0.00	36.56	36.56				0.16		
6	11/10/2021	13:07	16-13	16	3.65	0.00	54.12	54.12	199	86	64	0.16		3-Foot Screen
	11/10/2021	13:29	13-10	18	4.98	0.00	54.01	54.01				0.16		
	11/10/2021	13:47	10-7	18	4.81	0.00	54.03	54.03				0.16		
	11/10/2021	14:01	7-5	18	4.99	0.00	36.74	36.74				0.16		
7	11/10/2021	13:06	16-13	14	3.76	0.00	54.21	54.21	199	86	64	0.16	2'25 inch screens.	3-Foot Screen
	11/10/2021	13:29	13-10	20	5.04	0.00	54.01	54.01				0.16		
	11/10/2021	13:47	10-7	20	5.21	0.00	54.11	54.11				0.16		
	11/10/2021	14:00	7-5	20	5.09	0.00	36.66	36.66				0.16		
8	11/10/2021	13:05	16-13	20	3.80	0.00	54.31	54.31	199	86	64	0.16	2'25 inch screens.	3-Foot Screen
	11/10/2021	13:29	13-10	20	5.06	0.00	54.21	54.21				0.16		
	11/10/2021	13:48	10-7	22	5.72	0.00	54.42	54.42				0.16		
	11/10/2021	14:00	7-5	22	5.02	0.00	36.21	36.21				0.16		
9	11/10/2021	14:34	16-13	10	3.30	0.00	54.09	54.09	199	86	64	0.16		3-Foot Screen
	11/10/2021	15:08	13-10	14	5.20	0.00	54.23	54.23				0.16		
	11/10/2021	15:36	10-7	20	5.02	0.00	54.80	54.80				0.16		
	11/10/2021	15:56	7-5	20	5.32	0.00	36.21	36.21				0.16		
10	11/10/2021	14:35	16-13	20	3.60	0.00	54.08	54.08	199	86	64	0.16		3-Foot Screen
	11/10/2021	15:07	13-10	18	5.02	0.00	54.00	54.00				0.16		
	11/10/2021	15:36	10-7	24	5.10	0.00	54.17	54.17				0.16		
	11/10/2021	15:56	7-5	20	5.01	0.00	36.72	36.72				0.16		
11	11/10/2021	14:36	16-13	20	3.59	0.00	54.21	54.21	199	86	64	0.16	2'25 inch screens	3-Foot Screen
	11/10/2021	15:07	13-10	20	5.04	0.00	53.99	53.99				0.16		
	11/10/2021	15:36	10-7	22	5.18	0.00	54.89	54.89				0.16		
	11/10/2021	15:56	7-5	20	4.89	0.00	36.01	36.01				0.16		
12	11/10/2021	14:37	16-13	22	3.55	0.00	53.98	53.98	199	86	64	0.16	2'25 inch screens	3-Foot Screen
	11/10/2021	15:07	13-10	20	5.04	0.00	54.23	54.23				0.16		
	11/10/2021	15:36	10-7	22	5.05	0.00	54.24	54.24				0.16		
	11/10/2021	15:56	7-5	20	5.06	0.00	36.71	36.71				0.16		
13	11/11/2021	8:41	16-13	22	3.54	0.00	54.62	54.62	199	86	64	0.16		3-Foot Screen
	11/11/2021	9:08	13-10	20	4.22	0.00	54.32	54.32				0.16		
	11/11/2021	9:47	10-7	20	3.89	0.00	54.25	54.25				0.16		
	11/11/2021	10:13	7-5	20	3.99	0.00	35.66	35.66				0.16		
14	11/11/2021	8:43	16-13	20	2.50	0.00	54.23	54.23	199	86	64	0.16		3-Foot Screen
	11/11/2021	9:09	13-10	20	4.03	0.00	54.85	54.85				0.16		
	11/11/2021	9:47	10-7	20	4.08	0.00	54.02	54.02				0.16		
	11/11/2021	10:13	7-5	20	4.09	0.00	36.02	36.02				0.16		
15	11/11/2021	8:45	16-13	20	3.01	0.00	54.44	54.44	199	86	64	0.16		3-Foot Screen
	11/11/2021	9:09	13-10	20	4.35	0.00	54.06	54.06				0.16		
	11/11/2021	9:47	10-7	20	4.38	0.00	54.63	54.63				0.16		
	11/11/2021	10:13	7-5	20	4.35	0.00	36.02	36.02				0.16		
16	11/11/2021	8:47	16-13	12	3.02	0.00	54.56	54.56	199	86	64	0.16		3-Foot Screen
	11/11/2021	9:09	13-10	14	4.56	0.00	54.02	54.02				0.16		
	11/11/2021	9:47	10-7	14	4.76	0.00	54.22	54.22				0.16		
	11/11/2021	10:14	7-5	14	4.02	0.00	36.01	36.01				0.16		
17	11/11/2021	10:44	16-13	26	4.12	0.00	54.11	54.11	199	86	64	0.16		3-Foot Screen
	11/11/2021	11:09	13-10	22	4.02	0.00	54.55	54.55				0.16		
