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JUNE 2016 – JUNE 2017 ANNUAL SITE MANAGEMENT-PERIODIC REVIEW REPORT

D.C. Rollforms Site

Jamestown, New York

NYSDEC Site No. 907019

July 2017

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ACRONYMS AND ABBREVIATIONS

AC	air compressor
acfm	actual cubic feet per minute
AGC	Annual Guidance Concentration
AS	air stripper
B	blower
BPU	Board of Public Utilities
CF	cartridge filters
COC	Constituents of Concern
DCE	Dichloroethene
DNAPL	Dense Non-Aqueous Phase Liquid
DRO	Diesel Range Organics
FSP	Field Sampling Plan
gpm	gallons per minute
GRO	Gasoline Range Organics
In W.C.	Inches of Water Column
kg	kilograms
lbs	pounds
LPGOC	Liquid Phase Granular Organically Modified Clay
PLC	Programmable Logic Controller
MW	monitoring well
NAPL	Non-Aqueous Phase Liquid
ND	non-detect
NYSDEC	New York State Department of Environmental Conservation
O&G	Oil and Grease
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OW	observation well
OWS	oil/water separator
PCBs	polychlorinated Biphenyls

PLC	programmable logic controller
POTW	Publicly Owned Treatment Works
SMP	Site Management Plan
SP	sample port
SVE	soil vapor extraction
TCE	Trichloroethene
TP	transfer pump
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
µg/L	micrograms per liter
mg/L	milligrams per liter
USEPA	United States Environmental Protection Agency
VC	Vinyl Chloride
VEP	Vacuum Enhanced Pumping
VOCs	Volatile Organic Compounds
VPGAC	vapor phase granular activated carbon

1 EXECUTIVE SUMMARY

Arcadis of New York, Inc. (Arcadis), on behalf of Ingersoll Rand, has prepared this Annual Site Management Periodic Review Report (PRR) for the former D.C. Rollforms (NYSDEC Site Code 907019) Site (referred to hereafter as the Site) located in Jamestown, Chautauqua County, New York (Figure 1). This PRR covers the reporting period from June 2016 through June 2017, as requested in a letter from NYSDEC dated April 28, 2016.

This PRR summarizes the operational and performance monitoring data generated during 2016-2017 reporting period for the remedial program at the Site. The basis of this report is to satisfy the requirements set forth in the Site Management PRR request and provide the supporting documentation for the Institutional and Engineering Controls Certification (IC/EC) (Appendix A).

A groundwater and soil vapor extraction treatment system (referred to herein as the 'system') was installed at the site in 2008. The system has been operational since, and consists of a vacuum enhanced pumping (VEP) system which recovers and treats site constituents of concern (COCs). The system is operated as documented in the Operation, Maintenance, and Monitoring Plan (OM&M Plan; ARCADIS 2008). The Site Management Plan (SMP) was finalized and approved by NYSDEC in 2009.

Overall, the current remedial program has been effective in achieving the remedial goals at the site by containing and eliminating off site migration of contaminated soils and groundwater. During the 2016-2017 period, the system recovered 1,095,195 gallons of impacted groundwater. Total COC mass removal included 5.0 kg in the dissolved phase, 2.4 kg in the vapor phase, and 2.3 gallons of dense non-aqueous phase liquid (DNAPL). Concentrations in groundwater remained relatively stable with some variability occurring due to seasonal fluctuation.

All the elements defined in the OM&M and SMP were in compliance during the reporting period. The remedial system was operated continuously during the reporting period, except for noted routine and/or non-routine maintenance activities. No substantial changes were made regarding site management and remedial system operation during the specified reporting period.

The site conceptual model is well defined, and is based on soil and groundwater data collected during previous investigations, including the groundwater and remedial system analytical data that have been collected since 2008. Based on the trends in Site COC concentrations in groundwater a pilot-scale in-situ chemical oxidation (ISCO) injection approach was conducted to enhance remediation of the residual groundwater plume at the site. The pilot study took place October 2016 through April 2017 in the area near monitoring wells MW-8S, MW-12, and MW-13, and MW-14, which historically have had the highest concentration of volatile organic compounds (VOCs) in groundwater. Overall, the pilot study results were very promising. A reduction of 90 to 99% of the VOC mass was achieved within the groundwater monitoring well network. The ISCO pilot study is discussed in further detail below in Section 9.

Based on the results of the ISCO pilot study and long term historical data trends, Arcadis is recommending the following modifications to the O&M program:

1. As a result of the 90 to 99% VOC degradation in monitoring wells MW-8S, MW-12, and MW-13, and MW-14, Arcadis is recommending that recovery wells VEP-1 through VEP-3 remain offline to allow for a longer observation period to monitor for signs of rebound in VOC concentrations. If VOC

concentrations do not rebound over the next two semi-annual sampling events a monitored natural attenuation (MNA) approach for this area will be recommended.

2. On a semi-annual basis 13 monitoring wells are sampled as part the groundwater monitoring program. Four of these wells, which include ESI-1, ESI-2, ESI-6 and MW-9, have remained non-detect (ND) and/or below groundwater standards for the last four to eight years. Based on the volume and redundancy of data collected, and remedial achievements noted in in these areas, Arcadis is recommending these wells be dropped from the semi-annual monitoring program and permanently abandoned.

3. Based on the remedial achievements in the monitoring well locations ESI-1 and ESI-2, the continued operation of nearby recovery wells VEP-6 through VEP-9 are not necessary and are not providing any remedial benefit, therefore Arcadis is recommending that these four wells be taken offline.

The PRR is organized as follows:

- Section 2 provides a brief overview of the Site location and physical description, nature and extent of contamination, previous remedial enhancements, and description of the VEP system layout and process
- Section 3 summarizes the system O&M
- Section 4 discusses the system performance
- Section 5 provides an evaluation of the system performance
- Section 6 summarizes the system groundwater monitoring
- Section 7 summarizes the site cover and riverbank inspections
- Section 8 summarizes the IC/EC compliance
- Section 9 provides a detailed summary of the ISCO pilot study program
- Section 10 provides conclusions by summarizing the system performance and groundwater monitoring results
- Section 11 provides goals and recommendations for the next reporting period
- Section 12 provides a list of references.

2 SITE OVERVIEW

2.1 Site Location and Description

The Site is located at 583 Allen Street in Jamestown, Chautauqua County, New York (Figure 1). The Site is approximately 2.38 acres in size, and is a vacant parcel. The vacant parcel is owned by All Metal Press and Fabrication, Inc., which acquired the property from the Jamestown Allen Co. in 2016, and is bounded

by Allen Street on the east, the Weber Knapp and Jamestown Urban Renewal Agency properties on the south, and the Chadakoin River on the west and northwest. The adjacent north parcel is owned by All Metal Press and Fabrication, Inc. This parcel contains a two-story building and parking lot (Figure 2). The Site is located in a mixed residential and commercial area, which is served by a public water supply and sanitary sewer.

2.2 Nature and Extent of Contamination

The following sections describe the historical nature and extent of the contamination onsite identified during previous remedial investigations (RI). A summary of chemical constituents previously detected in each medium is provided below.

2.2.1 Surface Soil

During the initial RI surface soil samples were collected at fifteen locations throughout the site. VOCs were not detected in any of the surface soil samples. Analysis of semi-volatile organic compounds (SVOCs) indicated total SVOC concentrations ranging from 2,768 micrograms per kilogram (μg/kg) (parts per billion, ppb) to 88,961 ppb.

2.2.2 Subsurface Soil

During the initial 1991 investigation, eight test pits were excavated and subsurface soil samples were collected from six locations where visual contamination was present. Analytical results indicated contamination of metals above the regulatory guidance (Technical Administrative Guidance Memorandum [TAGM-4046]), at that time, levels for arsenic, cadmium, chromium, copper, mercury, nickel, and zinc. No VOCs were detected in unsaturated sub-surface soil samples. Oil and grease varied from 0.21% to 7.1% while cyanide ranged from non-detect (ND) to 15.4 milligrams per kilogram (mg/kg) (parts per million, ppm).

During the first phase of the remedial investigation, a sub-surface soil sample collected from location GP-13 in the delisted northern parcel indicated metal contamination, primarily due to lead (86,900 ppm). In February 2000, 19 additional test pits were excavated to determine the extent of lead contamination in the northern parcel. Samples collected from the test pits indicate total lead levels ranged from 20 to 33,100 ppm. The results of TCLP lead analysis determined that soils were not a hazardous waste as the TCLP levels for lead were below the regulatory limit of 5 milligrams per liter (mg/L).

Eighteen test pits were excavated in 2000. Total VOCs ranged from 0.024 to 66 ppm as compared to the regulatory cleanup guidance value at the time (TAGM) of 10 ppm. Total VOCs in excess of 10 ppm were identified in TP-11, TP-12, and TP-15. SVOCs concentrations ranged from ND to 79 ppm.

2.2.3 Groundwater

Fifteen groundwater monitoring wells and 27 Geoprobe were installed and sampled during the remedial investigation between 1997 and 2000. VOCs including trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC) were reported in several groundwater samples. The highest level of chlorinated solvents was reported in monitoring wells MW-8 S/D and Geoprobe GP-5 located in the former TCE, paint

and thinner storage area. At GP-5, concentrations of TCE and DCE were 830 ppm and 34 ppm, respectively. At MW-8S/D, levels of TCE, DCE, and VC varied from 96 to 920 ppm, 7.1 to 18 ppm and ND to 1.6 ppm respectively.

Tetrachloroethene (PCE) was also found in MW-8D at a concentration of 1.1 ppm. In October 1999, 5 additional Geoprobe were installed and were sampled during the investigation to determine the extent of total VOCs. Samples collected from these Geoprobe samples indicated elevated levels of VOCs. The highest levels were found in Geoprobe GP-30 with VC, DCE, and TCE ranging 17 ppm, 40 ppm, and ND respectively.

Total SVOCs, consisting primarily of polycyclic aromatic hydrocarbons (PAHs), were present in most of the groundwater samples. Due to high detection limits, the comparison of individual SVOC contaminant levels to groundwater standards is not, however, feasible. The highest concentrations of PAHs were in Geoprobe GP-5 (61 ppm) and in GP-6 (249 ppm). The concentrations of SVOCs in the remaining wells varied from ND to 3.6 ppm.

Non-Aqueous Phase Liquid (NAPL) consisting primarily of total petroleum hydrocarbons (TPHs) was observed in ESI-3, ESI-4, and abandoned MW-10. The highest concentrations of TPHs were recorded in GP-6 (2,405 ppm), ESI-3 (420 ppm), and GP-5 (333 ppm).

2.2.4 Soil Vapor

Off-site soil vapor intrusion was raised as a concern by the New York State Department of Health (NYSDOH) in a letter dated May 5, 2014, citing the possibility of a preferential pathway for vapor movement via the onsite treatment systems discharge pipeline (pipeline) bedding material. A soil vapor investigation (SVI) was completed in accordance with the Soil Vapor Investigation Work Plan (Arcadis 2014) and the Response to Comments of the Soil Vapor Investigation Work Plan (Arcadis 2014) which were approved by the NYSDEC in an email received August 11, 2015.

Of the three site related chemicals (i.e., cis-DCE, TCE and VC), only TCE was detected in soil vapor. Cis-1,2-dichloroethene and vinyl chloride were not detected in any soil vapor sample. Although TCE was detected in soil vapor samples, all concentrations were below the soil vapor screening values calculated using the NYDOH Air Guideline Value for TCE as a starting point.

Furthermore, multiple lines of evidence were considered to evaluate the concerns raised by the NYSDOH. These lines of evidence indicated that vapor migration at any concentration is not a concern with respect to the public sewer system and residential properties located east of Allen Street.

The multiple lines of evidence included:

1. The absence of chemicals in soil vapor above calculated screening values, as defined above, along the treatment systems discharge pipe bedding material.
2. The physical impediment of any vapor movement off-site into the public sanitary sewer by the construction of the pipeline.

Considering the data collected west of Allen Street and the physical limitations to vapor migration moving east of Allen Street no further action regarding off-site vapor migration was recommended. This SVI data was compiled and submitted to the NYSDEC and NYSDOH in the *Soil Vapor Investigation Report* (Arcadis 2016).

Off-site soil vapor intrusion was raised as a concern again by the NYSDOH in a letter dated September 8, 2016, citing again the possibility of a preferential pathway for vapor movement towards the offsite residential properties and Weber Knapp facility. Based on the previous assessments and lines of evidence provided, Arcadis believes no further investigation is warranted, as documented in a response letter to the Department dated October 13, 2016.

2.3 Summary of Remedial System Components

The approved remedy for the Site was document the NYSDEC approved *100% Remedial Design Work Plan* (ARCADIS, 2006). The final remedy for this Site was documented in the *Engineering Construction Completion Report* (ARCADIS, 2009), which documented the remedial construction activities which were initiated in September 2006 and completed in June 2008. The final remedy implemented for the D.C. Rollforms Site includes the following elements:

- Installation of a steel interlocking sheet-pile wall (i.e., vertical barrier wall) at the top of the riverbank between the Chadakoin River and the Site
- Vacuum Enhanced Pumping technology utilizing submersible pneumatic pumps, regenerative blower, and 14 recovery wells to remediate VOCs, TPH, and NAPL in groundwater and soil
- Groundwater extraction and treatment system comprised an oil/water separator, solids filtration units, and air stripping technologies
- Soil vapor extraction (SVE) and treatment system comprised of a regenerative blower and, heat exchanger, and carbon filtration
- Excavation of the soil between the vertical barrier wall and Chadakoin River
- Removal of abandoned Site storm water outfalls
- Riverbank reconstruction/stabilization and restoration including live plantings
- Covering and reseeding disturbed areas with 12-inches of clean soil
- The removal of sediment from the Chadakoin River
- Fish habitat construction (e.g., wingwall structure) in the Chadakoin River.

The remedial system layout is shown on the site plan in Figure 2. The groundwater collection system is designed to extract groundwater impacted by NAPL and VOCs consisting primarily of TCE, total DCE, and VC. The extracted groundwater is treated via an oil/water separator (OWS), filtration, and air stripping prior to discharge to the public ally owned treatment works (POTW) sanitary sewer under an Industrial Waste Water Discharge permit with the Jamestown Board of Public Utilities (BPU).

2.4 Engineering Controls

As part of the remedy, engineering controls implemented and maintained at the D.C. Rollforms Site include:

- Installation of a steel interlocking sheet-pile wall (i.e., vertical barrier wall) at the top of the riverbank between the Chadakoin River and the Site

- Vacuum Enhanced Pumping technology utilizing submersible pneumatic pumps and a regenerative blower to remediate NAPL and VOCs in groundwater and soil
- Groundwater and soil vapor treatment system comprised an oil/water separator, solids filtration units, carbon filtration, and air stripping technologies.

2.5 Institutional Controls

Institutional controls have been implemented as part of the Remedial Action. The Declaration of Covenants and Restrictions dated June 2005 by Jamestown Allenco addresses prohibitions on the property. The prohibitions set forth in the declaration is summarized as follows:

- The property is prohibited from ever being used for purposes other than commercial or industrial
- The use of groundwater underlying the property is prohibited without rendering it safe for drinking water or industrial/commercial purposes
- The owner of the property shall continue to not interfere with any institutional and engineering controls the NYSDEC required Ingersoll Rand to put into place and maintain.

The covenants and restrictions run with the land and are binding upon all future owners of the property.

2.6 Remedial Action Goals

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10.

The overall remedial objective is to meet the site-specific clean-up goals and be protective of human health and the environment. At a minimum, the remedy selected should eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The specific remedial goals selected for this site are the following:

- Eliminate, to the extent practicable, the potential for ingestion of groundwater that does not attain the NYSDOH Drinking Water Standards
- Eliminate, to the extent practicable, the off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria
- Eliminate, to the extent practicable, the migration of NAPL
- Eliminate, to the extent practicable, exposures to contaminated soils at levels that present a health concern
- Eliminate, to the extent practicable, the migration of site contaminants in soils into the surface water, groundwater, and sediments
- Eliminate, to the extent practicable, the exposure of fish and wildlife to levels of river sediment contaminants above standards/guidance values.

3 SYSTEM OPERATION AND MAINTENANCE

The following sections summarize the remedial system O&M program. The remedial system was operated from June 2016 through June 2017 reporting period with brief periods of shutdown due to scheduled operation and maintenance (O&M), and/or alarm conditions, as well as repairs and non-routine maintenance activities. The most notable system shutdown occurred during the week of October 3, 2016 during the implementation of the ISCO pilot test.

Monthly O&M site visits consisted of system inspection, recording of operating parameters, influent and effluent system sampling, and investigation/troubleshooting of any alarm conditions. System alarm verification was performed remotely via desktop software. The O&M data generated during each monthly visit are summarized in quarterly progress reports as required by the Consent Order. O&M related to each of the major system components (collection system, liquid and vapor treatment) are discussed below.

3.1 Collection and Treatment System O&M

The following O&M tasks were performed monthly on the remedial system (pneumatic pumps, air compressor, regenerative blower, transfer pump, and related equipment).

3.1.1 Liquid Phase Treatment

The following OM&M tasks were performed monthly and/or quarterly with regards to the liquid phase extraction and treatment portion of the system:

- Inspection of all pipes and fittings for potential leaks;
- Checking air compressor (AC-600) oil level and pressure to assure proper operation;
- Inspection of pneumatic recovery pumps for proper operation and repair/cleaning, as needed;
- Inspection and cleaning of air stripper (AS-700), as needed;
- Inspection of flow meter (FQI-700) to assure proper operation;
- Monitor and record the system field gauge readings to determine if the system is operating within the designed operational ranges;
- Check and record pressure readings at inlet and outlet of cartridge filters (CF-400 and 401) to assure proper operation;
- Change-out cartridge filters (CF-400 and 401), as needed;
- Record total volume of groundwater recovered and average recovery flow rates;
- Maintain sequestering agent dosing rate and change-out drum as needed;
- Collect system influent liquid phase samples and submit for laboratory analysis of site-specific COCs. These results are summarized in Section 4.3; and

- Collect system effluent liquid phase samples and submit for laboratory analysis as per the Industrial Wastewater Discharge permit, as set forth by the Jamestown BPU. These results are summarized in Section 4.4.

3.1.2 Vapor Phase Treatment

The following OM&M tasks were performed monthly and/or quarterly with regards to the vapor extraction and treatment portion of the system.

