Schlumberger

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August 1, 2018

David Szymanski
New York State Department of Environmental Conservation
Division of Environmental Remediation
270 Michigan Ave.
Buffalo, New York 14203-2915

Re: **Periodic Review Report (July 7, 2017, through July 7, 2018), Former Dowell Facility, Depew, New York**

Dear Mr. Szymanski,

Please find enclosed one electronic copy (submitted via e-mail) of the above-referenced document. The original signed certification form will be mailed to your attention at the New York State Department of Environmental Conservation Regional Office address listed above.

If you have any questions or comments, please call me at (281) 285-4747. I can also be reached by e-mail at cocianni-v@slb.com.

Sincerely,

Virgilio Cocianni
Remediation Manager

Enclosures

c: Matt Focucci/New York State Department of Health
Jim Strunk/The Dow Chemical Company
Monica Schneider/CH2M HILL Engineers, Inc.

Periodic Review Report
(July 7, 2017 through July 7, 2018)

Former Dowell Facility
3311 Walden Avenue, Depew, New York

Prepared for

New York State Department of Environmental Conservation

On Behalf of

Schlumberger Technology Corporation and The Dow Chemical Company

August 2018

CH2M HILL Engineers, Inc.

Executive Summary

On behalf of the Volunteers (Schlumberger Technology Corporation [STC] and The Dow Chemical Company [Dow]), CH2M HILL Engineers, Inc. (CH2M), has prepared this periodic review report (PRR) in accordance with the site management plan (SMP; URS 2011) for the former Dowell Facility (site) located in Depew, New York. The site entered into the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Program (VCP) on February 26, 2001—Voluntary Cleanup Agreement No. B9-0586-00-10, Site No. V-00410-9. The PRR was prepared as required in the SMP for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

Dowell Schlumberger Incorporated (Dowell, a defunct joint venture between STC and Dow) operated a facility at 3311 Walden Avenue in the Village of Depew located to the east of Buffalo, New York. Former activities at the site included servicing industrial facilities and limited oilfield-related projects. In the late 1980s, Dowell discontinued operations at the site, and the facility was permanently closed. After site operations ceased, the Volunteers performed site investigations to determine the nature and extent of contamination in site soil or groundwater, or both, that may be attributed to previous site activities.

The results of site investigations indicated elevated concentrations of volatile organic compounds (VOCs) in both soil and groundwater at the site. Additionally, asbestos-containing material was identified in several of the onsite building structures. The Volunteers subsequently entered the site into the NYSDEC VCP, and remedial actions were initiated in October 2003. Remedial actions conducted between October 2003 and May 2004 included building or structure demolition, asbestos-containing material abatement, contaminated soil excavation and disposal, monitoring well removal or installation, and site restoration. No engineering controls were installed as part of the site remedy; however, a Declaration of Covenants and Restrictions granted to NYSDEC was recorded with the Erie County Clerk on June 22, 2005.

Following completion of the remedial actions, but before issuance of the Certificate of Completion by NYSDEC, a long-term monitoring program consisting of quarterly groundwater sampling of onsite monitoring wells was instituted for the site. A final remedial action report was completed and submitted to NYSDEC in September 2010 (URS 2010). The SMP was prepared and submitted to NYSDEC in May 2011. NYSDEC issued a Certificate of Completion for the site remediation on December 7, 2011. Since this time, the long-term monitoring program and site maintenance activities have been conducted in accordance with the SMP and NYSDEC-approved modifications.

Between February 2016 and October 2016, the Volunteers operated an in situ thermal treatment (ISTT) system to remediate the residual VOC contamination in onsite groundwater. The ISTT system was decommissioned in November 2016 and the site was restored to its original condition in December 2016. A final engineers report was prepared summarily and submitted to NYSDEC in March 2017 (CH2M 2017a).

During this reporting period, post-ISTT groundwater monitoring was conducted in October 2017 and June 2018, as agreed upon in discussions with NYSDEC. This PRR summarizes the site maintenance and monitoring activities conducted during the reporting period of July 7, 2017 through July 7, 2018. The October 2017 and June 2018 groundwater data and the June 2018 site inspection form indicate that the remedy continues to perform as designed. Site institutional controls remain in place as required, and no areas of noncompliance were identified during the reporting period.