	11/11/2021	11:33	10-7	24	4.14	0.00	54.57	54.57				0.16		
	11/11/2021	11:52	7-5	26	4.54	0.00	36.05	36.05				0.16		
18	11/11/2021	10:43	16-13	30	4.24	0.00	53.97	53.97	198	85	64	0.16		3-Foot Screen
	11/11/2021	11:08	13-10	20	4.31	0.00	54.19	54.19				0.16		
	11/11/2021	11:33	10-7	28	4.26	0.00	53.98	53.98				0.16		
	11/11/2021	11:52	7-5	28	4.32	0.00	36.03	36.03				0.16		
19	11/11/2021	10:43	16-13	25	4.08	0.00	54.22	54.22	199	86	64	0.16		3-Foot Screen
	11/11/2021	11:08	13-10	20	4.09	0.00	54.29	54.29				0.16		
	11/11/2021	11:33	10-7	20	4.32	0.00	54.12	54.12				0.16		
	11/11/2021	11:52	7-5	20	4.15	0.00	36.02	36.02				0.16		
20	11/11/2021	10:42	16-13	25	4.24	0.00	54.32	54.32	199	86	64	0.16		3-Foot Screen
	11/11/2021	11:08	13-10	20	4.53	0.00	54.17	54.17				0.16		
	11/11/2021	11:33	10-7	22	4.09	0.00	54.35	54.35				0.16		
	11/11/2021	11:52	7-5	20	4.10	0.00	36.00	36.00				0.16		
21	11/11/2021	12:27	16-13	24	3.48	0.00	54.47	54.47	199	86	64	0.16	Some surfacing through old boreholes. Plugged	3-Foot Screen
	11/11/2021	13:00	13-10	20	4.03	0.00	54.02	54.02				0.16		
	11/11/2021	13:18	10-7	20	4.32	0.00	54.01	54.01				0.16		
	11/11/2021	13:35	7-5	22	4.18	0.00	36.75	36.75				0.16		
22	11/11/2021	12:26	16-13	16	3.53	0.00	54.48	54.48	199	86	64	0.16	Some surfacing through old boreholes. Plugged	3-Foot Screen
	11/11/2021	13:00	13-10	18	4.23	0.00	54.10	54.10				0.16		
	11/11/2021	13:19	10-7	18	4.01	0.00	54.46	54.46				0.16		
	11/11/2021	13:35	7-5	16	4.21	0.00	36.21	36.21				0.16		
23	11/11/2021	12:24	16-13	26	3.50	0.00	53.89	53.89	199	86	64	0.16		3-Foot Screen
	11/11/2021	13:00	13-10	24	4.36	0.00	54.44	54.44				0.16		
	11/11/2021	13:19	10-7	24	4.00	0.00	54.87	54.87				0.16		
	11/11/2021	13:36	7-5	22	3.96	0.00	36.12	36.12				0.16		
24	11/11/2021	12:23	16-13	24	3.53	0.00	54.23	54.23	199	86	64	0.16		3-Foot Screen
	11/11/2021	13:00	13-10	20	4.67	0.00	54.47	54.47				0.16		
	11/11/2021	13:19	10-7	22	4.05	0.00	54.00	54.00				0.16		
	11/11/2021	13:36	7-5	22	4.44	0.00	36.13	36.13				0.16		
25	11/11/2021	14:09	16-13	16	2.58	0.00	54.44	54.44	199	86	64	0.16		3-Foot Screen
	11/11/2021	14:26	13-10	14	3.87	0.00	54.00	54.00				0.16		
	11/11/2021	14:45	10-7	14	4.02	0.00	54.33	54.33				0.16		
	11/11/2021	15:03	7-5	14	4.15	0.00	35.82	35.82				0.16		
26	11/11/2021	14:10	16-13	20	2.82	0.00	54.04	54.04	199	86	64	0.16		3-Foot Screen
	11/11/2021	14:26	13-10	22	4.54	0.00	54.65	54.65				0.16		
	11/11/2021	14:44	10-7	22	4.74	0.00	54.43	54.43				0.16		
	11/11/2021	15:02	7-5	22	4.02	0.00	36.11	36.11				0.16		
27	11/11/2021	14:10	16-13	18	3.01	0.00	54.43	54.43	199	86	64	0.16		3-Foot Screen
	11/11/2021	14:26	13-10	20	4.03	0.00	54.05	54.05				0.16		
	11/11/2021	14:44	10-7	18	4.15	0.00	54.27	54.27				0.16		
	11/11/2021	15:02	7-5	20	4.16	0.00	36.15	36.15				0.16		
28	11/11/2021	14:10	16-13	20	3.42	0.00	54.62	54.62	199	86	64	0.16		3-Foot Screen
	11/11/2021	14:27	13-10	20	3.97	0.00	54.03	54.03				0.16		
	11/11/2021	14:44	10-7	18	4.01	0.00	54.33	54.33				0.16		
	11/11/2021	15:02	7-5	18	4.14	0.00	36.23	36.23				0.16		