- Inspection of all pipes and fittings for potential leaks;
- Recording of the blower outlet temperature (TI-901 and TI-902);
- Record extracted air flow rate (FIT-501);
- Check and record pressure readings at inlet and outlet of the heat exchanger and vapor phase activated carbon vessels (ASC-501 and ASC-502) to assure proper operation;
- Monitor the regenerative blower (B-900) for proper operation pressures and temperatures;
- Influent vapor samples are collected and submitted for laboratory analysis of site-specific COCs. These results are summarized in Section 4.5; and
- Effluent vapor samples are collected and submitted for laboratory analysis to monitor the system VOC emissions. These results are summarized in Section 4.6.

3.1.3 Recovery Well Inspections

The following O&M tasks were performed quarterly or as needed with regards to the system recovery wells.

- Record applied vacuum readings at individual VEP wells;
- Observe pump operation at each recovery well; and
- Recovery well integrity surveys are conducted to observe the surface conditions around each well, the condition of the concrete surface seal and presence of a secure bolt down road box.

3.1.4 Performance Monitoring Well Monitoring

- Record induced vacuum readings at select monitoring wells; and
- Record DTW/drawdown at site monitoring wells.

3.1.5 Recordkeeping and Reporting

Monitoring data were recorded on OM&M checklists. Influent and effluent liquid and vapor samples were submitted quarterly for laboratory analysis. The analytical results are used to evaluate system performance and to estimate the contaminant mass removal.

3.2 Non-Routine O&M

During the 2016 - 2017 reporting period, the following system non-routine O&M activities were performed:

- Several non-fatal low flow alarms were received for the sequestering agent dosing pump. Each of these alarms were cleared by re-priming the dosing pump and/or by changing out the sequestering agent drum
- Several non-fatal, high water level alarm was detected upon arrival for the SVE knockout tank which caused the SVE blower to shut down. The knockout tank and SVE header pipe were drained, and the SVE system was restarted
- On December 2, 2016, Ahlstrom Schaffer electric was onsite to replace a blown fuse in the air stripper control panel
- On March 20, 2017, the air stripper unit was taken apart and cleaned
- On March 21, 2017, Ahlstrom Schaffer electric was onsite to replace a blown fuse in the air stripper control panel
- On May 25, 2017, transfer pump TP-900 was replaced due to a leaky seal in the pump casing, and pressure transmitter PT-600 was replaced
- On May 25 and 26, 2017 Environmental Products and Services of Vermont conducted transportation and disposal of spent liquid phase cartridge filters and OWS cleaning liquid/sludge. All waste was disposed of at CWM Chemical Services Model City location. Copies of the waste manifests have been provided in Appendix B.

No system process modifications were made during the reporting period, except for the shutdown of recovery wells VEP-1 through VEP-4 during the ISCO pilot study.

4 REMEDIAL SYSTEM PERFORMANCE SUMMARY

The operational data collected during the monthly inspections of the system operation are summarized in the following sections. Monthly system O&M logs have been provided with the quarterly Remedial Status Reports, and system liquid phase influent and vapor phase sample results have been submitted to NYSDEC's EIMS Administrator in the required EQuIS Electronic Data Deliverable (EDD) format. System liquid phase effluent analytical results have been provided with the Industrial Wastewater Discharge Monitoring Reports submitted monthly to the Jamestown BPU.

4.1 Objectives of Monitoring

During operation of the system, various data were collected and analyzed to evaluate the overall performance and effectiveness of the system. This performance monitoring is intended to achieve the following objectives:

- Evaluate total dissolved and vapor phase VOC and TPH, as well as NAPL recovered during the operational period
- Evaluate performance of the remedial system
- Determine if any modifications to the system are required to enhance the system performance
- Ultimately determine when remedial milestones or endpoints have been achieved.

The performance monitoring results for 2016 - 2017 reporting period are summarized below.

4.2 System Operational Data

The system operational data for 2016 through 2017 is summarized in Table 1. These data include the average and cumulative recovered groundwater and soil vapor flows, average applied vacuums to the recovery well network, and recovery well statuses.

4.2.1 Groundwater Recovery/Extracted Liquid Flowrate

Total extracted groundwater flow readings were collected from the totalizing flowmeter (FQI-700). The average monthly system groundwater extraction flow rates are included in Table 1. A cumulative total of 15,481,990 gallons of groundwater has been recovered by the system from startup (January 2008) through April 2017 (Table 2). The total flow recovered in 2016 through April 2017 was 1,095,195 gallons, this total flow corresponds to an average recovery rate of approximately 2.0 gallons per minute (gpm).

4.2.2 Vapor Recovery/Extracted Vapor Flowrate

The vapor phase extraction system was operational during the 2016 - 2017 period except for isolated shutdowns and/or temporary recovery well configuration changes due to routine O&M activities, as well as non-routine O&M activities discussed in Section 3.1 and 3.2, respectively.

Total (i.e., extracted soil vapor and fresh air dilution) vapor flow rate readings were collected from the flowmeter (FIT-501) located in the vapor treatment system exhaust post the VPGAC vessel ASC-502 (i.e., post-blower/fresh air dilution valve) and ranged from 99 to 131 actual cubic feet per minute (acfm) during the operational months for the vapor phase extraction system during the 2016 - 2017 reporting period (Table 1). These flow ranges correspond to an average recovery rate of approximately 95 acfm over the operational period for the vapor phase extraction system during 2016 - 2017.

4.2.3 Applied and Induced Vacuum

The applied vacuum at the system knockout tank generated by regenerative blower B-900 generally ranged from 44 to 66 inches of water column (in.W.C.). The applied vacuum to the VEP wellheads was adjusted based on several factors which included observed vacuum at the wellhead, induced vacuum at select monitoring points, and seasonal groundwater elevations. The average monthly VEP applied wellhead vacuums are included in Table 1.

Induced vacuum measurements were recorded periodically throughout the reporting period at select monitoring wells.

4.3 System Influent Liquid Phase Analytical Results

The liquid phase monthly influent concentrations of TCE, total DCE, VC, TPH GRO/DRO, and PCBs in groundwater are provided in Table 2 and are illustrated graphically on Figure 3. Recovery well statuses during influent liquid phase sampling events have been included in Table 2.

Liquid phase influent concentrations during 2016 - 2017 ranged from 0.9 to 3.6 micrograms per liter (μg/L) for TCE, 8.2 to 156 μg/L for total DCE, and 4.4 to 127 μg/L for VC. Influent concentrations of TPH DRO ranged from 0.3 mg/L to 0.7 mg/L.

4.4 System Effluent Treated Liquid Phase Analytical Results

Pursuant to the effluent standards set by the Jamestown BPU Industrial Wastewater Discharge Permit (Permit No. 037), sampling consists of the monthly collection of four grab samples over an 8-hour period during a typical operational day. These samples are analyzed for VOCs using USEPA Method 624, oil and grease (O&G) using USEPA Method 1664A, total suspended solids (TSS) using USEPA Method 2540D, and PCBs using USEPA Method 608. All samples were submitted to Accutest Laboratories in Marlborough, Massachusetts. Prior to final discharge to local sanitary sewer manhole 3T6, the system effluent sample is collected from sample port SP-702 located post air stripper (AS-700).

During 2016 – 2017 reporting period, the effluent discharge monitoring parameters were non-detect or reported at quantities below the permitted effluent limits. The effluent sample results are provided in Table 3.

4.5 System Vapor Influent Sampling & Analytical Results

The influent vapor concentrations of TCE, total DCE, VC, and TPH GRO are presented in Table 4, and are illustrated graphically on Figure 4. The two predominant compounds detected in the influent vapor samples have been TCE and DCE. TCE and total DCE were detected in influent vapor samples with concentrations ranging from 80 to 698 micrograms per cubic meter (μg/m^3) and 79 to 475 μg/m^3, respectively. Influent VC and influent TPH GRO vapor samples were below the method detection limit for each influent vapor sampling event.

4.6 System Vapor Effluent Sampling & Analytical Results

The purpose of the effluent sample collection is to ensure that the permit equivalent standards/guidance values are met as an air permit is not required for the Site. During 2016 – 2017 reporting period, regulatory guidance values were not exceeded. The effluent vapor concentrations of TCE, total DCE, VC, and TPH GRO are presented in Table 4.

5 SYSTEM EVALUATION

The following sections summarize the remedial system performance monitoring data from June 2016 through June 2017.

5.1 Mass Recovery

The estimated total mass recovered was calculated using the system influent dissolved and vapor phase analytical sampling results with the corresponding extraction flow rates and the NAPL volumes collected.

5.1.1 Dissolved Phase

Influent groundwater laboratory analytical data were used to estimate dissolved phase VOC and TPH GRO/DRO mass recovery rates. As shown in Table 5, influent VOC and TPH GRO/DRO levels and groundwater recovery rates were used to calculate the overall mass of VOCs recovered in the dissolved phase. As indicated in Table 5, a total estimated mass of approximately 5.0 kilograms (kg) of VOCs and TPH GRO/DRO were recovered in the dissolved phase during the reporting period.

As the data presented in Table 5 indicate, total dissolved phase mass recovery rate estimates ranged from 6 to 35 grams per day. The fluctuation in dissolved phase mass recovery rate is related to variability in influent mass concentrations in the extracted groundwater due to VEP well configurations, extraction rate, and precipitation recharge to the groundwater system. The annual dissolved phase mass recovery of VOCs, TPH [GRO & DRO], and DNAPL are shown on Figure 3.

5.1.2 Vapor Phase

Influent vapor sampling results, molecular weights, and total vapor extraction flow rates were utilized to estimate the vapor phase VOC and TPH/GRO mass recovery rate for the reporting period. As the data presented in Table 6 indicate, the vapor phase mass recovery rate ranged from 1 to 7 grams per day during the operational period for the vapor extraction system. As mentioned in the discussion of dissolved phase mass recovery rates, the fluctuation in vapor phase mass recovery rate is related to the VEP well configuration and groundwater elevations. As Table 6 shows, a total estimated mass of 0.78 kg of VOCs were removed in the vapor phase during 2016 - 2017 As expected, the mass transfer of VOCs from soil to vapor is predominantly limited to desorption and diffusion processes. Therefore, mass removal rates in the vapor phase are declining over time as the Site is remediated. No detectable concentrations of TPH GRO were detected in the system influent, which indicates that the lighter fraction VOCs that were historically present have been remediated from the subsurface. The annual vapor phase mass recovered for VOCs and TPH [GRO] is shown on Figure 4.

5.1.3 Non-Aqueous Phase Liquid

During the 2016 - 2017 reporting period, approximately 2.3 gallons of DNAPL was recovered by the collection and treatment system in the oil/water separator (OWS-200). Since starting the system in January 2008, an estimated cumulative total of 351.3 gallons of DNAPL have been recovered. A summary of annual DNAPL removal is provided in Table 7.

5.1.4 Total Mass Removal Trend

The VEP system has recovered a cumulative total of approximately 400 kg (882 lbs) and 179 kg (394 lbs) of dissolved and vapor phase VOCs, respectively, during the period of operation from startup in 2008 through March 2017 (Table 7). The mass removal rate had fluctuated for the liquid phase mass removed

during each year of the operation from 2008 through 2012. However, in 2013 the liquid phase VOC/TPH mass removal rates dropped an order of magnitude and continued to decrease through 2016 and early 2017. The drop in mass removal rates are largely attributable to the decrease in TPH DRO in the system influent water samples. As indicated in previous reports, the rate of recovery is expected to decrease as the mass removal becomes more dependent on desorption and diffusion processes rather advective movement and capture of VOCs.

The mass removal rate for the vapor phase VOC/TPH had generally dropped off after the first year of operation in 2008, and plateaued during each year of the operation from 2010 through 2012, and has subsequently continued to drop through early 2017. The drop in mass removal rates are mostly attributable to the decrease in TPH GRO in the system influent vapor samples, as well as lighter fraction VOC concentrations. As indicated in previous reports, the rate of recovery has, and is expected to decrease as the mass removal becomes more dependent on desorption and diffusion processes rather advective movement and capture of VOCs, particularly for any lighter fraction VOCs and GRO compounds.

As presented in Table 7, the dissolved and vapor phase mass recovered during 2016 – 2017 is estimated at 5.0 and 2.3 kg, respectively. Figure 5 also depicts annual mass recovery through March 2017 for both the dissolved and vapor phases, and DNAPL.

6 GROUNDWATER MONITORING

Groundwater monitoring activities were conducted on May 2016 and November 2016. Groundwater monitoring consisted of the collection of groundwater samples from monitoring wells and the measurement of water levels in monitoring wells to evaluate the hydraulic influence of the system.

Sampling included the following thirteen (13) monitoring wells to evaluate VOC concentration trends during remediation.

Monitoring Wells:

- MW-12 and MW-13 (adjacent to VEP-2)
- MW-10R (adjacent to VEP-12)
- MW-14 (adjacent to VEP-1 and VEP-2)
- OW-6 (adjacent to VEP-3 and VEP-4)
- MW-8S, (adjacent to VEP-2)
- MW-9 (adjacent to VEP-13)
- ESI-1 (adjacent to VEP-8)
- ESI-2 (adjacent to VEP-6)
- ESI-4R (adjacent to VEP-14)
- ESI-6 (adjacent to VEP-1)
- ESI-7 (adjacent to VEP-5)

- OW-5 (adjacent to VEP-3 and VEP-4)

Collection of groundwater samples was performed in accordance with the Field Sampling Plan and consisted of purging three volumes of water from each well or purging until the well was dry. Samples were then collected using low flow sampling techniques where feasible, and select wells were sampled using disposable bailer's due to lack of water. It should be noted that all groundwater sampling was conducted with the VEP system offline (i.e., static conditions). All samples were submitted to Accutest Laboratories in Marlborough, Massachusetts for analysis of VOCs using USEPA Method 8260. Groundwater analytical results are discussed in Section 6.2.2.

6.1 Well Inspections

Recovery well and monitoring well integrity surveys are conducted quarterly to observe the surface conditions around each well, the condition of the concrete surface seal and presence of a secure locking cap and/or bolt down road box. Periodically, the depth to bottom in all the wells is measured and compared to the original constructed well depth.

6.2 Groundwater Monitoring Results

The results of the groundwater monitoring program during 2016 - 2017 are summarized in the following sections. The groundwater monitoring program was performed in accordance with the Groundwater Collection and Treatment System OM&M Plan (ARCADIS 2008) and as approved by NYSDEC in 2016

6.2.1 Groundwater Elevation Data

Water level data collected from the Site monitoring wells for 2016 - 2017 are summarized in Table 8. The groundwater elevations reflect the position of the water table within the fill material layer at the Site under pumping conditions for each sampling event in May and November 2016. Overall, the water level data indicated that the system influences water levels near the VEP recovery wells, with drawdown typically in the range consistent with design estimates of 1 to 5 feet in adjacent monitoring wells.

6.2.2 Laboratory Analytical Results

During the 2016 - 2017 reporting period, groundwater samples were collected from thirteen (13) monitoring wells to monitor groundwater quality and evaluate the performance of the system. A summary of the groundwater monitoring analytical results, along with historical data, is shown in Table 9. Historical TCE, DCE (total), and VC concentration trends in groundwater for monitoring wells are depicted on Figures 6A, 6B, and 6C.

The following selected observations were made with respect to the groundwater analytical data:

- Consistent with the historical results for the Site, the primary VOCs detected in groundwater are TCE, total DCE and VC, with most of the VOC mass within the southern end of the Site near recovery wells VEP-1 and VEP-2.
- TCE, DCE, and VC concentrations at monitoring wells MW-8S, MW-12, MW-13 and MW-14 during the May 2016 event continued to fluctuate within ranges established since the recovery system

startup in 2008. However, a steady decline in concentrations were noted during the November 2016 event, which was conducted approximately 30 days following the implementation of the ISCO pilot study in that area.

- TCE concentrations at monitoring well OW-5 continue to remain below NYSDEC Class GA groundwater standards. DCE and VC concentrations continue to indicate an overall downward trend over the past several years.
- TCE, DCE, and VC concentrations at monitoring well OW-6 continue to fluctuate within ranges established since the recovery system startup in 2008. These fluctuations are most likely attributable to recovery well operation and seasonal groundwater levels.
- VOC concentrations at wells ESI-4R and MW-10R are indicating a downward trend over the past three years as compared to the baseline ranges established since installation in 2010. However, a slight increasing trend in DCE and VC concentrations were noted at MW-4R, and similar increase in TCE concentrations at MW-10R in November 2016.
- Concentrations of TCE, total DCE and VC at monitoring well ESI-1 and ESI-2 which are located adjacent to the Chadakoin River and upgradient from the vertical barrier wall, continues to remain below the laboratory detection limits and the NYSDEC Class GA groundwater standards since starting up the remedial system.
- The spring 2016 groundwater sampling event showed TCE and DCE concentrations at well ESI-7 increased above the NYSDEC Class GA groundwater standards. However, the concentrations decreased below the standards during the November 2016 sampling event.
- Consistent with the historical Site results since the startup of the remedial system, TCE, total DCE, and VC have remained below the NYSDEC Class GA groundwater standards in monitoring well MW-9, which is located at the northwest (downgradient) corner of the Site near the Chadakoin River.
- Consistent with the historical Site results since the startup of the remedial system, TCE, total DCE, and VC remain below the NYSDEC Class GA groundwater standards in monitoring well ESI-6, which is located at the southeast (upgradient) corner of the Site.

7 RIVERBANK AND COVER SYSTEM INSPECTIONS

As outlined in the SMP, the following remedial design elements were constructed at the Site.

- 12 inches of clean soil cover/grass seed in areas disturbed during construction
- Riverbank reconstruction including stabilization/erosion controls
- Wingwall structure
- Riverbank plantings.

Each of these areas is inspected quarterly to certify that the engineering controls are in place and functioning as designed.

The cover system, riverbank, and wingwall structure were inspected for erosion, sloughing, settlement or other indication of loss of integrity. The riverbank plantings were observed for any signs of distress or lack of growth.

During the 2016 - 2017 reporting period the Site cover material and riverbank were inspected on quarterly basis and recorded on inspection checklists which have been provided as Appendix C.

7.1.1 Site Cover

No erosion of the Site cover was observed during the reporting period. The vegetation growth across the Site was observed to be in good condition.

7.1.2 Riverbank Inspections

The riverbank plantings were inspected quarterly and during the 2016 - 2017 reporting period the plants continue to indicate growth and the previous measures taken to deter wildlife have appeared to be successful. Based on the site inspections and observations the rip-rap stone and wingwall deflector appeared to be in place, and functional.