Based on the groundwater data since the ISTT remedy was completed, it is recommended that groundwater monitoring and reporting activities continue into the next PRR reporting period. Annual groundwater monitoring is proposed for October 2018 to remain in compliance with the SMP and sampling of site wells X-A-1 and X-C-3 for VOCs is recommended once temperatures return to background levels (anticipated spring 2019).

Contents

Abbreviations and Acronyms

°C	degrees Celsius
CH2M	CH2M HILL Engineers, Inc.
Dow	The Dow Chemical Company
EC	engineering control
FD	field duplicate
IC	institutional control
ISTT	in situ thermal treatment
MS	matrix spike
MSD	matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
PRR	periodic review report
QA	quality assurance
QC	quality control
SCG	applicable standards, criteria and guidelines
site	Former Dowell Facility
SMP	Site Management Plan
STC	Schlumberger Technology Corporation
TCL	Target Compound List
TestAmerica	TestAmerica Laboratories, Inc.
URS	URS Corporation
VCP	Voluntary Cleanup Program
VOC	volatile organic compound

SECTION 1

Introduction and Site Overview

This periodic review report (PRR) was prepared for the Former Dowell Facility (site) located in Depew, New York. The PRR was prepared in accordance with the site management plan (SMP) for the periodic submittal of data, information, recommendations, and certifications to the New York State Department of Environmental Conservation (NYSDEC).

1.1 Purpose

The PRR provides the following information for the reporting period to NYSDEC (URS 2011):

- Identification, assessment, and certification of institutional controls (ICs) required by the remedy for the site
- Results of the required annual site inspections and severe conditions inspections, if applicable
- Applicable inspection forms and other records generated for the site during the reporting period, in electronic format
- A site evaluation, including compliance of the remedy, new conclusions or observations regarding site contamination based on inspections or data generated for the media monitored, recommendations regarding changes to the remedy and/or monitoring plan, and the overall performance and effectiveness of the remedy

1.2 Site Location

The site is located east of Buffalo, New York, at 3311 Walden Avenue in the Village of Depew (Figure 1-1). The site is located in a mixed residential and industrial/commercial area. Properties surrounding the site include Walden Avenue to the north, a CSX Transportation railroad yard to the south, a lumber yard and supply store (84 Lumber) to the east, and a mattress manufacturer (Fibrix [previously known as Buffalo Batt and Felt]) to the west (Figure 1-2). A residential neighborhood and an abandoned recycling facility (EnviroSense Corporation) are located adjacent to the site on the northern side of Walden Avenue.

The site is approximately 1.8 acres and relatively flat with a gentle downward slope to the north-northwest toward Walden Avenue. Maximum relief across the site (that is, from south to north) is about 4 feet, and surface water flows from south to north across the site. The property is currently vacant, and the ground surface consists primarily of gravel and grass with small- to medium-sized trees on portions of the site. A 6-foot-high chain-linked fence with a locked entrance gate along Walden Avenue surrounds the site.

1.3 Site History

Former activities at the site included servicing industrial facilities and limited oilfield-related projects. Various industrial cleaning and oilfield-related chemicals were stored onsite and transferred into tank trucks for use at different job sites (URS 2004). A former railroad siding, which has been removed, traversed the site from east to west. Former onsite building structures included the following: a two-story office building, a chemical storage building, a one-story office and maintenance shop, an acid plant, a bulk cement plant, cement silos, an 8,000-gallon diesel aboveground storage tank, a 1,000-gallon gasoline underground storage tank with dispenser, a mud separator, an oil/water separator, and a hydrochloric acid aboveground storage tank (Figure 1-2). In the late 1980s, operations at the site were discontinued, and the facility was permanently closed. Building structures were razed during the 2003 to 2004 remedial action, and the site has been inactive since (URS 2011).

1.4 Previous Site Investigations and Remedial Action Activities

Site investigations and remedial actions were performed after site operations were discontinued. A chronology of the site investigations and remedial actions is presented in Table 1-1.

SECTION 2

Institutional Controls and Engineering Controls Plan Compliance

This section summarizes the IC and engineering control (EC) requirements for the site.