Total Gallons:	Total Lbs. 3DME	Total Lbs. of ZVI:	Total Litres of BDI:
5571	2400	1800	17.92

Precision-Ferry Site Phase 2
MW-13
Injection Log
Table 3

Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of 3DME Injected			Total Gallons Per Location	Pounds of 3DME Injected Per Location	Pounds of ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval						
1	11/11/2021	15:31	16-13	14	3.36	0.00	33.21	33.21	273	133	100	0.18		3-Foot Screen
	11/12/2021	7:45	16-13	24	3.65	0.00	41.08	41.08				0.00		
	11/12/2021	8:01	13-10	22	4.82	0.00	74.23	74.23				0.18		
	11/12/2021	8:22	10-7	24	4.34	0.00	74.32	74.32				0.18		
	11/12/2021	8:43	7-5	22	4.02	0.00	50.35	50.35				0.12		
2	11/11/2021	15:31	16-13	22	3.32	0.00	33.61	33.61	273	134	100	0.18		3-Foot Screen
	11/12/2021	7:45	16-13	20	3.43	0.00	41.02	41.02				0.00		
	11/12/2021	8:01	13-10	20	4.02	0.00	74.43	74.43				0.18		
	11/12/2021	8:22	10-7	24	4.02	0.00	74.10	74.10				0.18		
	11/12/2021	8:43	7-5	22	4.00	0.00	50.32	50.32				0.12		
3	11/11/2021	15:30	16-13	14	3.32	0.00	33.12	33.12	273	133	100	0.18		3-Foot Screen
	11/12/2021	7:46	16-13	20	3.54	0.00	41.03	41.03				0.00		
	11/12/2021	8:01	13-10	20	4.62	0.00	74.43	74.43				0.18		
	11/12/2021	8:23	10-7	20	4.54	0.00	74.35	74.35				0.18		
	11/12/2021	8:44	7-5	16	4.24	0.00	50.02	50.02				0.12		
4	11/11/2021	15:30	16-13	22	3.38	0.00	33.14	33.14	273	133	100	0.18		3-Foot Screen
	11/12/2021	7:46	16-13	20	3.43	0.00	41.05	41.05				0.00		
	11/12/2021	8:02	13-10	20	4.50	0.00	74.40	74.40				0.18		
	11/12/2021	8:23	10-7	20	4.12	0.00	74.39	74.39				0.18		
	11/12/2021	8:44	7-5	20	4.67	0.00	50.12	50.12				0.12		
5	11/12/2021	9:06	16-13	28	3.80	0.00	74.43	74.43	273	133	100	0.18		3-Foot Screen
	11/12/2021	9:12	13-10	30	6.43	0.00	74.38	74.38				0.18		
	11/12/2021	9:22	10-7	30	6.45	0.00	74.21	74.21				0.18		
	11/12/2021	9:31	7-5	30	6.37	0.00	50.12	50.12				0.12		
6	11/12/2021	9:05	16-13	20	4.04	0.00	74.40	74.40	273	133	100	0.18		3-Foot Screen
	11/12/2021	9:12	13-10	30	6.25	0.00	74.39	74.39				0.18		
	11/12/2021	9:22	10-7	30	6.35	0.00	74.41	74.41				0.18		
	11/12/2021	9:31	7-5	30	6.32	0.00	50.23	50.23				0.16		