8 INSTITUTIONAL AND ENGINEERING CONTROLS COMPLIANCE

As part of the annual certification under the Site Management and OM&M Plans the Site engineering controls have been maintained and remain in place functioning as designed except for noted shutdowns due to non-routine system maintenance. The engineering controls include the following:

- Soil cover and vegetative growth across the Site
- Riverbank and stabilization erosion controls
- Wingwall deflector
- Vertical hydraulic barrier wall
- Groundwater recovery and soil vapor extraction via VEP (i.e., recovery) wells
- Remedial system operation and maintenance.

No changes in site use were observed during the reporting period, as per the SMP, which includes land and groundwater use restrictions. A copy of the signed Institutional and Engineering Controls Certification Forms have been included as Appendix A.

9 ISCO PILOT STUDY SUMMARY

The following sections summarize the ISCO pilot study, which was conducted on-site from October 2016 through April 2017. The objective of the ISCO pilot test implementation was to destroy COCs mass in groundwater while gathering information that can be used to improve its effectiveness of a full-scale

application if needed. The goal is to evaluate a remedial alternative to existing VEP treat to reduce remedial timeframe. The ISCO Pilot Study area and injection well layout is shown on the Figure 7.

The specific objectives for this pilot-scale ISCO injection were to evaluate:

- Injection design parameters such as achievable injection flow rates and safe injection pressures
- Distribution and longevity of the injected persulfate/activator in the targeted injection zones
- Hydraulic properties of the subsurface in the vicinity of the injection area (e.g., migratory porosity, which can be estimated based on the hydraulic responses to injection)
- Efficacy of ISCO technology and designed dosing of persulfate/activator on the treatment of groundwater COCs at the site
- Recommendations for any contingent actions (e.g., additional injection wells or injection events), additional monitoring, and the potential effect of ISCO activities on ongoing vacuum enhanced pumping system.

9.1 Pilot Study Implementation

The ISCO pilot-scale injection event was performed between October 3, 2016 and October 7, 2016. As an ISCO reagent alkaline activated persulfate was utilized. The reagent solutions were prepared in small batches (250 gallons) using approximately 83 pounds of sodium persulfate and 42 pounds of sodium hydroxide, to achieve a target solution concentration of approximately 40 grams per liter (g/L) and pH above 12 standard units (s.u.). In total, approximately 3,600 gallons of solution were injected through three newly installed injection wells: IW-6 (1,100 gallons), IW-7 (1,400 gallons), and IW-8 (1,100 gallons). The injection was performed at low pressure [less than one pound per square inch (psi)] during the day and overnight unmanned injection was performed under gravity. The average injection rate was approximately 0.5 gpm.

9.2 Dose Response Monitoring

Dose-response monitoring was performed at four monitoring wells (MW-8S, MW-12, MW-13, and MW-14) during injection by monitoring of real-time field parameters, specifically specific conductance, pH, temperature, redox potential, and persulfate (using a field test kit) at least twice per day. During the injection event, arrival of sodium persulfate was observed in all dose-response wells, except MW-14. Up to 7 g/L and 8 g/L of sodium persulfate was observed at dose-response wells MW-8S and MW-12, respectively, with a commensurate increase in pH above 12 s.u. At MW-13 sodium persulfate concentration increase was relatively low (0.14 g/L) and negligible at MW-14.

9.3 Post Injection Monitoring

The ISCO pilot study performance monitoring was performed on month-1, month-3 and month-6 following the injection event. Field parameters, depth to water, and sodium persulfate concentration data were collected from select monitoring wells at or downgradient of the target injection area. Additionally, groundwater samples were collected from four monitoring wells (MW-8S, MW-12, MW-13, and MW-24) located at the target injection area (dose response wells) for total sodium VOC analyses.

Compared to the baseline concentrations, the month-1 post ISCO monitoring data showed significant decrease in total chlorinated VOC concentrations (TCE, DEC [total], and VC combined) in all four dose-response wells with approximately 45% (MW-13) to 99% (MW-8S) decrease. The month-3 and month-6 data showed even further degradation of total chlorinated VOCs and based on the month-6 data the degradations were over 99% in MW-8S, approximately 93% in MW-12, 99% in MW-13, and 90% in MW-14. Note, during the injection event the reagent dose-response was the highest in MW-8S and MW-12. Although dose-response wells MW-13 and MW-14 did not show the instantaneous arrival of reagents during the injection event, the concentrations of total chlorinated VOCs decreased significantly following the injection event. The decrease in total chlorinated VOCs suggests delayed arrival of reagents at these two wells. In these wells, detection of high concentrations of sodium (decomposition product of sodium persulfate) supports this observation. Persulfate concentrations in these wells were minimal (in low mg/L range) and pH values were circumneutral or slightly basic (9.2 s.u. in MW-8S during the month-6 monitoring).

10 CONCLUSIONS

The following sections summarize the conclusion of the system operation and groundwater data during the 2016 - 2017 reporting period.

10.1 System Performance Summary

Data from the 2016 - 2017 reporting period indicate that the VEP system has been effective at recovering dissolved and vapor phase VOC mass and NAPL from the subsurface at the Site.

The performance effectiveness of the remedial system is summarized through the following metrics:

- Sustained average groundwater extraction rate of 2.0 gpm from the VEP well network
- Averaged a soil vapor extraction rate of 120 acfm from the VEP well network. It should be noted that this extracting rate includes fresh air dilution (i.e., makeup air)
- The groundwater elevation data indicate that the VEP well network is effective at dewatering the fill material near the recover wells thus making more adsorbed phase mass available via vacuum extraction through in-situ stripping and bio-venting processes
- As indicated by the ND, or near detection limits, extraction soil vapor concentrations, the induced lateral air flows in the sub-surface have remediated the VOCs and lighter fraction petroleum compounds (e.g., TPH GRO).
- Approximately 2.3 gallons of DNAPL were recovered by the remedial system. Since startup the system has recovered approximately 351 gallons of DNAPL
- An estimated total mass of 5.0 kg and 2.4 kg were recovered in the dissolved and vapor phase in 2016 – 2017, respectively. Since system startup in January 2008 an estimated cumulative total mass of approximately 400 kg and 179 kg have been recovered in the dissolved and vapor phases, respectively.

10.2 Groundwater Data Summary

The analytical results continue to show improvement in groundwater quality in several of the monitoring wells. VOC concentrations continue to remain below the NYSDEC Class GA groundwater standards in the up- and down-gradient monitoring wells. The following highlights the groundwater analytical data for specific monitoring wells at the site:

- VOC concentrations in monitoring wells ESI-1, ESI-2, ESI-6, and MW-9 continue to remain below NYSDEC Class GA Groundwater Standards.
- Groundwater quality changes in monitoring wells MW-8S, MW-12, MW-13 and MW-14 responded positively to the ISCO injections, and based on the April 2017 sampling event, have continued to indicate 90 to 99% mass reduction in this area.
- Groundwater quality changes in monitoring wells MW-4R and MW-10R indicated increases in VOC concentrations.
- VOC concentrations in monitoring well OW-5 during the 2016 sampling events were within the normal variable historical ranges, which range from several thousand μg/L to ND.

11 2017-2018 GOALS AND RECOMMENDATIONS

The information presented in this section indicates that the system will continue to operate as designed and outlined within the NYSDEC approved Groundwater Collection and Treatment System Operational, Maintenance, and Monitoring Plan (ARCADIS 2008), with the exceptions noted below. The recommendations and action items planned for during the 2017 - 2018 reporting period are described in the sections below.

11.1 Goals

System operation goals and performance monitoring will continue to focus on optimizing mass removal rates through the operation of VEP well network, evaluating individual recovery well mass removal rates, and continued operation and maintenance of the remedial system process equipment and components.

The goals for system operational activities during 2017/18, as well as activities already conducted in the first several months of 2017, are as follows:

- Conduct water level measurements at all monitoring wells to monitor hydraulic influence of the system.
- Collect groundwater samples on a semi-annual basis from a reduced number of monitoring wells, including ESI-4R, ESI-7, MW-8S, MW-10R, MW-12, MW-13, MW-14, OW-5 and OW-6.
- Continue monitoring the groundwater quality in the area of ISCO pilot study.
- Continue to monitor the treatment system for mass removal efficiency and VOC breakthrough based on field screening and/or laboratory analysis of samples collected from the system influent and effluent sample points.

- Collect system effluent samples as required by the Jamestown BPU Industrial Wastewater Discharge Permit.
- Continue NAPL recovery efforts.
- Continue to collect influent system samples to track mass removal in the vapor and liquid phases.
- Perform O&M activities (e.g., liquid phase cartridge filter change-outs, pneumatic pump cleaning as needed, sequestering agent drum replacement, air stripper cleaning, and air compressor/blower maintenance per OM&M plan).
- Monitor operation of the system and adjusted vacuum and pumping rates to recovery wells, as necessary, to optimize groundwater and vapor extraction rates.

11.2 Recommendations

As noted above in the executive summary section, Arcadis has performed an ISCO pilot study to enhance the current remedial program at the site. The following recommendations and action items are planned for implementation during 2017 following the Departments approval:

- As a result of the 90 to 99% VOC degradation in monitoring wells MW-8S, MW-12, and MW-13, and MW-14, Arcadis is recommending that recovery wells VEP-1 through VEP-3 remain offline to allow for a longer observation period to monitor for signs of rebound in CVOC concentrations. If CVOC concentrations do not rebound over the next two semi-annual sampling events a MNA approach for this area will be recommended.
- On a semi-annual basis 13 monitoring wells are sampled as part the groundwater monitoring program. Four of these wells, which include ESI-1, ESI-2, ESI-6 and MW-9, have remained ND and/or below groundwater standards for the last four to eight years. Based on the volume and redundancy of data collected, and remedial achievements noted in in these areas, Arcadis is recommending these wells be dropped from the semi-annual monitoring program and permanently abandoned.
- Based on the remedial achievements in the monitoring well locations ESI-1 and ESI-2, the continued operation of nearby recovery wells VEP-6 through VEP-9 are not necessary and are not providing any remedial benefit, therefore Arcadis is recommending that these four wells be taken offline.

12 REFERENCES

Arcadis 2016, Response to Comments – Soil Vapor Investigation Report, DC Rollforms Site, Jamestown, New York (Site No. 907019), July 2016

Arcadis 2016, Site Management Periodic Review Report and ICEC Certification, DC Rollforms Site, Jamestown, New York (Site No. 907019), July 2016.

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ARCADIS 2008, Engineering Construction Completion Report, D.C. Rollforms, Ingersoll Rand Site, Jamestown, New York, Site Code 907019, December 7, 2008.

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Administration Order on Consent Index #B9-0446-94-01A, D.C. Rollforms site, Site #907019, Ingersoll Rand Company, Jamestown, New York, September 21, 2004.

Record of Decision, D.C. (Dow Craft) Rollforms Inactive Hazardous Waste Site, Jamestown, Chautauqua County, New York, Site No. 9-07-019, March 31, 2003.

TABLES

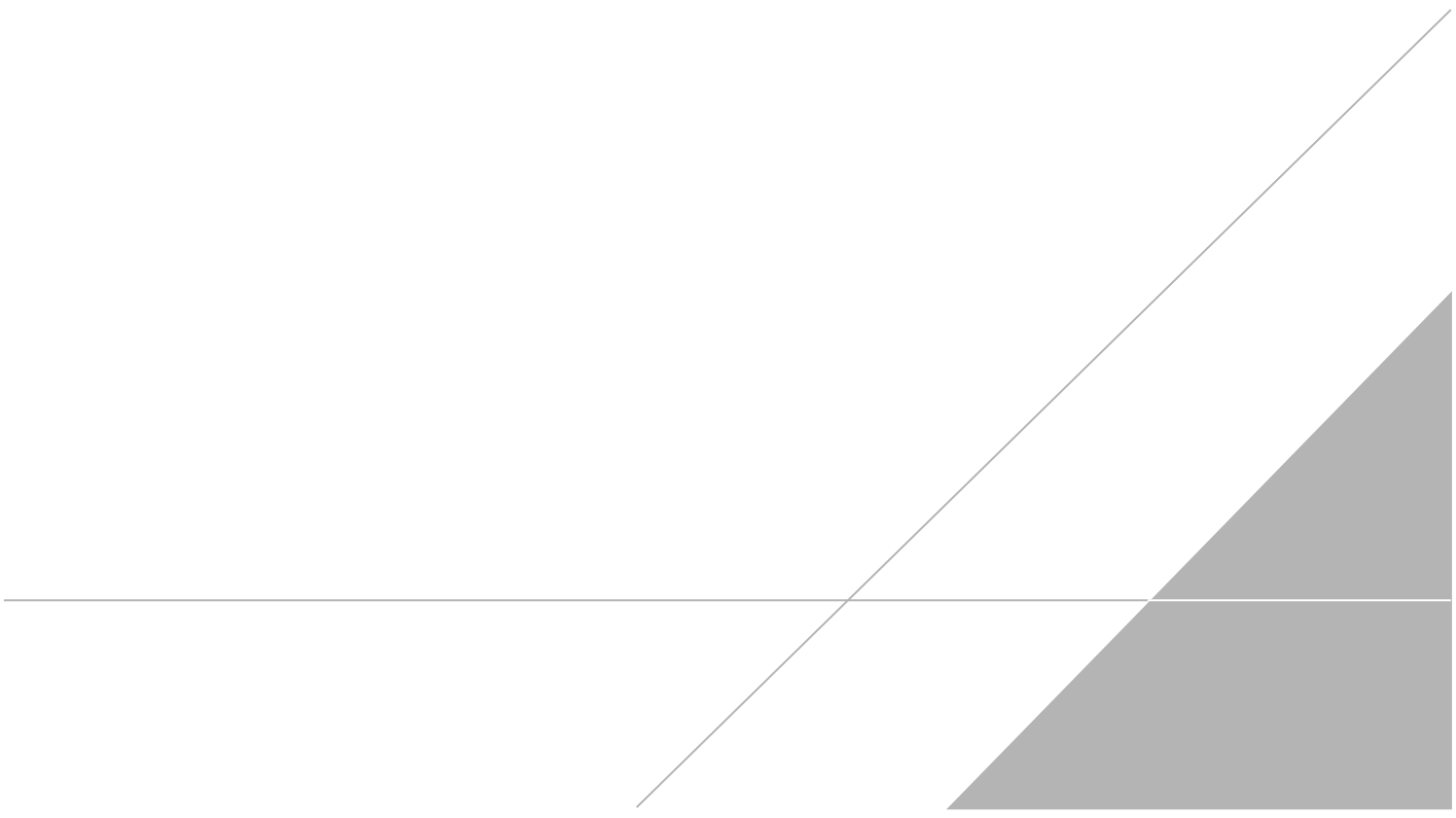


Table 1.
System Operational Data, 2016-2017
DC Rollforms Site
Jamestown, New York

ARCADIS Design & Consultancy for natural and built assets

System Parameters			Date															
			1/14/16	2/8/16	3/2/16	4/22/16	5/13/16	6/29/16	7/14/16	8/22/16	9/12/16	10/12/16	11/7/16	12/20/16	1/12/17	2/9/17	3/21/17	4/10/17
SVE Blower Applied Vacuum (in. W.C.)			30	56	42	44	46	48	66	50	44	50	56	54	65	54	52	51
Vapor Extraction Flowrate (acfm)			107	92	180[2]	150	98	99	71	56	106	110	131	104	87	84	115	80
Cumulative Groundwater Recovered and Treated			14,197,875	14,272,780	14,438,505	14,515,850	14,706,910	14,843,710	14,905,310	14,950,930	15,061,320	15,169,050	15,249,350	15,372,100	15,432,780	15,481,820	15,533,700	15,607,990
Monthly System Flow (gallons)			108,200	74,905	165,725	77,345	191,060	136,800	61,600	45,620	110,390	107,730	80,300	122,750	60,680	49,040	51,880	74,290
Monthly System Influent (gpm)			2.5	2.1	3.8	3.3	6.3	2.0	2.9	1.2	2.7	2.5	2.1	2.0	1.8	1.2	0.9	2.6
Recovery Well Statuses[1]																		
Vacuum Enhanced Pumping (VEP) Wells	VEP-1	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N
	VEP-2	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N
	VEP-3	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N
	VEP-4	Liquid Phase On (Y/N)	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
		Vapor Phase On (Y/N)	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	VEP-5	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-6	Liquid Phase On (Y/N)	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-7	Liquid Phase On (Y/N)	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-8	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-9	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-10	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-11	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-12	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-13	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	VEP-14	Liquid Phase On (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
		Vapor Phase On (Y/N)	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes:

1. Recovery wells for which total fluids pneumatic pumps were online but observed to be in need of routine cleaning and/or repairs and therefore not recovering groundwater are considered to have liquid phases on in this table. Recovery well statuses do not necessarily reflect the recovery well configuration for the corresponding monthly influent sampling events.
2. Vapor extraction flowrate on March 2, 2016 estimated due to system shutdown.

Definitions:

acfm - actual cubic feet per minute
gpm - gallons per minute
in.W.C. - Inches of Water Column
N - No
Y - Yes
SVE - Soil Vapor Extraction
VEP - Vacuum Enhanced Pumping

Table 2.
TCE, DCE (total), VC, and TPH in System Influent Water Samples, 2016-2017
DC Rollforms Site
Jamestown, New York

Date	VOCs (µg/L)[1]				VEP Wells Online During Monthly System Influent Sampling Event
	TCE	DCE (total)[2]	VC	DRO (µg/L)	
3/2/16	32.8	44.4	39.1	1,300	VEP-1 through VEP-14
6/29/16	3.6	33.5	34.8	718	VEP-5 - VEP-7, VEP -9 - VEP 11, and VEP-13 - VEP-14
9/12/16	0.91	8.2	4.4	298	VEP-5 through VEP-13
10/12/16	1.2	141	127	738	VEP-5 , VEP-7 through 8, VEP-10 through VEP-14
3/21/17	12	156	15.7	NS	VEP-5 through VEP-14

Notes:

1. Samples analyzed for VOCs using US EPA Method 624. Samples analyzed for TPH [GRO] and TPH[DRO] using US EPA Method 8015 B. Samples analyzed for PCB using US EPA Method 608.
2. DCE (total) includes the sum of 1,1-Dichloroethene, cis-1,2-Dichloroethene, and trans-1,2-Dichloroethene.