2.1 Institutional Control and Engineering Control Requirements

A series of ICs is required by the Declaration of Covenants and Restrictions to (1) prevent future exposure to remaining contamination and (2) limit the use and development of the site to commercial uses only. Adherence to the ICs on the site is required by the Declaration of Covenants and Restrictions and was implemented under the SMP. The ICs for the site consist of the following:

- Compliance with the Declaration of Covenants and Restrictions and the SMP by the Grantor and the Grantor's successors and assigns.
- Groundwater monitoring must be performed as defined in the SMP. (Alterations to the groundwater monitoring program, schedule, or sampling and analysis methods require prior approval by NYSDEC before implementation.)
- Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP. (Alterations to the frequency of reporting to the NYSDEC require prior approval by NYSDEC before implementation.)

The site has a series of ICs in the form of site restrictions. Adherence to the ICs is required by the Declaration of Covenants and Restrictions. The following site restrictions apply to the Controlled Property:

- The property may only be used for restricted commercial use, provided that the long-term ICs included in the SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted or restricted residential use, without additional remediation and amendment of the Declaration of Covenants and Restrictions, as approved by NYSDEC.
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP.
- The use of the groundwater underlying the property is prohibited without treatment, rendering it safe for intended use.
- The potential for vapor intrusion must be evaluated for any buildings developed on the site, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the property are prohibited.

The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, the following: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by NYSDEC, and (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow, and will be made by a Qualified Environmental Professional as defined by New York Codes, Rules and Regulations, Title 6, Part 375-1.2 (ak).

ICs identified in the Declaration of Covenants and Restrictions may not be discontinued without an amendment to or extinguishment of the Declaration of Covenants and Restrictions. To date, no changes have been made to the ICs, and monitoring activities have been performed in compliance with applicable requirements.

2.2 Institutional Control and Engineering Control Certification

The NYSDEC IC/EC Certification Form has been completed by a CH2M HILL Engineers, Inc. (CH2M) New York Registered Professional Engineer for this reporting period and is provided as Appendix A.

SECTION 3

Monitoring Plan Compliance

3.1 Monitoring Plan Requirements

Annual groundwater monitoring is required in accordance with the SMP (URS 2011) and NYSDEC approved modifications.

During the reporting period, annual groundwater sample collection included the monitoring network sampled in October 2017 (as proposed in the 2017 PRR [CH2M 2017b]). In the 2017 PRR, it was recommended that groundwater samples be collected from site wells X-A-1, X-A-3, X-C-3, RW-02, MW-07S, and MW-07D in October 2017 (no sooner than 1 year post-ISTT system shutdown) and analyzed for VOCs. The 2017 PRR was approved by NYSDEC in a letter dated October 26, 2017.

In a conference call between the Volunteers and NYSDEC on December 6, 2017, results of the October 2017 sampling were discussed, and it was decided that site wells X-A-1 and X-C-3 would be sampled and analyzed for VOCs once groundwater temperatures in the ISTT area return to background levels. By June 2018, groundwater temperatures had not yet reached background levels. However, groundwater samples were collected at X-A-1 and X-C-3 to monitor vinyl chloride concentrations.

The 2018 annual groundwater monitoring event will be completed in October 2018 in accordance with the SMP and approved modifications (including sampling and VOC analysis of X-A-1, X-A-3, X-C-3, RW-02, MW-07S, and MW-07D).

3.2 Groundwater Sampling and Analysis

On October 20, 2017, groundwater samples and groundwater quality parameters were collected from site monitoring wells X-A-1, X-A-3, X-C-3, RW-02, MW-07S, and MW-07D.

On June 19, 2018, groundwater samples were collected and groundwater quality parameters were recorded at site monitoring wells X-A-1 and X-C-3. In addition, groundwater quality parameters were recorded at MW-01, MW-02, MW-04, and MW-07D.

Groundwater samples were collected using disposable HydraSleeves. HydraSleeves were deployed at the appropriate depths to collect a representative groundwater sample from the mid-point of each well screen interval for site monitoring wells RW-02, MW-07S, and MW-07D. HydraSleeves for site monitoring wells X-A-1, X-A-3, and X-C-3 were set at specific screen depths, so that the groundwater samples collected were comparable to the site monitoring wells that were plugged and abandoned (that is, MW-06D, RW-01, and MW-06S) due to the implementation of the ISTT remedy.