Total Gallons:	Total Lbs. 3DME	Total Lbs. of ZVI:	Total Litres of BDI:
1639	800	600	4.00

3-D MICROEMULSION Factory Emulsified

Prepared By: *CWC*

Figure 1 – Injection Locations Map
Ferry St
222 S Ferry St, Schenectady, NY
MW-5 and MW-6R Area

Date Prepared: *Dec 2021*

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LEGEND

Injection Point

Monitoring Well

Prepared By: ***RRS***

Figure 2 – MW-13 Injection Map
222 S Ferry St.
Schenectady, NY 12305

Date Prepared: ***Nov. 2021***

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Photo Log

Photo 1: Direct Push Rig and injections ongoing on parking lot. Looking SW.

Photo 2: Points marked out on the ground. Looking SW.

Photo 3: Signaling of injection points on site. Looking SE.

Photo 4: RRS trailer staged and products displayed.

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Photo 5: Signaling of points and injections on site. Looking E.

Photo 6: RRS trailer staged and equipment.

APPENDIX B

Precision Environmental Services Groundwater Monitoring Data

MW-6 Readings - Wed. 11/10/21

Time	DTW (ft)	pH	Temp (°C)	DO (%L)	ORP (mV)	COND. (µS/cm)	Notes
745	5.43	7.06	17.3	134	-406.7	723	Before injections started
1052	5.04	7.15	17.4	120.8	-408.4	725	
1206	4.98	8.26	17.2	116	-345.1	722	
1230	4.97		17.2	103.7	-357.2	732	YSI pH readings way off
1320	4.9		17.1	97.8	-361	811	Took time to recalibrate
1350	4.72	8.09	17.1	91.3	-106.4	817	
1458	4.8	7.82	16.8	92.7	-181.7	785	
1551	4.91	7.71	16.7	116.7	-228.3	771	
1632	4.99	7.81	16.7	140.2	-123.7	754	

MW-6 Readings - Thurs. 11/11/21

Time	DTW (ft)	pH	Temp (°C)	DO (%L)	ORP (mV)	COND. (µS/cm)	Notes
732	5.37	7.8	16.4	77.2	-60.8	708	
918	5.36	7.78	16.3	69.3	-167.9	703	
1001	5.31	7.91	16.5	84.7	-193.9	708	
1045	5.3	7.92	16.1	84.2	-109.5	707	
1121	5.26	7.78	16.8	82.1	-206.3	724	
1232	5.27	7.84	16.8	100.9	-193.8	718	
1318	5.29	7.89	16.4	89.3	-162.1	713	
1420	5.28	7.84	16.7	77.8	-214.7	723	

MW-13 Readings - Thurs. 11/11/21

Time	DTW (ft)	pH	Temp (°C)	DO (%L)	ORP (mV)	COND. (µS/cm)	Notes
1545	4.19	7.74	16.9	73.6	-217.3	759	Started 4 points at end of day

* Readings may have been affected by leaking hose on pavement
* Surface water flowing into well

MW-13 Readings - Fri. 11/12/21

Time	DTW (ft)	pH	Temp (°C)	DO (%L)	ORP (mV)	COND. (µS/cm)	Notes
716	4.78	7.81	17.5	132.1	-241.8	723	
821	4.02	7.64	15.8	148.7	-250.4	603	
930	3.89	8.62	14.3	162.3	-218	549	

* Heavy rain. Water pooling over/flowing into well affecting readings.
* Stopped readings to avoid draining surface water into well.

Notes:

DTW	Depth to water
°C	Degrees celcius
DO	Dissolved oxygen
%L	Percent per liter
ORP	Oxidation reduction potential
mv	milivolts
COND.	Conductivity
µS/cm	microsiemens per centimeter

APPENDIX C

Community Air Monitoring Program Data and Field Readings