Definitions:

D - Identifies an analysis that used a secondary dilution factor
DCE - Dichloroethene
DRO - Diesel Range Organics
E - Sample concentration exceeded calibration range
GRO - Gasoline Range Organics
mg/L - milligrams per liter
ND - Non-Detect
NS - Not Sampled for
PCB - Polychlorinated Biphenyls
TCE - Trichloroethene
TPH - Total Petroleum Hydrocarbons
µg/L - micrograms per liter
VC - Vinyl Chloride
VOCs - Volatile Organic Compounds

Table 3.
TCE, DCE (total), VC, PCBs, TSS, Oil Grease and pH in System Effluent Water Samples, 2016-2017
DC Rollforms Site
Jamestown, NY

Date	Analyte[1]						
	Total VOCs (µg/L)	PCB (µg/L)	TSS (mg/L)	Oil & Grease (mg/L)		pH (s.u.)	
	Local Discharge Limit						
	2130	ND	350	100		5.5 - 10	
5/13/2016	1.8 J	<0.0001	15.0	< 5.0	< 5.0	8.3	8.1
				< 5.0	< 5.0	8.3	8.5
6/29/2016	< 5.0	<0.0001	64.0	< 5.1	< 5.1	8.0	8.1
				< 5.1	< 5.1	8.2	8.2
7/14/2016	< 5.0	<0.0001	1.9 B	< 5.0	< 5.0	8.5	8.4
				< 5.0	< 5.0	8.3	8.3
8/22/2016	0.39 J	<0.0001	6.0	2.3 B	< 5.0	8.6	8.4
				< 5.0	< 5.0	8.3	8.5
9/12/2016	< 5.0	<0.0001	2.0 B	1.5 B	< 5.0	7.9	8.1
				< 5.0	1.5 B	8.2	8.1
10/12/2016	3.6	<0.0001	< 4	< 5.0	< 5.0	7.5	7.5
				< 5.0	< 5.0	8.2	7.8
11/7/2016	< 5.0	<0.0001	< 4	< 5.0	< 5.0	8.1	8.0
				< 5.0	< 5.0	8.1	8.1
12/20/2016	3.67 J	<0.0001	< 4	< 5.0	< 5.0	8.0	8.2
				< 5.0	< 5.0	8.2	8.3
1/12/2017	5.3	<0.0001	< 4	< 5.1	< 5.0	8.2	8.3
				< 5.0	< 5.0	8.2	8.2
2/9/2017	9.4	<0.0001	13.5	< 5.0	< 5.0	8.2	8.3
				8.5	< 5.0	8.2	8.2
3/21/2017	25.3	<0.0001	< 4	< 5.2	< 5.2	7.0	7.5
				< 5.9	< 5.6	7.6	7.8
4/10/2017	13.9	<0.0001	< 4	< 5.1	< 5.1	7.5	7.6
				< 5.1	< 5.1	7.6	7.7

Notes:

1. System effluent water samples collected via sample port SP-702 located after the air stripper. Samples analyzed for TCE, DCE (total), VC, PCB, and TSS consisted of four effluent samples collected during a typical operating day that were composited at the laboratory. Samples analyzed for Oil & Grease and pH were not composited. Samples analyzed for TCE, DCE (total), and VC using US EPA Method 624. Samples analyzed for PCB using US EPA Method 608. Samples analyzed for TSS using
2. DCE (total) includes the sum of 1,1-Dichloroethene, cis-1,2-Dichloroethene, and trans-1,2-

Definitions:

"--" - Indicates data not available
B - indicates a results > = MDL but < RL
DCE - Dichloroethene
J - Indicates an estimated value
mg/L - milligrams per liter
ND - Non-detect
NS - Not sampled
PCB - Polychlorinated Biphenyls
s.u. - standard units
TCE - Trichloroethene
TSS - Total Suspended Solids
µg/L - micrograms per liter
VC - Vinyl Chloride

Table 4.
TCE, DCE (total), VC and TPH in System Influent and Effluent Vapor Samples, 2016-2017
DC Rollforms Site
Jamestown, New York

Date	Sample Location	TCE		DCE (total)[2]		VC		TPH [GRO]		VEP Wells Online During Monthly System Influent Sampling Event
		ppbv	µg/m^3	ppbv	µg/m^3	ppbv	µg/m^3	ppbv	µg/m^3	
3/2/2016	Influent	< 10	< 53.7	< 20	< 79	< 1,000	< 2,598	< 700	< 1,280	VEP-1 through VEP-5, and VEP-7 through VEP-14
	Effluent	< 10	< 53.7	< 20	< 79	< 1,000	< 2,598	< 700	< 1,280	
4/22/2016	Influent	34	183	30	119	< 1,000	< 2,598	< 700	< 1,280	VEP-1 through VEP-5, and VEP-7 through VEP-14
	Effluent	16	86	57	226	< 1,000	< 2,598	< 700	< 1,280	
9/12/2016	Influent	130	698	120	475	< 1,000	< 2,598	< 700	< 1,280	VEP-5 through VEP-14
	Effluent	55	295	150	230	< 1,000	< 2,598	< 700	< 1,280	
10/12/2016	Influent	15	81	38	151	< 1,000	< 2,598	1,200	4,128	VEP-5 through VEP-14
	Effluent	11	59	35	139	< 1,000	< 2,598	960	3,302	
3/21/2017	Influent	100	537	< 20	< 79	< 1,000	< 2,598	< 700	< 1,280	VEP-5 through VEP-14
	Effluent	44	< 236	< 20	< 79	< 1,000	< 2,598	< 700	< 1,280	

Notes:
1. Influent vapor sample collected via sample port SP-900 located before the liquid knockout tank. Effluent vapor sample collected via sample port SP-503 located after VPGAC vessel ASC-502. Samples analyzed using Microseeps, Inc. Method AM 4.02.
2. DCE (total) includes the sum of 1,1-Dichloroethene, cis-1,2-Dichloroethene, and trans-1,2-Dichloroethene.

Definitions:
DCE - Dichloroethene
GRO - Gasoline Range Organics
J - Indicates an estimated value
NA - Not Available
ND - Non-detect
NS - Not Sampled
ppbv - parts per billion by volume
SVE - Soil Vapor Extraction
TCE - Trichloroethene
TPH - Total Petroleum Hydrocarbons
µg/m^3 - micrograms per cubic meter
VC - Vinyl Chloride

Table 5.
Cumulative Dissolved Phase VOC and TPH Mass Recovery, 2016-2017
DC Rollforms Site
Jamestown, New York

Date	VOC and TPH [GRO & DRO] Mass Removed																
	Influent VOC and TPH [GRO & DRO] Concentrations				Total Cumulative Flow (gallons)[1]	Total Flow Per Reporting Period (L)	Estimated Mass Removed Per Reporting Period (kg)[3]				Estimated Cumulative Mass Removed (kg)				Estimated Cumulative Mass Removal (kg)	Cumulative Days Operating	Estimated Mass Removal Rate Per Reporting Period (kg/day)
	TCE (µg/L)	DCE (total) (µg/L)[2]	VC (µg/L)	TPH [DRO] (mg/L)			TCE	DCE (total)[2]	VC	TPH [DRO]	TCE	DCE (total)[2]	VC	TPH [DRO]			
3/2/16	32.8	44.4	39.1	1.30	14,438,505	1,808,063	0.030	0.052	0.047	1.500	0.030	0.052	0.047	1.500	1.630	131	0.012
6/29/16	3.6	33.5	34.8	0.72	14,843,710	1,533,867	0.028	0.060	0.057	1.548	0.058	0.112	0.104	3.047	3.322	250	0.014
9/12/16	0.91	8.2	4.4	0.30	15,061,320	823,743	0.002	0.017	0.016	0.418	0.060	0.129	0.120	3.466	3.775	325	0.006
10/12/16	1.2	141	127	0.74	15,169,050	407,802	0.000	0.030	0.027	0.211	0.060	0.160	0.147	3.677	4.044	355	0.009
3/21/17	12	156	15.7	NS	15,533,700	1,380,350	0.003	0.061	0.029	0.919	0.063	0.220	0.176	4.596	5.056	384	0.035
Groundwater Recovered March 2016 - March 2017 (gal)					**1,095,195**						Total VOCs Recovered 2016-2017 (kg):				**4.044**		
Average Groundwater Recovery Rate (gpm)					**2.0**												

Notes:

1. Total cumulative flow is estimated based on the system flowmeter FQI-700.
2. DCE (total) is the sum of 1,1-Dichloroethene, cis-1,2-Dichloroethene, and trans-1,2-Dichloroethene.
3. Estimated mass removed per reporting period is calculated from influent mass concentration and volume of groundwater recovered. Influent mass concentrations used for calculations are the average of the concentrations from the previous and current monthly events.

Definitions:

DCE - Dichloroethene
DRO - Diesel Range Organics
GRO - Gasoline Range Organics
gal - gallons
gpm - gallons per minute
kg - kilograms
L - Liters
mg/L - milligrams per liter
ND - Non-detect
TCE - Trichloroethene
TPH - Total Petroleum Hydrocarbons
µg/L - micrograms per liter
VC - Vinyl Chloride
VOC - Volatile Organic Compounds

Table 6.
Cumulative Vapor Phase VOC and TPH Mass Recovery, 2016-2017
DC Rollforms Site
Jamestown, New York

Date	Influent VOC and TPH [GRO] Concentrations (ppmv)				Influent VOC and TPH [GRO] Concentrations (µg/m^3)[1]				Influent VOC and TPH [GRO] Concentrations (µg/L)				Vapor Extraction Flow Rate (acfm)	Reporting Period			Mass of Component Recovered[3] Per Reporting Period (kg)				Cumulative Mass Recovered (kg)				Estimated[2] Cumulative Mass Recovery (kg)	Cumulative Days Operating	Estimated[2] Mass Recovery Rate Per Reporting Period (kg/day)
														Period Duration		Volume Of Air Treated (L)[2]											
	TCE	DCE (total)[4]	VC	TPH [GRO]	TCE	DCE (total)[4]	VC	TPH [GRO]	TCE	DCE (total)[4]	VC	TPH[5] [GRO]		(days)	(min)		TCE	DCE (total)[4]	VC	TPH [GRO]	TCE	DCE (total)[4]	VC	TPH [GRO]			
4/22/16	0.034	0.030	1	0.7	182.58	118.86	ND	ND	0.183	0.119	ND	ND	150	51	73,440	311,937,869	0.037	0.031	0.000	0.000	0.089	0.107	0.000	0.000	0.20	51	0.001
9/12/16	0.130	0.120	1	0.7	698.1	475.44	ND	ND	0.700	0.475	ND	ND	106	143	205,920	618,085,518	0.138	0.093	0.000	0.000	0.226	0.200	0.000	0.000	0.43	194	0.002
10/12/16	0.015	0.038	1	1.2	80.55	150.556	ND	ND	0.081	0.151	ND	ND	110	30	43,200	134,561,434	0.122	0.098	0.000	0.000	0.348	0.297	0.000	0.000	0.65	224	0.007
3/21/17	0.100	0.020	1	0.7	537	79.24	ND	ND	0.539	0.079	ND	ND	115	160	230,400	750,281,933	0.097	0.036	0.000	0.000	0.445	0.333	0.000	0.000	0.78	384	0.001
								2016-2017 Average SVE Extraction Rate (cfm)					120							2016-2017 Cumulative Mass Recovery Rate (kg)				0.78		

Notes:

1. Vapor results were converted to mg/m3 and mg/L using Microseeps unit conversion factors, assuming a temperature of 25 C (+ 273.15 K), and gas constant, 0.08206 l*atm/(mol*K).
2. Volumes of air treated are estimated values.
3. Estimated mass recovery rate calculated from monthly influent mass concentration and estimated vapor extraction rate. Influent concentrations used are averages of those from the previous and current monthly events.
4. DCE (total) is the sum of 1,1-Dichloroethene, cis-1,2-Dichloroethene, and trans-1,2-Dichloroethene.
5. Conversion of TPH[GRO] from ppmv to µg/L assumes molecular weight approximately equal to hexane, temperature of 25ºC, and pressure of 1 atmosphere.
6. Laboratory detection limits used for March 2016 sample results for the reporting period average.

Definitions:

acfm - actual cubic feet per minute
DCE - Dichloroethene
GRO - Gasoline Range Organics
kg - kilograms
L - Liters
min - minutes
ND - Non-detect
NS - Not Sampled
ppmv - parts per million by volume
TCE - Trichloroethene
TPH - Total petroleum hydrocarbons
µg/L - micrograms per liter
VC - Vinyl Chloride
VOC - Volatile Organic Compounds

Table 7.
Annual and Cumulative Mass Recovery
DC Rollforms Site
Jamestown, New York

Year	Estimated Annual Mass Recovery		
	Dissolved Phase (kg)	Vapor Phase (kg)	DNAPL (gallons)
2008	30.4	116.2	117
2009	90.7	27.5	135
2010	72.0	8.1	39
2011	133.2	8.8	18
2012	39.9	9.3	12.5
2013	8.6	3.4	2.5
2014	11.7	2.2	12.0
2015	8.1	0.6	13.0
2016	4.0	1.6	1.5
2017 through March	1.0	0.8	0.8
Total	**399.5**	**178.5**	**351.3**

Notes:

1. Estimated cumulative mass recovery includes mass recovered since the system was brought online at the beginning of 2008.
2. Total volume of DNAPL recovered is based on volumes removed and containerized from oil/water separator (OWS-200) during the reporting period.
3. The vapor phase mass removal value for 2014 was corrected from 1.1 kg to 2.2 kg.

Definitions:

DNAPL - Dense Non-Aqueous Phase Liquid
kg - kilograms

Table 8.
Summary of Groundwater Elevation Data
DC Rollforms Site
Jamestown, New York

Well ID	Measuring [1] Point Elevation (ft amsl)	Non-pumping Conditions 3/22/2011		Operational Conditions 6/27/2011		Non-pumping Conditions 10/19/2011		Non-pumping Conditions 12/7/2011		Non-pumping Conditions 3/12/2012		Operational Conditions 5/23/2012	
		Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]
ESI-1	1296.37	5.70	1290.67	12.74	1283.63	8.08	1288.29	6.94	1289.43	8.41	1287.96	12.36	1284.01
ESI-2	1295.08	4.95	1290.13	12.26	1282.82	9.85	1285.23	6.30	1288.78	11.12	1283.96	12.01	1283.07
ESI-3[4]	1295.75	5.08	1290.67	11.06	1284.69	7.00	1288.75	5.55	1290.20	6.55	1289.20	8.02	1287.73
ESI-4R	1294.96	6.42	1288.54	12.11	1282.85	9.18	1285.78	7.91	1287.05	13.13	1281.83	12.25	1282.71
ESI-5	1293.08	3.52	1289.56	5.74	1287.34	5.98	1287.10	4.58	1288.50	4.83	1288.25	9.14	1283.94
ESI-6	1295.24	5.35	1289.89	8.68	1286.56	7.34	1287.90	5.38	1289.86	5.97	1289.27	7.51	1287.73
ESI-7	1295.12	4.95	1290.17	10.90	1284.22	9.88	1285.24	6.35	1288.77	10.64	1284.48	10.89	1284.23
MW-4S	1295.75	6.19	1289.56	13.01	1282.74	9.00	1286.75	7.38	1288.37	12.28	1283.47	14.26	1281.49
MW-7D	1295.37	5.27	1290.10	10.04	1285.33	9.09	1286.28	7.03	1288.34	9.11	1286.26	10.13	1285.24
MW-8S	1295.21	5.33	1289.88	8.35	1286.86	7.21	1288.00	5.94	1289.27	6.60	1288.61	8.60	1286.61
MW-8D	1295.48	5.00	1290.48	6.16	1289.32	6.10	1289.38	5.85	1289.63	5.99	1289.49	6.45	1289.03
MW-9	1291.95	5.01	1286.94	6.55	1285.40	6.30	1285.65	5.68	1286.27	6.32	1285.63	7.40	1284.55
MW-10R	1295.11	6.52	1288.59	11.85	1283.26	8.15	1286.96	7.27	1287.84	9.09	1286.02	12.54	1282.57
MW-12	1294.91	4.69	1290.22	7.85	1287.06	6.60	1288.31	5.52	1289.39	6.12	1288.79	7.54	1287.37
MW-13	1294.20	4.06	1290.14	7.23	1286.97	5.94	1288.26	4.69	1289.51	5.83	1288.37	7.40	1286.80
MW-14	1294.59	4.58	1290.01	7.83	1286.76	6.29	1288.30	5.33	1289.26	5.60	1288.99	7.01	1287.58
OW-1	1292.59	5.96	1286.63	12.66	1279.93	10.78	1281.81	7.30	1285.29	7.90	1284.69	7.90	1284.69
OW-2	1293.96	6.91	1287.05	14.11	1279.85	11.65	1282.31	8.27	1285.69	13.08	1280.88	13.95	1280.01
OW-3	1292.01	2.50	1289.51	2.80	1289.21	5.73	1286.28	3.83	1288.18	4.12	1287.89	5.02	1286.99
OW-4	NM	4.71	NA	11.10	NA	8.55	NA	5.98	NA	10.23	NA	11.41	NA
OW-5	1295.59	5.36	1290.23	12.15	1283.44	10.10	1285.49	6.32	1289.27	11.19	1284.40	11.96	1283.63
OW-6	1295.67	5.53	1290.14	11.53	1284.14	10.18	1285.49	6.81	1288.86	10.82	1284.85	11.49	1284.18
OW-7	NM	4.79	NA	11.51	NA	9.58	NA	6.14	NA	10.83	NA	11.45	NA

Definitions:
NA - Not Available
NM - Not Measured

Table 8.
Summary of Groundwater Elevation Data
DC Rollforms Site
Jamestown, New York