HydraSleeves were later retrieved, and groundwater from each well was placed in laboratory-supplied sample bottleware. After sample collection was completed, groundwater water quality parameters including temperature, specific conductivity, dissolved oxygen, pH, and oxidation reduction potential were recorded using a multi-probe water quality instrument deployed down the monitoring well.

Groundwater samples collected during the sampling event were placed in a laboratory-supplied cooler, packed on ice, and delivered to TestAmerica Laboratories, Inc. (TestAmerica) in Buffalo, New York, for laboratory analyses. The groundwater samples were analyzed for Target Compound List (TCL) VOCs using U.S. Environmental Protection Agency Method 8260C.

Quality assurance (QA) and quality control (QC) samples were collected in accordance with the site-specific quality assurance project plan (URS 2011). QA/QC samples collected during the sampling event included a field duplicate (FD), matrix spike (MS)/matrix spike duplicate (MSD), and trip blank sample. Equipment rinsate blank samples were not collected during the sampling event, because only disposable sampling equipment was used. FDs were collected at a rate of 1 for every 10 native samples. MS and MSD samples

were collected at a rate of 1 for every 20 native samples. A trip blank sample was included in the sample cooler provided by and submitted to TestAmerica.

3.3 Data Quality Assessment

CH2M performed a data review, verification, and validation of the October 2017 and June 2018 monitoring event sample data to assess the quality of the analytical results associated with the groundwater samples. To reflect data usability limitations, data were qualified using appropriate qualifier flags. The precision and accuracy of the data, as measured by field and laboratory QC indicators, suggest that the project analytical requirements were met, and the data are acceptable for project decision-making as qualified. The analytical laboratory reports for the October 2017 and June 2018 monitoring events are provided as Appendix B, and the data quality evaluation report is provided as Appendix C.

3.4 Groundwater Monitoring Results

3.4.1 Evaluation of Groundwater Results

Table 3-1 presents the analytes detected in groundwater samples collected during the October 2017 and June 2018 ISTT monitoring events. Groundwater quality parameters are presented in Table 3-2. In October 2017, the average groundwater temperature measured within the ISTT area was 24.6 degrees Celsius (°C) and 13.1°C outside of the ISTT area. In June 2018, the average groundwater temperature measured within the ISTT area was 18.4°C and 11.3°C outside of the ISTT area. While seven VOCs were detected, only vinyl chloride exceeded its standards, criteria, and guideline (SCG) value at one or more groundwater/recovery wells during the sampling events (Figure 3-1).

The Level IV electronic data deliverable has been prepared and is being submitted to NYSDEC as a separate deliverable.

3.4.2 Monitoring Deficiencies

There were no monitoring deficiencies during the reporting period.

3.4.3 Conclusions and Recommendations

Overall, the 2004 excavation remedy and the 2016 ISTT remedy have significantly reduced the residual onsite VOC concentrations in groundwater. Prior to the implementation of the 2016 ISTT remedy, 14 VOCs exceeded their applicable SCG values in onsite groundwater based on the results from the 2015 target treatment zone investigation. Several of the VOCs were detected at concentrations 2 to 4 orders-of-magnitude greater than their applicable SCG value (CH2M 2015). Only vinyl chloride currently exceeds its SCG value.

With vinyl chloride concentrations slightly exceeding its SCG value at two site monitoring wells and groundwater temperatures still exceeding pre-ISTT remedy levels, the Volunteers recommend that groundwater monitoring and reporting activities continue into the next PRR reporting period according to the SMP. In June 2018, the average groundwater temperature inside the ISTT area was approximately 18.4°C compared to 28°C in June 2017. However, the average temperature inside the ISTT (24.6°C) still exceeds the average temperature of the monitoring wells outside of the ISTT area, which was 11.3°C in June 2018. Based on the current rate of heat loss within the ISTT area, average groundwater temperature inside the ISTT area is expected to be comparable to the average groundwater temperature outside the ISTT area by spring 2019.