Well ID	Measuring [1] Point Elevation (ft amsl)	Non-pumping Conditions 10/1/2012		Non-pumping Conditions 12/5/2012		Operational Conditions 3/13/2013		Operational Conditions 6/18/2013		Operational Conditions [5] 8/28/2013		Non-pumping Conditions 11/13/2013	
		Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]
ESI-1	1296.37	12.68	1283.69	11.02	1285.35	8.06	1288.31	8.40	1287.97	12.02	1284.35	6.92	1289.45
ESI-2	1295.08	12.04	1283.04	11.80	1283.28	11.25	1283.83	11.63	1283.45	11.51	1283.57	6.24	1288.84
ESI-3[4]	1295.75	10.88	1284.87	6.19	1289.56	5.96	1289.79	6.84	1288.91	10.73	1285.02	5.66	1290.09
ESI-4R	1294.96	12.06	1282.90	DRY	NA	DRY	NA	DRY	NA	DRY	NA	7.72	1287.24
ESI-5	1293.08	7.62	1285.46	5.48	1287.60	4.61	1288.47	5.18	1287.90	7.66	1285.42	4.72	1288.36
ESI-6	1295.24	10.21	1285.03	7.68	1287.56	5.41	1289.83	6.34	1288.90	9.73	1285.51	6.09	1289.15
ESI-7	1295.12	11.10	1284.02	10.55	1284.57	10.33	1284.79	10.72	1284.40	10.90	1284.22	6.21	1288.91
MW-4S	1295.75	13.80	1281.95	13.48	1282.27	12.45	1283.30	12.96	1282.79	12.78	1282.97	7.35	1288.40
MW-7D	1295.37	10.79	1284.58	9.59	1285.78	8.83	1286.54	9.02	1286.35	10.39	1284.98	6.74	1288.63
MW-8S	1295.21	10.49	1284.72	6.97	1288.24	6.33	1288.88	7.58	1287.63	9.34	1285.87	6.30	1288.91
MW-8D	1295.48	7.05	1288.43	5.92	1289.56	5.99	1289.49	6.08	1289.40	7.21	1288.27	6.01	1289.47
MW-9	1291.95	6.97	1284.98	5.55	1286.40	5.94	1286.01	6.74	1285.21	6.85	1285.10	5.30	1286.65
MW-10R	1295.11	13.24	1281.87	13.12	1281.99	8.01	1287.10	8.60	1286.51	11.77	1283.34	7.43	1287.68
MW-12	1294.91	10.03	1284.88	6.54	1288.37	5.93	1288.98	6.91	1288.00	8.74	1286.17	5.86	1289.05
MW-13	1294.20	9.43	1284.77	6.91	1287.29	5.74	1288.46	6.89	1287.31	8.26	1285.94	5.24	1288.96
MW-14	1294.59	9.54	1285.05	6.48	1288.11	5.58	1289.01	6.26	1288.33	8.17	1286.42	5.52	1289.07
OW-1	1292.59	7.91	1284.68	DRY	NA	12.23	1280.36	13.50	1279.09	12.39	1280.20	7.21	1285.38
OW-2	1293.96	13.89	1280.07	13.70	1280.26	13.23	1280.73	13.59	1280.37	13.34	1280.62	8.23	1285.73
OW-3	1292.01	6.90	1285.11	5.25	1286.76	4.63	1287.38	4.71	1287.30	4.93	1287.08	4.58	1287.43
OW-4	NM	11.85	NA	10.60	NA	9.78	NA	10.25	NA	11.05	NA	6.01	NA
OW-5	1295.59	12.03	1283.56	11.42	1284.17	11.01	1284.58	11.63	1283.96	11.65	1283.94	6.52	1289.07
OW-6	1295.67	11.84	1283.83	10.88	1284.79	10.49	1285.18	11.02	1284.65	11.49	1284.18	6.77	1288.90
OW-7	NM	11.57	NA	11.24	NA	10.93	NA	11.14	NA	10.96	NA	6.08	NA

Definitions:
NA - Not Available
NM - Not Measured

Table 8.
Summary of Groundwater Elevation Data
DC Rollforms Site
Jamestown, New York

Well ID	Measuring [1] Point Elevation (ft amsl)	Operational Conditions 3/18/2014		Operational Conditions 5/19/2014		Operational Conditions 8/18/2014		Operational Conditions 12/17/2014		Operational Conditions 3/23/2015		Operational Conditions 5/21/2015	
		Depth to Water [2]	Water-Level Elevation [3]	Depth to Water [2]	Water-Level Elevation [3]	Depth to Water [2]	Water-Level Elevation [3]	Depth to Water [2]	Water-Level Elevation [3]	Depth to Water [2]	Water-Level Elevation [3]	Depth to Water [2]	Water-Level Elevation [3]
ESI-1	1296.37	7.30	1289.07	7.36	1289.01	7.77	1288.60	7.07	1289.30	7.04	1289.33	10.77	1285.60
ESI-2	1295.08	10.35	1284.73	9.35	1285.73	11.05	1284.03	10.21	1284.87	9.09	1285.99	10.31	1284.77
ESI-3[4]	1295.75	6.48	1289.27	6.60	1289.15	7.45	1288.30	5.51	1290.24	5.80	1289.95	7.98	1287.77
ESI-4R	1294.96	11.23	NA	11.12	NA	DRY	NA	9.24	1285.72	8.60	1286.36	9.64	1285.32
ESI-5	1293.08	5.03	1288.05	4.35	1288.73	5.42	1287.66	5.00	1288.08	4.04	1289.04	5.06	1288.02
ESI-6	1295.24	5.80	1289.44	5.61	1289.63	6.85	1288.39	5.40	1289.84	5.55	1289.69	8.28	1286.96
ESI-7	1295.12	9.89	1285.23	8.74	1286.38	10.76	1284.36	9.76	1285.36	8.78	1286.34	10.31	1284.81
MW-4S	1295.75	11.31	1284.44	11.08	1284.67	12.66	1283.09	8.63	1287.12	8.79	1286.96	9.61	1286.14
MW-7D	1295.37	8.75	1286.62	7.82	1287.55	9.80	1285.57	8.66	1286.71	8.16	1287.21	9.31	1286.06
MW-8S	1295.21	6.41	1288.80	6.36	1288.85	8.02	1287.19	5.93	1289.28	6.11	1289.10	7.79	1287.42
MW-8D	1295.48	6.02	1289.46	5.92	1289.56	6.13	1289.35	5.99	1289.49	5.90	1289.58	6.26	1289.22
MW-9	1291.95	6.77	1285.18	6.51	1285.44	6.99	1284.96	5.34	1286.61	6.32	1285.63	6.85	1285.10
MW-10R	1295.11	8.15	1286.96	8.08	1287.03	9.93	1285.18	7.37	1287.74	7.52	1287.59	9.53	1285.58
MW-12	1294.91	5.86	1289.05	5.85	1289.06	6.95	1287.96	5.55	1289.36	5.57	1289.34	7.01	1287.90
MW-13	1294.20	5.14	1289.06	5.32	1288.88	6.92	1287.28	5.28	1288.92	5.01	1289.19	6.25	1287.95
MW-14	1294.59	5.74	1288.85	5.65	1288.94	6.54	1288.05	5.46	1289.13	5.46	1289.13	6.88	1287.71
OW-1	1292.59	11.48	1281.11	10.46	1282.13	12.05	1280.54	11.23	1281.36	10.01	1282.58	11.31	1281.28
OW-2	1293.96	12.40	1281.56	11.40	1282.56	13.11	1280.85	12.21	1281.75	10.07	1283.89	12.31	1281.65
OW-3	1292.01	4.26	1287.75	4.25	1287.76	4.28	1287.73	3.88	1288.13	NA	NA	4.98	1287.03
OW-4	NM	9.35	NA	8.80	NA	10.48	NA	9.00	NA	8.75	NA	9.36	NA
OW-5	1295.59	10.50	1285.09	9.45	1286.14	11.33	1284.26	7.94	1287.65	8.99	1286.60	10.71	1284.88
OW-6	1295.67	9.96	1285.71	9.22	1286.45	11.25	1284.42	9.13	1286.54	9.10	1286.57	10.70	1284.97
OW-7	NM	10.20	NA	9.22	NA	10.86	NA	10.03	NA	8.85	NA	10.13	NA

Definitions:

NA - Not Available

NM - Not Measured

Table 8.
Summary of Groundwater Elevation Data
DC Rollforms Site
Jamestown, New York

Well ID	Measuring [1] Point Elevation (ft amsl)	Operational Conditions 8/26/2015		Operational Conditions 5/12/2016		Operational Conditions 11/8/2016	
		Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]	Depth to [2] Water	Water-Level Elevation [3]
ESI-1	1296.37	12.10	1284.27	9.63	1286.74	7.25	1289.12
ESI-2	1295.08	11.57	1283.51	10.46	1284.62	7.1	1287.98
ESI-3[4]	1295.75	8.00	1287.75	7.66	1288.09	6.25	1289.50
ESI-4R	1294.96	12.15	1282.81	10.94	1284.02	10.30	1284.66
ESI-5	1293.08	7.69	1285.39	5.05	1288.03	4.05	1289.03
ESI-6	1295.24	9.73	1285.51	7.60	1287.64	5.86	1289.38
ESI-7	1295.12	10.93	1284.19	10.47	1284.65	6.74	1288.38
MW-4S	1295.75	12.74	1283.01	12.97	1282.78	10.28	1285.47
MW-7D	1295.37	10.40	1284.97	9.74	1285.63	6.77	1288.60
MW-8S	1295.21	10.63	1284.58	7.87	1287.34	6.15	1289.06
MW-8D	1295.48	7.00	1288.48	6.20	1289.28	5.88	1289.60
MW-9	1291.95	7.57	1284.38	7.40	1284.55	6.41	1285.54
MW-10R	1295.11	12.71	1282.40	10.90	1284.21	8.09	1287.02
MW-12	1294.91	9.76	1285.15	7.36	1287.55	5.57	1289.34
MW-13	1294.20	9.51	1284.69	7.35	1286.85	4.77	1289.43
MW-14	1294.59	9.01	1285.58	6.75	1287.84	5.44	1289.15
OW-1	1292.59	12.54	1280.05	11.72	1280.87	7.61	1284.98
OW-2	1293.96	13.57	1280.39	12.80	1281.16	8.99	1284.97
OW-3	1292.01	6.65	1285.36	4.45	1287.56	3.22	1288.79
OW-4	NM	11.02	NA	10.32	NA	7.30	NA
OW-5	1295.59	11.82	1283.77	10.91	1284.68	7.20	1288.39
OW-6	1295.67	11.62	1284.05	10.99	1284.68	7.25	1288.42
OW-7	NM	10.99	NA	10.47	NA	6.99	NA

Definitions:

NA - Not Available

NM - Not Measured

Table 9.
Summary of TCE, DCE, and VC in Groundwater Samples
DC Rollforms Site
Jamestown, New York

Well ID	MW-8S		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
December 1998	< 5	8,500	1,100
January 1999	< 5	9,300	2,100
February 1999	3,000	2,500	< 10
March 1999	120	1,406	330
April 1999	130	4,416	480
May 1999	320	2,110 J	62 J
July 1999	35 J	1,600	290
September 1999	96 J	7,100	1,600
January 2000	9	50	72
July 2000	< 5	1,107 J	820
December 2001	85	11 J	1 J
March 2002	6	51 J	18
July 2002	< 5	4.6 J	5 J
October 2002	< 20	410	130
December 2002	3 J	37 J	23
August 2003	9	8.8	3
December 2003	< 5	50 J	49
June 2004	< 5	9.6 J	35
November 2004	< 20	400	93
July 2005	< 20	320	180
March 2008	150 D	758 DJ	60 DJ
June 2008	< 100	3,100 D	910
September 2008	46 J	6,029 DJ	1,800
December 2008	26	69 J	1.5
March 2009	23	92	< 1
June 2009	42	3,000	350
September 2009	57	7,800 D	870
December 2009	67	4,400	270
March 2010	< 25	4,700	580
June 2010	< 25	5,400 D	690
October 2010	58	1,811	57
December 2010	14	66	< 1
March 2011	25	145	3
June 2011	10	3,902 D	334 D
October 2011	12	2,744 D	115 D
December 2011	16	158	< 1
March 2012	29.5	399.5	24.2
October 2012	< 1	809	1270
March 2013	16.7	121	< 1
August 2013	1.6	3410.1	242
March 2014	16.5	134.1	< 1
August 2014	11	4,137	631
March 2015	9.3	34.9	<1
August 2015	2.3	1,440	0.32 J
May 2016	11.2	7,446	648
November 2016	< 1	40	< 1
January 2017	2.9	10	2.9
April 2017	2	10	2.2

Well ID	MW-9		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
March 2008	3.4 J	6.9 J	3.6 J
June 2008	10	< 5	< 5
September 2008	9.8 J	2.2 J	< 25
December 2008	6.8	0.52 J	< 1
March 2009	4.8	2.7	1.4
June 2009	7.2	< 1	< 1
September 2009	11	< 1	< 1
December 2009	4.1	< 1	< 1
March 2010	2.1	2.7	1.9
June 2010	5.3	< 1	< 1
October 2010	8.4	< 1	< 1
December 2010	4.7	< 1	< 1
March 2011	4	4.2	1.5
June 2011	9	< 1	< 1
October 2011	8.6	< 1	< 1
December 2011	6.7	< 1	< 1
March 2012	4.4	1.4	< 1
October 2012	3.4	3.0	4.4
March 2013	3	< 1	< 1
August 2013	4	2.4	< 1
March 2014	1.9	< 1	< 1
August 2014	3.9	< 1	< 1
March 2015	1.9	< 1	< 1
August 2015	2.3	3.5	0.75 J
May 2016	2.2	1.0	< 1
November 2016	3.9	< 1	< 1

Well ID	MW-10R[4]		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
June 2010	3.9	12	< 2
October 2010	56	260	< 2
December 2010	22	9.4	< 1
March 2011	76	17	< 1
June 2011	9.3	273	1.8
October 2011	86	143	< 1
December 2011	11	31	< 1
March 2012	17	111	< 1
May 2012	13.2	157	< 1
October 2012	< 1	1.7	< 1
December 2012	1.1	41	< 1
March 2013	79.3	38.6	< 1
June 2013	9.6	19.4	< 1
August 2013	< 1	23	< 1
November 2013	1.5	2.1	< 1
March 2014	31.4	25.8	< 1
May 2014	53.4	26.7	< 1
August 2014	13.2	41.9	1.1
December 2014	13	16.2	< 1
March 2015	19.3	7.1	< 1
May 2015	22.4	96	< 1
August 2015	< 1	12	< 1
May 2016	2.6	89.9 J	3.7
November 2016	109	54.6	< 1

Well ID	MW-12		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
December 1998	81	524 J	260
January 1999	60	460	120
February 1999	4,400 B	9,800	< 10
March 1999	66 J	4,516	380
April 1999	510	9,200	710 J
May 1999	300	7,438 J	360 J
July 1999	6	29 J	83
September 1999	56	1,000	120
January 2000	12 J	1,100	920
July 2000	< 5	< 5	< 10
December 2001	< 5	15 J	< 10
March 2002	7	172 J	120
July 2002	< 5	35	24
October 2002	10	48 J	37
December 2002	64	301 J	130
August 2003	42	40	100
December 2003	22	140	220
June 2004	< 5	11	26
November 2004	32	140	140
July 2005	0.76	51	86
March 2008	44	1,808 DJ	400
June 2008	< 100	1900	470
September 2008	< 50	810	410
December 2008	1,600 D	1,808 D	30
March 2009	540	760	14
June 2009	280	2300	140
September 2009	< 20	5,800 D	230
December 2009	470	3,500	59
March 2010	510	3800	140
June 2010	110	4,800	440
October 2010	36	970	310
December 2010	230	1,200	< 10
March 2011	127	620.4	9.4
June 2011	194	3,843 D	364 D
October 2011	1,750 D	1,942 D	15
December 2011	828 D	2,032 D	25
March 2012	188	1,580	25.3
May 2012	5870	9,958	106
October 2012	< 1	2,685	3860
December 2012	692	1,244	5.8
March 2013	130	745	< 1
June 2013	393	2,092	76.7
August 2013	198	1,016	460
November 2013	1010	1,810	58.4
March 2014	202	809	< 5
May 2014	140	998.9	< 5
August 2014	< 5	1,387.3	1200
December 2014	262	1,064.9	14.3
March 2015	92.1	629.2	< 5
May 2015	390	2,272	176
August 2015	38.7	1541.8	389
May 2016	149	1857.5	230
November 2016	58.6	510.3	64
January 2017	26.2	163	15.2
April 2017	14.4	125	19.9

Definitions:

B - indicates a results > = MDL but < RL
D - Identifies an analysis that used a secondary dilution factor
DCE - Dichloroethene
J - Indicates an estimated value
TCE - Trichloroethene
µg/L - micrograms per liter
VC - Vinyl Chloride

Table 9.
Summary of TCE, DCE, and VC in Groundwater Samples
DC Rollforms Site
Jamestown, New York

Well ID	MW-13			Well ID	MW-14			Well ID	ESI-1			Well ID	ESI-2		
Date	Analyte (µg/L)[1]			Date	Analyte (µg/L)[1]			Date	Analyte (µg/L)[1]			Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC		TCE	DCE (total)[2]	VC		TCE	DCE (total)[2]	VC		TCE	DCE (total)[2]	VC
July 2000	< 5	6	4 J	July 2000	13 J	4,700	1,400	July 2002	< 100	210	2,300	July 2002	< 20	21	390
December 2001	24	< 5	< 5	December 2001	< 5	3,000	610	October 2002	< 20	21	460	October 2002	< 10	< 10	52
July 2002	0.9 J	< 5	< 5	March 2002	< 5	6,600	1,100	August 2003	< 20	16	420	August 2003	< 5	< 5	36
October 2002	< 5	< 5	< 5	July 2002	NA	14,000	3,800	December 2003	< 5	1 J	1 J	December 2003	< 20	230	500
December 2002	51	3 J	< 5	October 2002	< 500	8,400	2,000	June 2004	< 500	92 J	1,300	June 2004	< 5	5 J	190
August 2003	3	< 5	< 5	December 2002	< 250	6,816 J	1,400	December 2004	< 5	< 5	< 5	December 2004	< 5	< 5	12
December 2003	< 5	< 5	< 5	August 2003	< 1,200	20,000	1,900	July 2005	< 50	70	1,200	July 2005	< 5	< 5	75
June 2004	< 5	< 5	< 5	December 2003	< 500	16,000	2,200	March 2008	< 50	< 50	< 50	March 2008	< 25	< 25	< 25
November 2004	< 5	< 5	< 5	June 2004	< 1,000	19,000	2,500	June 2008	< 50	< 50	< 50	December 2008	< 1	< 1	< 1
July 2005	< 5	< 5	< 5	December 2004	< 500	16,000	2,300	September 2008	< 50	< 50	< 50	March 2009	< 1	< 1	< 1
March 2008	2.7 J	48 J	24	March 2008	1.7 J	1,009 DJ	340	December 2008	< 1	< 1	< 1	March 2010	< 1	< 1	< 1
June 2008	6.7	1,306 DJ	85	June 2008	< 100	1,800	550	March 2009	< 1	< 1	< 1	June 2010	< 1	< 1	< 1
September 2008	< 100	1,700 D	890	September 2008	< 100	1,814 J	3,900 D	June 2009	< 1	< 1	< 1	October 2010	< 1	< 1	< 1
December 2008	61	523 DJ	200 D	December 2008	3.7	975 DJ	390 D	September 2009	< 1	3.2	< 1	December 2010	< 1	< 1	< 1
March 2009	41	1,700	630	March 2009	< 5	620	150	December 2009	< 1	< 1	< 1	March 2011	< 1	< 1	< 1
June 2009	< 50	6,200	1,700	June 2009	< 10	1,100	450	March 2010	< 1	3.6	< 1	June 2011	4.1	< 1	1.1
September 2009	< 25	2,600	170	September 2009	< 2.5	190	300	June 2010	< 1	< 1	< 1	October 2011	< 1	< 1	< 1
December 2009	< 5	900	400	December 2009	< 2.5	710 D	310	October 2010	< 1	< 1	< 1	December 2011	< 1	< 1	< 1
March 2010	< 5	510	170	March 2010	< 5	1,307 D	510	December 2010	< 1	< 1	< 1	March 2012	< 1	< 1	< 1
June 2010	< 5	1,400 D	530	June 2010	< 2	220	280	March 2011	< 1	< 1	< 1	October 2012	< 1	< 1	< 1
October 2010	< 10	5,157 D	4,500 D	October 2010	< 1	85	170	June 2011	< 1	< 1	< 1	March 2013	< 1	< 1	< 1
December 2010	< 25	4,500 D	4,300	December 2010	3.4	1,607 D	390 D	October 2011	< 1	< 1	< 1	August 2013	< 1	< 1	< 1
March 2011	5.8	363	612	March 2011	66	1,809	451	December 2011	< 1	< 1	< 1	March 2014	< 1	< 1	< 1
June 2011	5.7	325	377	June 2011	< 1	1,419 D	544	March 2012	< 1	< 1	< 1	August 2014	0.54 J	< 1	0.89 J
October 2011	85	1,538 D	1,310 D	October 2011	3.4	2,230 D	476 D	October 2012	< 1	10.9	11.8	March 2015	0.47 J	< 1	< 1
December 2011	79	916 D	494 D	December 2011	3.1	1,282 D	353	March 2013	< 1	< 1	< 1	August 2015	< 1	2.8	1.4
March 2012	36.7	392	243	March 2012	< 1	3401.3	1260	August 2013	< 1	< 1	< 1	May 2016	< 1	0.76 J	1.2
May 2012	495	3,116	682	May 2012	< 1	568	209	March 2014	< 1	< 1	< 1	November 2016	3.7	< 1	< 1
October 2012	< 1	2,554	3,100	October 2012	< 1	24.9	65	August 2014	< 1	< 1	< 1				
December 2012	72.2	316	15	December 2012	2.9	1828.7	194	March 2015	< 1	< 1	< 1				
March 2013	52.8	350	27.7	March 2013	< 1	801	158	August 2015	< 1	< 1	< 1				
June 2013	40.9	971.3	60.2	June 2013	< 1	2512.5	611	May 2016	< 1	< 1	< 1				
August 2013	< 1	1,564	1,000	August 2013	< 1	888.2	526	November 2016	< 1	< 1	< 1				
November 2013	29.5	125	8.2	November 2013	< 1	2310	1190								
March 2014	25.6	277.6	180	March 2014	< 4	1044.9	590								
May 2014	46.5	321.6	18.1	May 2014	< 10	1640.2	1030								
August 2014	46	2,395	236	August 2014	912	4016 J	204								
December 2014	11.2	198	350	December 2014	< 5	1494.2	1970								
March 2015	12.1	175.3	27	March 2015	< 5	1236	954								
May 2015	1.9	2.2	326	May 2015	1.6	427	523								
August 2015	< 1	10,009	5,910	August 2015	< 5	285	453								
May 2016	< 1	145	181	May 2016	< 5	788.1	871								
November 2016	25	121	48	November 2016	1.7	194.7	303								
January 2017	< 2	7	9.3	January 2017	0.6	105	150								
April 2017	<1	2	2.4	April 2017	0.5	59	98.5								

Definitions:

B - indicates a results > = MDL but < RL
D - Identifies an analysis that used a secondary dilution factor
DCE - Dichloroethene
J - Indicates an estimated value
TCE - Trichloroethene
µg/L - micrograms per liter
VC - Vinyl Chloride

Table 9.
Summary of TCE, DCE, and VC in Groundwater Samples
DC Rollforms Site
Jamestown, New York

Well ID	ESI-4R[3]		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
October 2010	150	186	38
December 2010	12	410	39
March 2011	134	410	52
June 2011	15	1,165 D	248 D
October 2011	4.2	391	102
December 2011	2.5	480 D	101
March 2012	3.5	2,070	825
August 2013	< 1	98	9.2
March 2014	1.2	315	51.9
August 2014	1.1	253.5	33.6
March 2015	10.1	230.8	86
August 2015	2.1	180	29.1
May 2016	2.1	194	39.5
November 2016	< 1	330	431.0

Well ID	ESI-6		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
December 1998	2 J	19	13
January 1999	< 5	30	34
February 1999	360	22	< 10
March 1999	390	82	50
April 1999	520	75	45 J
May 1999	280	39	42
July 1999	120	12	11
September 1999	610	8 J	< 10
January 2000	130	46	24
July 2000	< 5	< 5	< 10
December 2001	3	14	5
March 2002	< 5	49	26
July 2002	1 J	4 J	2 J
October 2002	< 5	1 J	< 5
December 2002	< 5	14	9
August 2003	< 5	2	< 5
December 2003	4 J	67	23
June 2004	< 5	6	12
November 2004	< 5	43	11
July 2005	< 5	14	6
March 2008	< 5	1.6 J	3.6 J
June 2008	< 5	< 5	1.5 J
September 2008	< 5	2.6 J	3.2 J
December 2008	< 1	2.2	1.1
March 2009	9.1	6.8	2.4
June 2009	1.4	1.1	< 1
September 2009	< 1	< 1	< 1
December 2009	< 1	2.1	< 1
March 2010	< 1	< 1	< 1
June 2010	< 1	< 1	< 1
October 2010	< 1	< 1	< 1
December 2010	< 1	1.6	< 1
March 2011	1.1	2.5	< 1
June 2011	< 1	< 1	< 1
October 2011	< 1	< 1	< 1
December 2011	< 1	1.5	< 1
March 2012	< 1	< 1	< 1
October 2012	< 1	< 1	< 1
March 2013	< 1	< 1	< 1
August 2013	< 1	1.3	< 1
March 2014	< 1	< 1	< 1
August 2014	< 1	< 1	< 1
March 2015	0.51 J	1.6	< 1
August 2015	< 1	0.87 J	0.21 J
May 2016	< 1	< 1	< 1
November 2016	< 1	1.5	< 1

Well ID	ESI-7		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
December 1998	320	8	< 10
January 1999	< 5	3	< 10
February 1999	16	19	< 10
March 1999	100	40	2 J
April 1999	180	37	4 J
May 1999	77	83 J	88
July 1999	89	2.5 J	4 J
September 1999	190	4 J	< 10
January 2000	33	49.7 J	3 J
July 2000	4 J	14	< 10
December 2001	7	17 J	2 J
March 2002	65	261 J	2 J
July 2002	9	204 J	33
October 2002	1 J	7	2 J
December 2002	24	83 J	1 J
August 2003	10	93	5
December 2003	13	171 J	4 J
July 2004	< 5	17 J	11
November 2004	10	66	< 5
July 2005	< 5	19	18
March 2008	2.2 J	20	2.4 J
June 2008	< 5	< 5	< 5
September 2008	< 5	1.1 J	0.55 J
December 2008	0.79 J	3.2	< 1
March 2009	7.9	5.7	< 1
June 2009	< 1	< 1	< 1
September 2009	< 1	1.4	< 1
December 2009	< 1	1.8	1.4
March 2010	1.1	5.6	3.2
June 2010	< 1	1.1	1.2
October 2010	< 1	2.6	1.2
December 2010	7.3	13	< 1
March 2011	44	168	6.8
June 2011	< 1	1.3	1.6
October 2011	< 1	1.2	< 1
December 2011	1.2	9.1	< 1
March 2012	8.5	10.1	1.5
October 2012	< 1	2.1	4.4
March 2013	< 1	< 1	< 1
August 2013	< 1	< 1	< 1
March 2014	10.2	8.0	1.5
August 2014	< 1	1.3	0.79
March 2015	5.5	14.1	< 1
August 2015	< 1	3.6	0.51 J
May 2016	33.1	62.4	3.4
November 2016	1.9	4.8	< 1

Well ID	OW-5		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
March 2008	< 5	< 5	< 5
June 2008	< 5	6,656 DJ	11,000 D
September 2008	< 25	7,213 DJ	11,000 D
December 2008	< 1	< 1	< 1
March 2009	< 1	< 1	< 1
June 2009	< 5	930	780
September 2009	< 5	3,200 D	5,400 D
December 2009	< 1	130	130
March 2010	< 1	1,709 D	1,400 D
June 2010	< 10	5,100 D	4,200 D
October 2010	< 2	46	110
December 2010	< 1	< 1	< 1
March 2011	< 1	< 1	< 1
June 2011	1	2,558 D	1650
October 2011	< 1	187	137 D
December 2011	< 1	< 1	< 1
March 2012	< 1	1207.5	1030
October 2012	< 1	2554.2	4060
March 2013	< 1	9.3	< 1
August 2013	< 1	1868.8	2,710
March 2014	< 1	22.9	25
August 2014	< 1	385.7 J	1000
March 2015	3.2	< 1	< 1
August 2015	0.56 J	98	262
May 2016	< 1	171	463
November 2016	< 1	< 1	< 1

Definitions:

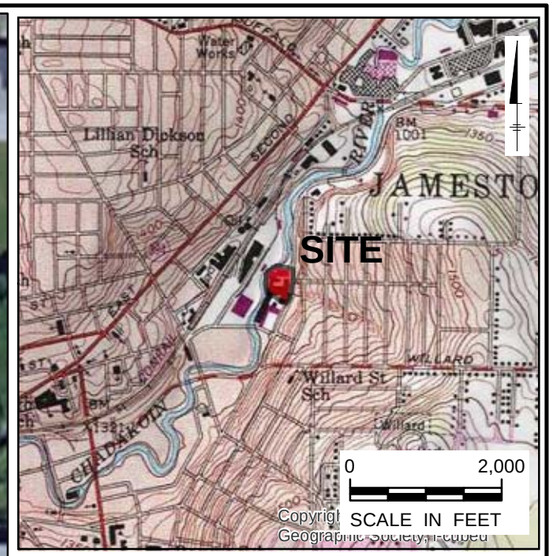
B - indicates a results > = MDL but < RL
D - Identifies an analysis that used a secondary dilution factor
DCE - Dichloroethene
J - Indicates an estimated value
TCE - Trichloroethene
µg/L - micrograms per liter
VC - Vinyl Chloride

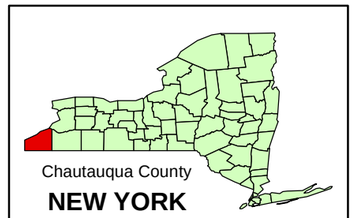
Table 9.
Summary of TCE, DCE, and VC in Groundwater Samples
DC Rollforms Site
Jamestown, New York

Well ID	OW-6		
Date	Analyte (µg/L)[1]		
	TCE	DCE (total)[2]	VC
March 2008	42	343 DJ	76
June 2008	11 J	100	310
September 2008	14 J	130	330
December 2008	230 D	98 D	0.8 J
March 2009	480	210	< 2.5
June 2009	94	290	40
September 2009	35	300	120
December 2009	200	640 D	9.8
March 2010	59	606	150
June 2010	20	420	120
October 2010	32	223	220
December 2010	190 D	180	1.4
March 2011	3.6	6.1	< 1
June 2011	15	249	17
October 2011	2.7	11.7	< 1
December 2011	610 D	362 D	< 1
March 2012	298	314	4.3
May 2012	66.8	414	57.5
October 2012	9.6	93.6	100
December 2012	13.8	85.5	57.6
March 2013	27.8	46	< 1
June 2013	35	157	87.5
August 2013	28.5	207.0	290
November 2013	1	2.1	1.6
March 2014	827	544	< 4
May 2014	672	358.1	1.8
August 2014	67	450.3	47.1
December 2014	17.1	48.2	0.46 J
March 2015	214	283	< 4
May 2015	197	5.6 J	176
August 2015	30.6	420.3	190
May 2016	68.1	600.2	108
November 2016	45.3	522	12

Definitions:
B - indicates a results > = MDL but < RL
D - Identifies an analysis that used a secondary dilution factor
DCE - Dichloroethene
J - Indicates an estimated value
TCE - Trichloroethene
µg/L - micrograms per liter
VC - Vinyl Chloride

FIGURES





LEGEND

- Property Line
- Riverbank
- Flow Direction

0 60 120

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

SOURCE: ESRI Online Imagery (May 2015).

INGERSOLL RAND - DC ROLLFORMS SITE
NYSDEC SITE NO. 907019, JAMESTOWN, NEW YORK

2016-2017 PRR

Site Location Map

ARCADIS Design & Consultancy for natural and built assets

FIGURE **1**

CITY: (CITRIX) DIV/GROUP: (ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(T.CARIGNAN) BY: JRAPP
PROJECT: AY000219.0024 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\SEMIANNUALREPORTVF1 DCR_GWMON REG SITE LOC.MXD SAVED: 5/8/2017

LEGEND

- Monitoring Well
- Recovery Well (passive)
- Injection Well (inactive)
- Observation Well
- Vacuum Enhanced Pumping Well
- VEP Valve Box
- Property Line
- Interlocking Sheet Pile/Hydraulic Barrier Wall
- High Water Mark
- Bundled Process Line
- Discharge Line
- Recovery Well Piping
- Vacuum Line
- Overhead Electrical/Telecom Line
- Sanitary Sewer Line
- Bollard Pipe
- Effluent Pipe Clean Out
- Fire Hydrant
- Sewer Manhole
- Utility Pole

NOTE: All locations are approximate.

0 40 80

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

SOURCE: ESRI Online Imagery (May 2015).

INGERSOLL RAND - DC ROLLFORMS SITE
NYSDEC SITE NO. 907019, JAMESTOWN, NEW YORK

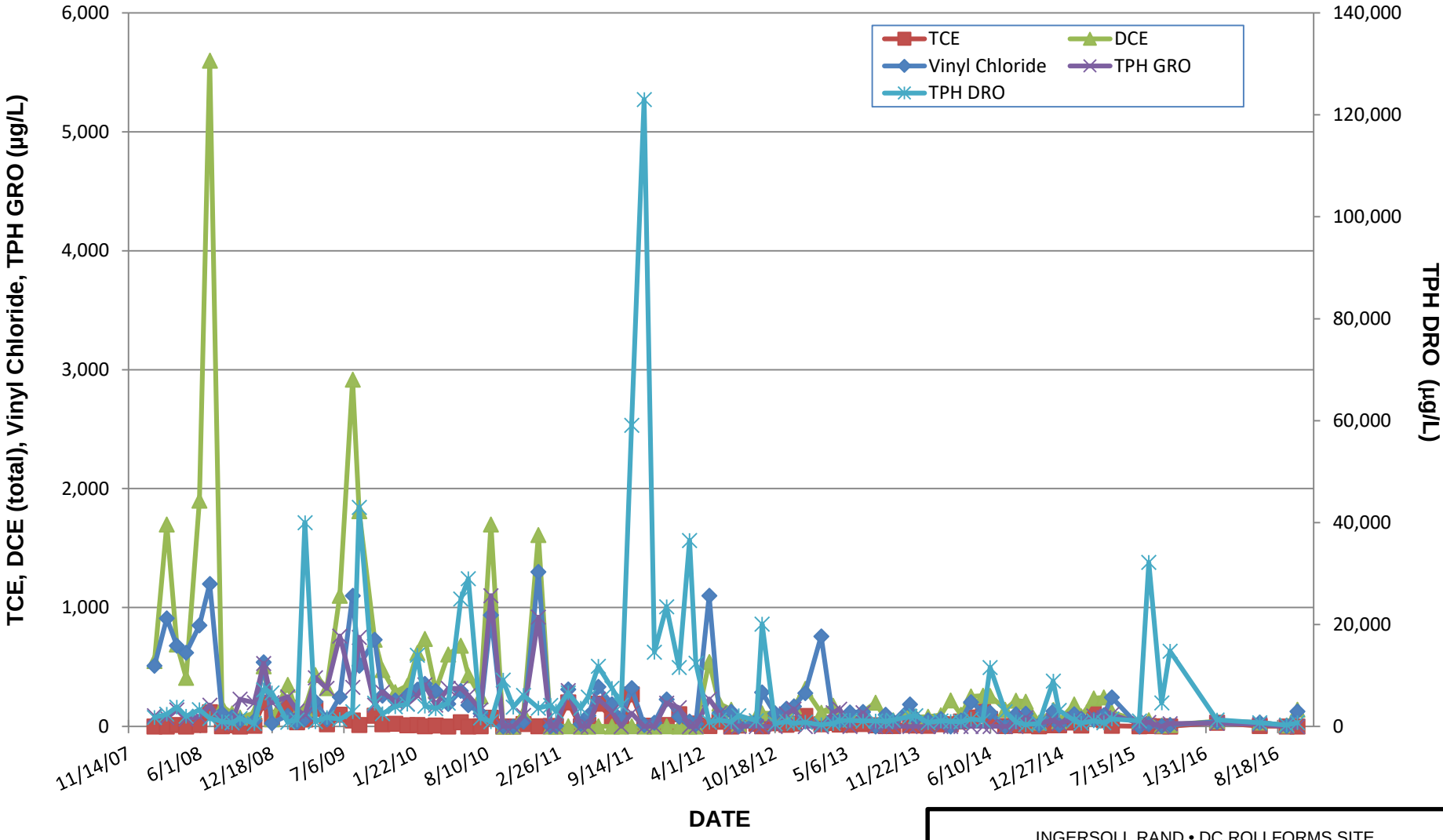
2016-2017 PRR

Site Plan/Remedial System Layout

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: (KNOXVILLE) DIV/GROUP:(ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(T.CARIGNAN) BY: JRAPP
PROJECT: AY000219.0024 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\SEMIANNUALREPORT\F2 DCR_GWMON SITE PLAN.MXD SAVED: 5/8/2017



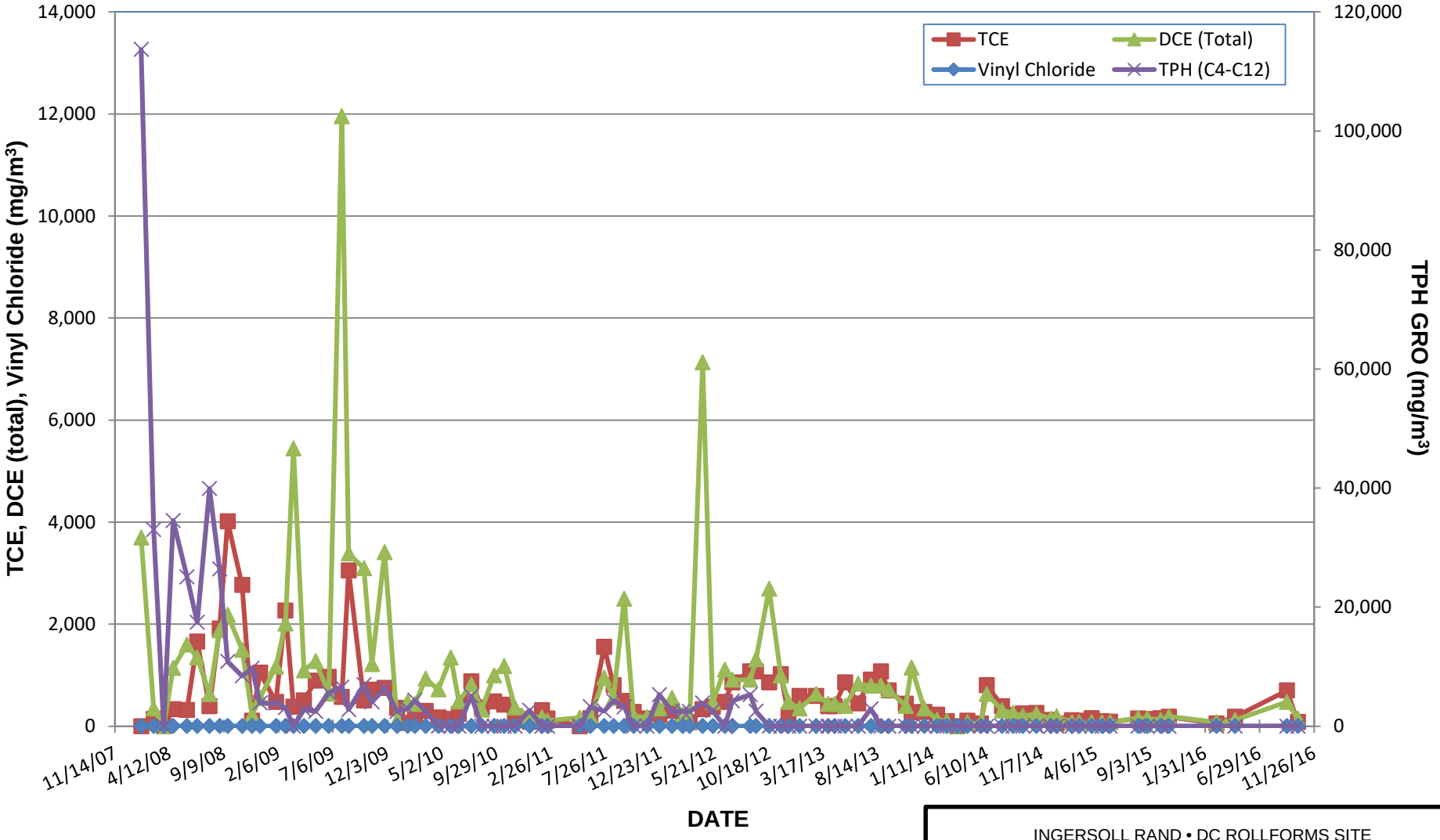
Definitions:
DCE – Dichloroethene
DRO – Diesel Range Organics
GRO – Gasoline Range Organics
mg/L – milligrams per liter
TCE – Trichloroethene
TPH – Total Petroleum Hydrocarbons
µg/L – micrograms per liter

INGERSOLL RAND • DC ROLLFORMS SITE
JAMESTOWN, NEW YORK
2016-2017 PRR

System Influent Dissolved Phase Concentrations

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3



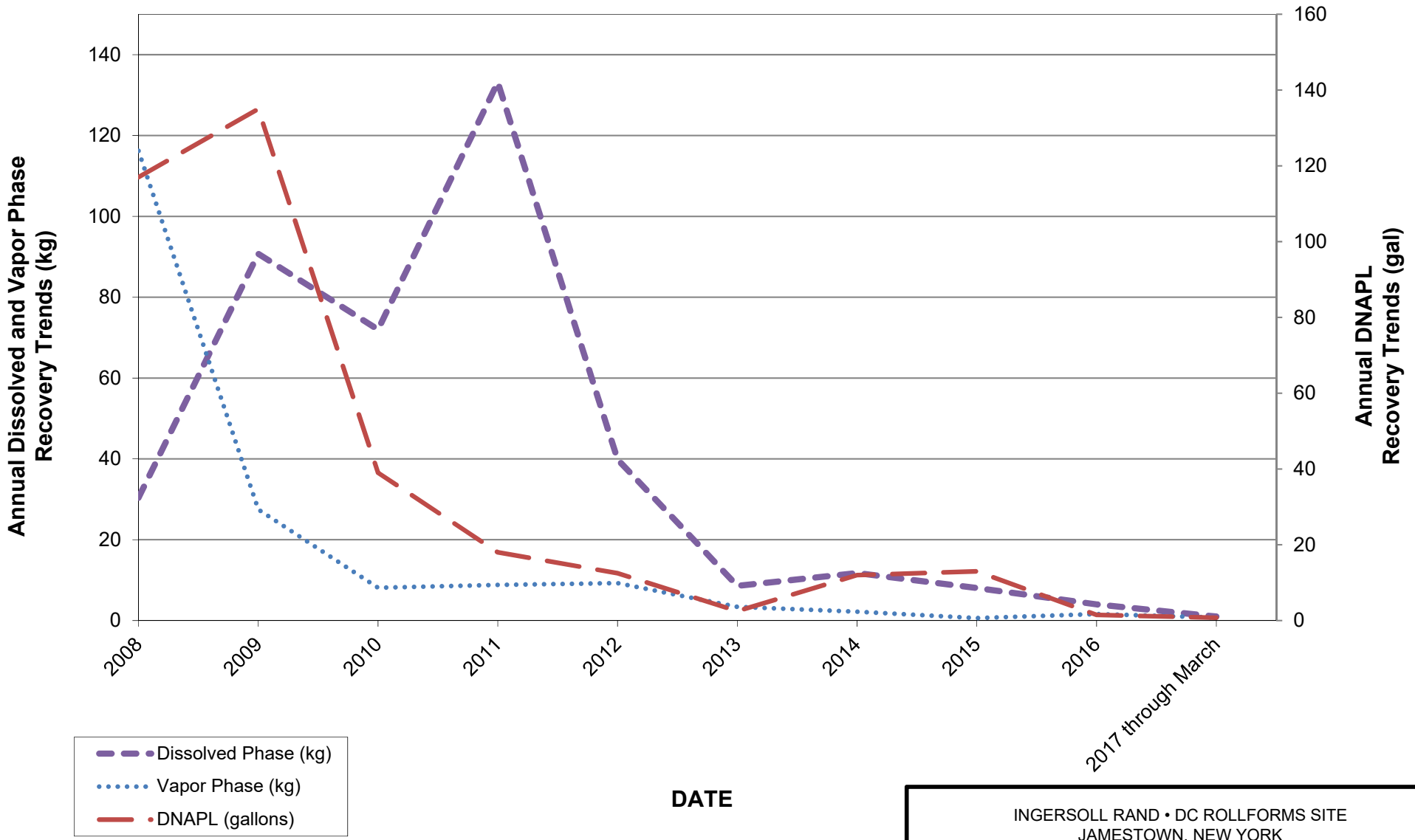
Definitions:
DCE – Dichloroethene
GRO – Gasoline Range Organics
mg/m³ – milligram per cubic meters
TCE – Trichloroethene
TPH – Total Petroleum Hydrocarbons

INGERSOLL RAND • DC ROLLFORMS SITE
JAMESTOWN, NEW YORK
2016-2017 PRR

System Influent Vapor Phase Concentrations

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

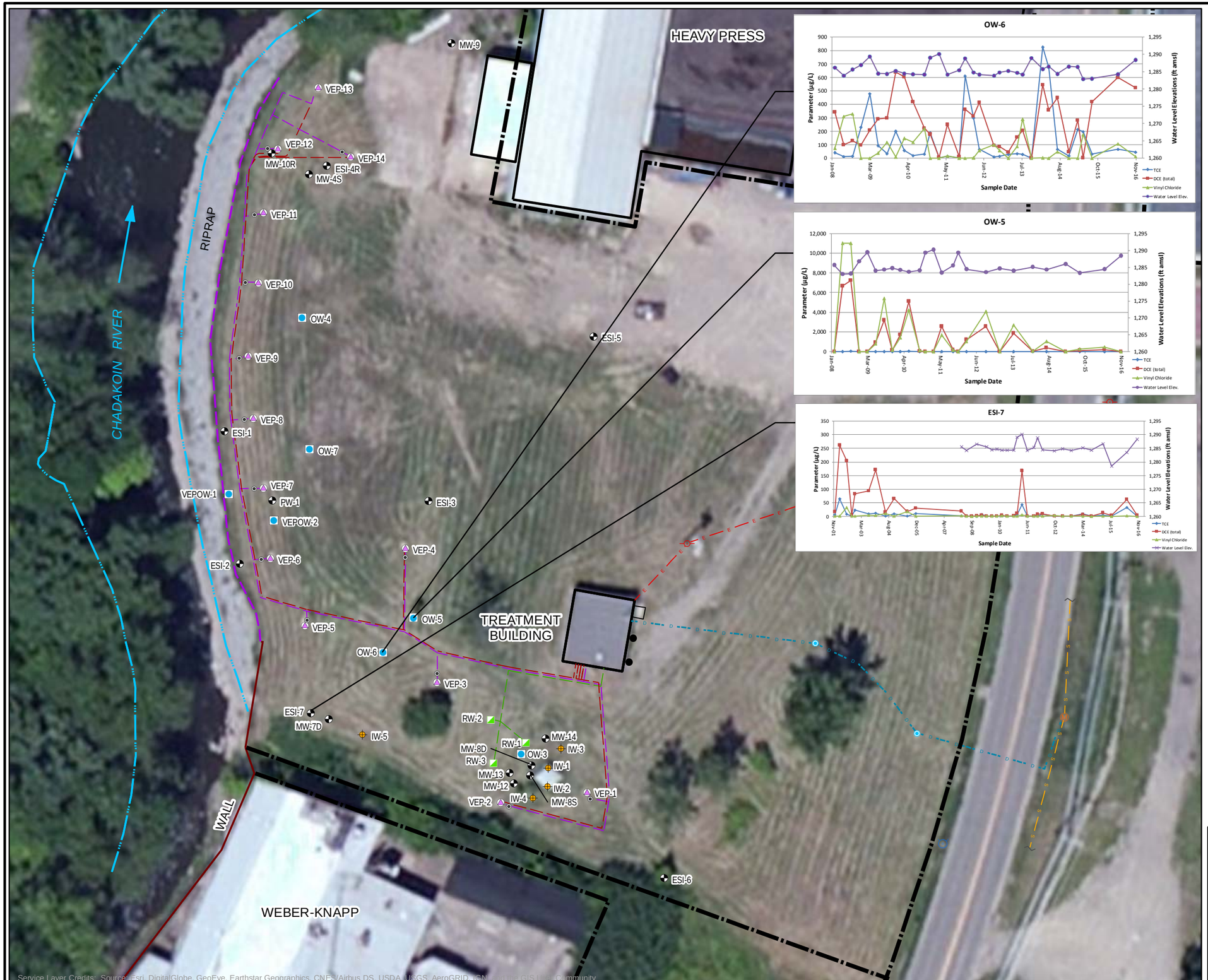


INGERSOLL RAND • DC ROLLFORMS SITE
JAMESTOWN, NEW YORK
2016-2017 PRR

Annual Mass Recovery Trends vs. Time

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5



LEGEND

- Monitoring Well
- Recovery Well (passive)
- Injection Well (inactive)
- Observation Well
- Vacuum Enhanced Pumping Well
- VEP Valve Box
- Property Line
- Interlocking Sheet Pile/Hydraulic Barrier Wall
- High Water Mark
- Bundled Process Line
- Discharge Line
- Recovery Well Piping
- Vacuum Line
- Overhead Electrical/Telecom Line
- Sanitary Sewer Line
- Bollard Pipe
- Effluent Pipe Clean Out
- Fire Hydrant
- Sewer Manhole
- Utility Pole

NOTE: All locations are approximate.

0 40 80

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

SOURCE: ESRI Online Imagery (May 2015).

INGERSOLL RAND - DC ROLLFORMS SITE
NYSDEC SITE NO. 907019, JAMESTOWN, NEW YORK

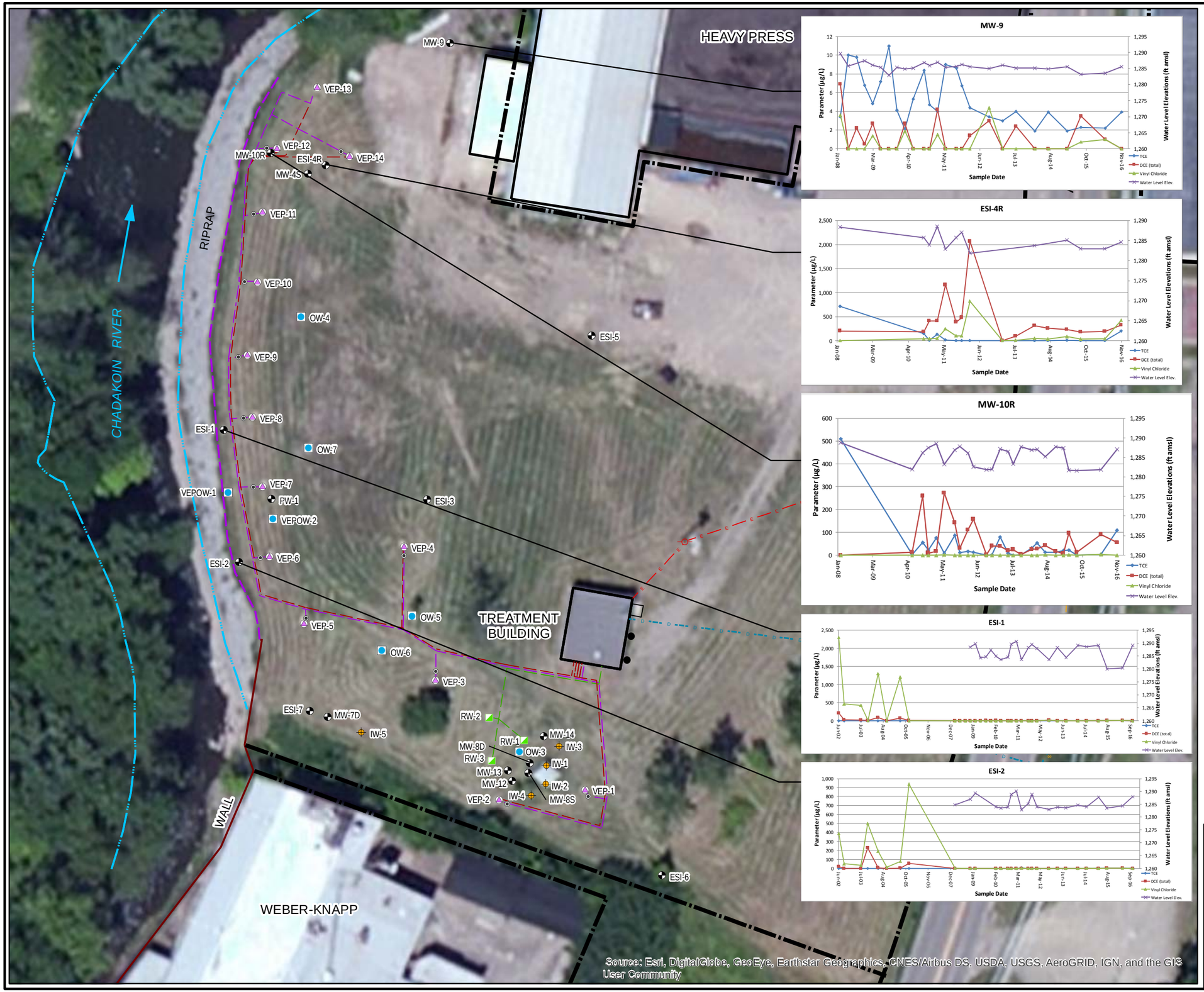
2016-2017 PRR

Summary of Groundwater Monitoring Analytical Results

ARCADIS Design & Consultancy for natural and built assets

FIGURE **6A**

CITY:(KNOXVILLE) DIV/GROUP:(ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(T.CARIGNAN) BY: JRAPP
PROJECT: AY000219.0024 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\SEMIANNUALREPORTF6A DCR_GWMON_SEMIANUAL.MXD SAVED: 5/8/2017



LEGEND

- Monitoring Well
- Recovery Well (passive)
- Injection Well (inactive)
- Observation Well
- Vacuum Enhanced Pumping Well
- VEP Valve Box
- Property Line
- Interlocking Sheet Pile/Hydraulic Barrier Wall
- High Water Mark
- Bundled Process Line
- Discharge Line
- Recovery Well Piping
- Vacuum Line
- Overhead Electrical/Telecom Line
- Sanitary Sewer Line
- Bollard Pipe
- Effluent Pipe Clean Out
- Fire Hydrant
- Sewer Manhole
- Utility Pole

NOTE: All locations are approximate.

0 40 80

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

SOURCE: ESRI Online Imagery (May 2015).

INGERSOLL RAND - DC ROLLFORMS SITE
NYSDEC SITE NO. 907019, JAMESTOWN, NEW YORK

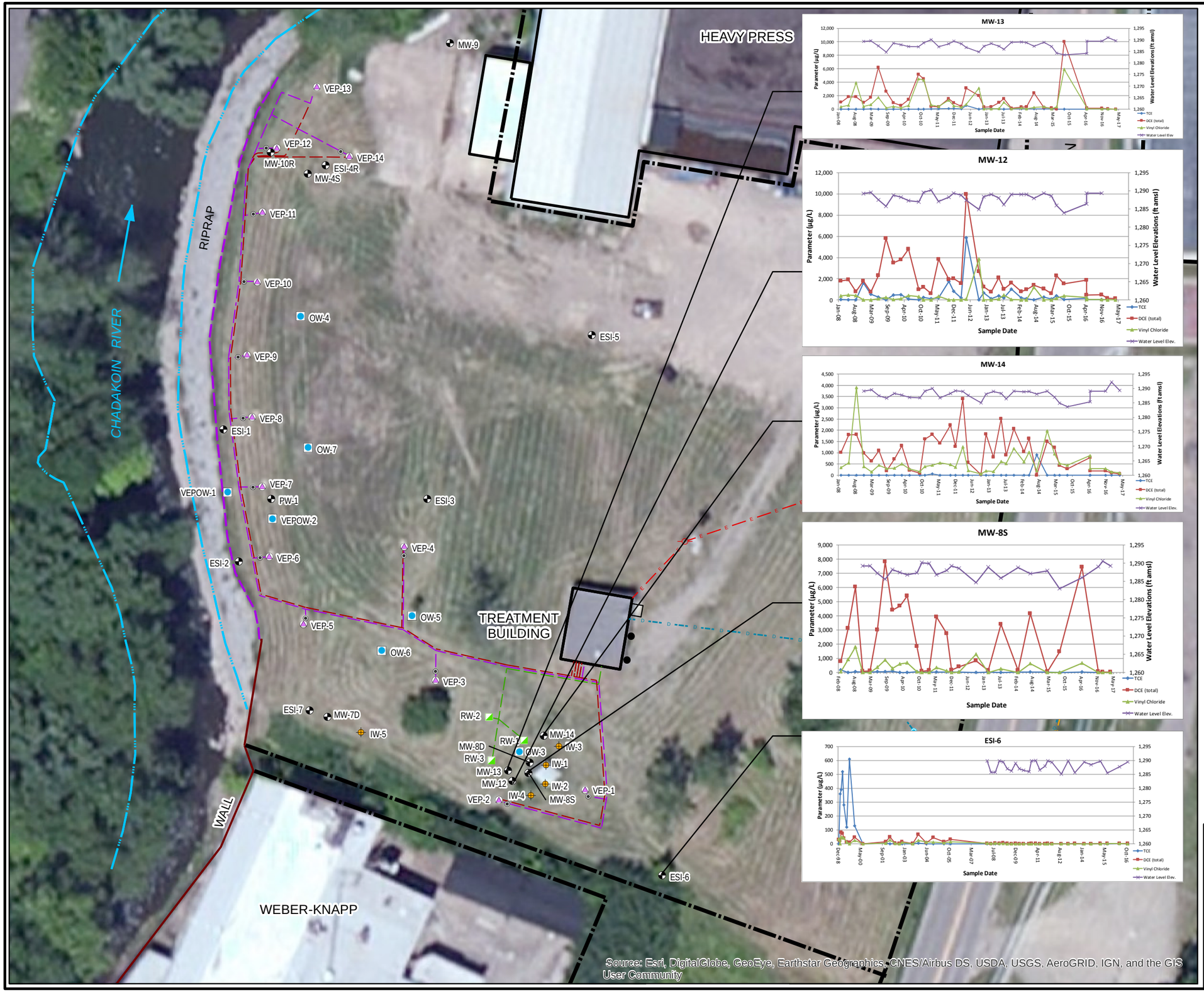
2016-2017 PRR

Summary of Groundwater Monitoring Analytical Results

ARCADIS Design & Consultancy for natural and built assets

FIGURE **6B**

CITY: (KNOXVILLE) DIV/GROUP:(ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(T.CARIGNAN) BY: JRAPP
PROJECT: AY000219.0024 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\SEMIANNUALREPORT\F6B DCR_GWMON_SEMIANUAL.MXD SAVED: 5/8/2017



LEGEND

- Monitoring Well
- Recovery Well (passive)
- Injection Well (inactive)
- Observation Well
- Vacuum Enhanced Pumping Well
- VEP Valve Box
- Property Line
- Interlocking Sheet Pile/Hydraulic Barrier Wall
- High Water Mark
- Bundled Process Line
- Discharge Line
- Recovery Well Piping
- Vacuum Line
- Overhead Electrical/Telecom Line
- Sanitary Sewer Line
- Bollard Pipe
- Effluent Pipe Clean Out
- Fire Hydrant
- Sewer Manhole
- Utility Pole

NOTE: All locations are approximate.

0 40 80

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

SOURCE: ESRI Online Imagery (May 2015).

INGERSOLL RAND - DC ROLLFORMS SITE
NYSDEC SITE NO. 907019, JAMESTOWN, NEW YORK

2016-2017 PRR

Summary of Groundwater Monitoring Analytical Results

ARCADIS Design & Consultancy for natural and built assets

FIGURE **6C**

CITY: (KNOXVILLE) DIV/GROUP:(ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(T.CARIGNAN) BY: KIVES
PROJECT: AY000219.0024 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\SEMIANNUALREPORT\F6C DCR_GWMON_SEMIANNUAL.MXD SAVED: 6/30/2017

LEGEND

- Monitoring Well
- Recovery Well (passive)
- Injection Well (inactive)
- Observation Well
- Vacuum Enhanced Pumping Well
- VEP Valve Box
- Proposed Injection Well
- Property Line
- Interlocking Sheet Pile/Hydraulic Barrier Wall
- High Water Mark
- Bundled Process Line
- Discharge Line
- Recovery Well Piping
- Vacuum Line
- Overhead Electrical/Telecom Line
- Sanitary Sewer Line
- Bollard Pipe
- Effluent Pipe Clean Out
- Fire Hydrant
- Sewer Manhole
- Utility Pole

NOTE: All locations are approximate.

0 40 80

SCALE IN FEET

PROJECTION: NAD 1983 StatePlane New York West FIPS 3103 Feet

AERIAL SOURCE: ESRI Online Imagery (June 2013).

INGERSOLL RAND - DC ROLLFORMS SITE NYSDEC
SITE NO. 907019, JAMESTOWN, NEW YORK

2016-2017 PRR

**ISCO Pilot Test Area/
Injection Well Layout**

ARCADIS Design & Consultancy for natural and built assets

FIGURE
7

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

CITY: (KNOXVILLE) DIV/GROUP:(ENV/GIS) PIC:() PM:(M.SANFORD/M.WACKSMAN) TM:(M.AHMAD/T.CARIGNAN) BY: KIVES
PROJECT: AY000219.0020 PATH: Z:\GISPROJECTS_ENV\INGERSOLRAND\DC_ROLLOVER\MAPDOCS\2017\ISCO COST ESTIF1 DCR_ISCO CE SITE PLAN.MXD SAVED: 5/17/2017

APPENDIX A

Institutional Control and Engineering Control Forms

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 907019

Site Name D.C. (Dow Craft) Rollforms

Site Address: 583 Allen Street Zip Code: 14701
City/Town: Jamestown
County: Chautauqua
Site Acreage: 2.4

Reporting Period: June 15, 2016 to June 15, 2017

	YES	NO
1. Is the information above correct?	X	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	X
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	X
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	X

If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.

	YES	NO
5. Is the site currently undergoing development?	☐	X

Box 2

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

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 907019 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
307-13-2.2	~~Jamestown Allenco, Inc.~~ All Metal Press and Fabrication, Inc.	Site Management Plan Landuse Restriction Ground Water Use Restriction Soil Management Plan

Deed Restrictions (7/19/2005) Recorded - 11/29/2005:
1. Property use: Commercial or Industrial
2. Prohibition of use of groundwater.

Site Management Plan:Soils Management Plan and Inspections of Cover System, Rip Rap, Plantings, and Erosion.

Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
307-13-2.2	Groundwater Containment Subsurface Barriers Groundwater Treatment System

Box 5

Periodic Review Report (PRR) Certification Statements

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

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

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

YES	NO
X	☐

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

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

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

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
X	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

_____ _____

Signature of Owner, Remedial Party or Designated Representative — Date

IC CERTIFICATIONS
SITE NO. 907019

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Todd Carignan (print name) at 855 Route 146, Clifton Park, NY 12065 (print business address),

am certifying as Remedial Party (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

T. Carignan
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

7/5/2017
Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Moh Mohiuddin at 8 S River Rd, Cranbury, NJ 08512,
print name — print business address

am certifying as a Professional Engineer for the Remedial Party
(Owner or Remedial Party)

STATE OF NEW YORK
MOH MOHIUDDIN
074527
LICENSED PROFESSIONAL ENGINEER

07/05/2017

Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification | Stamp (Required for PE) | Date

APPENDIX B

Waste Manifests

ENVIRONMENTAL PRODUCTS & SERVICES OF VERMONT, INC.

24-Hour Emergency Phone Number
1-800-843-8265

Please print or type

BILL OF LADING

Generator EPA ID # NYD002123727

1. Document No. BUF5185

2. Page 1 of 1

3. Generator's Name and Mailing Address
INGERSOLL RAND ATTN: MICHAEL GOLDSTEIN
800 EAST BEATY STREET
DAVIDSON NC 28036

4. Generator's Phone (518) 250-7352

Site Address
583 ALLEN STREET
JAMESTOWN NY 14701

5. Transporter 1 Company Name: ENVIRONMENTAL PROD & SVCS OF VT, INC
6. EPA ID #: NYR000115733
A. State Transporter's ID
B. Transporter 1 Phone 800 843-8265
C. State Transporter's ID

7. Transporter 2 Company Name
8. EPA ID #
D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Environmental Prod & Svcs of VT, Inc.
4429 WALDEN AVE.
HM LANCASTER NY 14086
10. EPA ID #: NYR000198788
E. State Facility's ID
F. Facility's Phone 716 597-0001

GENERATOR

	11. Shipping Name	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a.	NON-RCRA, NON-DOT SOLIDS, N.O.S. (PETROLEUM CONTAMINATED SOIL)	004	DM	1540	P
b.	NON-RCRA, NON-DOT SOLIDS, N.O.S. (CARTRIDGE FILTERS)	002	DM	8	P
c.					
d.					

G. Additional Descriptions for Materials Listed Above

a. APP#: B1216027-DT, 11 X 55 GAL
b. APP#: B1216026-DT, 2 X 2 GAL
c.
d. JOB# B4254D

15. Special Handling Instructions and Additional Information
1)SOIL CUTTINGS WITH TRACE ORGANICS & METALS 2)

16. GENERATOR'S CERTIFICATION: I hereby certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulation of the Department of Transportation. The materials described on this document are not subject to federal uniform hazardous waste manifest requirements.

Printed/Typed Name	Signature	Date Month	Day	Year
Jeff Baker Dir. Global Logistics		05	25	17

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Matt Mack				

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the materials covered by this bill of lading except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year

BILL OF LADING

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
NYD002123727	1	800-843-8265	001215673 FLE

GENERATOR

5. Generator's Name and Mailing Address
INGERSOLL RAND ATTN: MICHAEL GOLDSTEIN
800 EAST BEATY STREET
DAVIDSON NC 28036
Generator's Phone: 518 250-7352

Generator's Site Address (if different than mailing address)
DC ROLLFORMS
583 ALLEN STREET
JAMESTOWN NY 14701

6. Transporter 1 Company Name
ENVIRONMENTAL PROD & SVCS OF VT, INC
U.S. EPA ID Number
NYR000115733

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
1550 BALMER RD
MODEL CITY NY 14107
Facility's Phone: 800 843-3804
U.S. EPA ID Number
NYD049836679

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (1,2-DICHLOROETHENE, VINYL CHLORIDE), 9, PGIII		DM		P	D028 D043
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1) APP# NY306518 X 5 GAL ERG#171 SEE ATTACHED ANALYTICAL RESULTS
2)
3)
4) JOB# B42540 PO# B13773

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

APPENDIX C

Site Cover and Riverbank Inspection Checklists

Site Cover and Riverbank Inspection Checklist

DC Rollforms Site, Jamestown, New York

Section 1: General Information

Figure Reference:	Weather: 18° Heavy Snow / Freezing Rain
Date / Time Monitoring Performed: 03/02/16	

Cover material(s): □ Soil | X Vegetated Topsoil | X Rip Rap Stone

Section II. Observations

Observation	Yes	No	N/A	Provide Comments As Necessary (use additional space below if needed)
Erosion and Sedimentation Controls				
Are erosion and sedimentation (E&S) controls present? If yes:	X			
Are they functioning as intended?	X			
Are they still required (i.e., has a healthy stand of vegetation been established)?				Winter Conditions
Vegetated Topsoil Isolation Cover				
Are there areas of scour?		N		
Is any geotextile fabric exposed?		N		
Is vegetation effectively covering the intended area? Provide percent growth for seeded areas.	Y			
Is there any sign of distressed vegetation?			N	
Do any areas require seeding?		N		
Photograph Numbers (if applicable)				
Rip Rap Stone Cover				
Are there areas of scour?		N		
Is any geotextile fabric exposed?		N		
Photograph Numbers (if applicable)				
Wing Wall Deflector				
Are there areas of scour?				High Water, NO Observation
Is 30" dia. Rip Rap in place?				
Photograph Numbers (if applicable)				
Riverbank Plantings				
Are the live stake cuttings thriving?	Y			
Photograph Numbers				
Chadakoin River (USGS 03014500, Falconer, NY)				
Discharge, Cubic Feet Per Second?				~~650~~ 1000
Gage Height, Feet? J. Baker				~~2.15~~ 2.85

Other Observations: Describe any other relevant observations noted during this monitoring period.

Performed by: J. Baker	Signature:	Date: 03/02/16

Site Cover and Riverbank Inspection Checklist

DC Rollforms Site, Jamestown, New York

Section 1: General Information

Figure Reference: Site Plan

Weather: 75°F Partly Cloudy

Date / Time Monitoring Performed: 8/1/16 1630

Cover material(s) ☒ Soil ☒ Vegetated Topsoil ☒ Rip Rap Stone

Section II. Observations

Observation	Yes	No	N/A	Provide Comments As Necessary (use additional space below if needed)
Erosion and Sedimentation Controls				
Are erosion and sedimentation (E&S) controls present? If yes:	X			
Are they functioning as intended?	X			
Are they still required (i.e., has a healthy stand of vegetation been established)?	X			
Vegetated Topsoil Isolation Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Is vegetation effectively covering the intended area? Provide percent growth for seeded areas.	X			99%
Is there any sign of distressed vegetation?		X		
Do any areas require seeding?		X		
Photograph Numbers (if applicable)	NA			
Rip Rap Stone Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Photograph Numbers (if applicable)	NA			
Wing Wall Deflector				
Are there areas of scour?		X		
Is 30" dia. Rip Rap in place?	X			
Photograph Numbers (if applicable)	NA			
Riverbank Plantings				
Are the live stake cuttings thriving?	X			
Photograph Numbers				
Chadakoin River (USGS)				
Discharge, Cubic Feet Per Second?	55			
Gage Height, Feet?	0.5			

Other Observations: Describe any other relevant observations noted during this monitoring period.

Performed by: T. Carignan | Signature: T. Carignan | Date: 8/1/16

Site Cover and Riverbank Inspection Checklist

DC Rollforms Site, Jamestown, New York

Section 1: General Information

Figure Reference: Site Plan

Weather: 55°F, Partly Cloudy

Date / Time Monitoring Performed: 11/7/16, 14:00

Cover material(s): ☐ Soil ☒ Vegetated Topsoil ☒ Rip Rap Stone

Section II. Observations

Observation	Yes	No	N/A	Provide Comments As Necessary (use additional space below if needed)
Erosion and Sedimentation Controls				
Are erosion and sedimentation (E&S) controls present? If yes:	X			Rip rap in place,
Are they functioning as intended?	X			
Are they still required (i.e., has a healthy stand of vegetation been established)?	X			vegetation cover is healthy
Vegetated Topsoil Isolation Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Is vegetation effectively covering the intended area? Provide percent growth for seeded areas.	X			95%
Is there any sign of distressed vegetation?		X		
Do any areas require seeding?		X		
Photograph Numbers (if applicable)	NA			
Rip Rap Stone Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Photograph Numbers (if applicable)	NA			
Wing Wall Deflector				
Are there areas of scour?		X		
Is 30" dia. Rip Rap in place?	X			
Photograph Numbers (if applicable)	NA			
Riverbank Plantings				
Are the live stake cuttings thriving?			X	Fall dormant growing season
Photograph Numbers	NA			
Chadakoin River (USGS)				
Discharge, Cubic Feet Per Second?	750			
Gage Height, Feet?	2.35			

Other Observations: Describe any other relevant observations noted during this monitoring period.

Performed by: Todd Carignan | Signature: T Carignan | Date: 11/9/16

Site Cover and Riverbank Inspection Checklist

DC Rollforms Site, Jamestown, New York

Section 1: General Information

Figure Reference: Site Plan

Weather: Sunny 45°F

Date / Time Monitoring Performed: 3/21/17, 11:00

Cover material(s) ☐ Soil ☒ Vegetated Topsoil ☒ Rip Rap Stone

Section II. Observations

Observation	Yes	No	N/A	Provide Comments As Necessary (use additional space below if needed)
Erosion and Sedimentation Controls				
Are erosion and sedimentation (E&S) controls present? If yes:	X			Rip rap in place
Are they functioning as intended?	X			
Are they still required (i.e., has a healthy stand of vegetation been established)?	X			Vegetation healthy post-winter
Vegetated Topsoil Isolation Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Is vegetation effectively covering the intended area? Provide percent growth for seeded areas.	X			95%
Is there any sign of distressed vegetation?		X		
Do any areas require seeding?		X		
Photograph Numbers (if applicable)	NA			
Rip Rap Stone Cover				
Are there areas of scour?		X		
Is any geotextile fabric exposed?		X		
Photograph Numbers (if applicable)	NA			
Wing Wall Deflector				
Are there areas of scour?		X		
Is 30" dia. Rip Rap in place?	X			
Photograph Numbers (if applicable)	NA			
Riverbank Plantings				
Are the live stake cuttings thriving?			X	Late winter dormant season
Photograph Numbers				
Chadakoin River (USGS)				
Discharge, Cubic Feet Per Second?	320			
Gage Height, Feet?	1.42			

Other Observations: Describe any other relevant observations noted during this monitoring period.

Performed by: Todd Carignan | Signature: T. Carignan | Date: 3/21/17

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