The Volunteers recommend that groundwater samples be collected and water quality parameters be recorded in October 2018 to meet the annual groundwater monitoring requirement of the SMP. In spring 2019, groundwater quality parameters will be recorded at wells within the ISTT area and outside of the ISTT area. If groundwater temperatures within the ISTT area return to background levels (within 2°C of average

temperatures outside of the ISTT area), site monitoring wells that currently exceed SCG values (X-A-1 and X-C-3) will be sampled for TCL VOC analysis. Upon confirming that the groundwater temperature within the ISTT area have returned to background levels and that the residual groundwater exceedances are confined to the VOC constituents detected in 2017 and 2018 (total 1,2-dichloroethene, cis-1,2-dichloroethene, and vinyl chloride, at concentrations only slightly greater than their applicable SCG values), the Volunteers will formally petition NYSDEC to remove the monitoring and reporting requirements from the SMP and to allow abandonment of remaining site monitoring wells not already proposed for abandonment in the Conclusions and Recommendations section of this PRR.

SECTION 4

Operation, Maintenance, and Inspections Compliance

4.1 Operation and Maintenance Plan Requirements

The current site remedy does not rely on mechanical systems (such as groundwater pump and treat or air sparge/soil vapor extraction) to protect public health and the environment. The 2016 remedial action (ISTT system) was a mechanical system, but was not required to protect public health and the environment.

Because this report focuses on the current remedy rather than the ISTT, operation and maintenance are not applicable; however, the SMP (URS, 2011) does require sitewide inspections to be conducted concurrently with groundwater monitoring.

4.2 Site Inspections

A sitewide inspection, as required by the SMP, was performed on June 20, 2018. A copy of the completed sitewide inspection form is provided as Appendix D. The sitewide inspection indicated no significant changes in the conditions of the site since the time of the last PRR, dated August 2017 (CH2M 2017b).

SECTION 5

Remedy Performance, Effectiveness, and Protectiveness

This section summarizes the remedy performance, effectiveness, and protectiveness based on inspections and data generated during this reporting period, and as the data compare to historical data.

5.1 Remedy Performance

Previous documents have detailed the remedy performance as it relates to site soil (URS 2011, 2013). The remedy performance related to site groundwater is demonstrated by the decreasing VOC groundwater concentrations since remedial action activities were completed in 2004 and 2016.

5.2 Remedy Effectiveness

The remedy was effective in removing soil with VOC concentrations exceeding soil cleanup objectives for restricted commercial use (URS 2013). The 2004 and 2016 remedial actions also have been effective in reducing VOC concentrations in groundwater to less than SCG values, except for the areas where residual VOC groundwater contamination slightly exceeds SCG values for one compound (vinyl chloride).

5.3 Remedy Protectiveness

The remedy has been protective of human health and the environment by reducing the VOC concentrations in soil to less than the applicable soil cleanup objectives for commercial sites. The implementation of the 2016 ISTT remedy has either eliminated or reduced VOC groundwater concentrations to a small fraction of concentrations prior to implementation of the remedy. The continued degradation of the residual onsite VOC contaminants is expected to eliminate the possibility of future contaminant exposure.

SECTION 6

Conclusions and Recommendations

The site is compliant with the requirements of the SMP (URS, 2011) for the July 7, 2017 through July 7, 2018 reporting period. The groundwater sampling data and the June 2018 site inspection indicate that the remedy continues to be effective in protecting human health and the environment, and that the remaining site contamination is stable or decreasing. ICs remain in place, as required.

No areas of noncompliance were identified during the reporting period. Based on the groundwater data collected since the ISTT remedy was completed, it is recommended that the 2018 annual groundwater monitoring be completed in October 2018 for the same wells monitored during the October 2017 event and that groundwater samples be collected for TCL VOC analysis from site monitoring wells X-A-1 and X-C-3 in spring 2019 if groundwater temperatures in the ISTT area return to background levels.

In addition, abandonment of the 13 site piezometers and monitoring wells MW-01, MW-02, and MW-04 is recommended. Monitoring of these piezometers is not included in the SMP, but the piezometers have been utilized for collection of groundwater measurements to establish groundwater flow direction. The general groundwater flow direction for the two lithologic units has remained consistent and continued collection of these measurements is thought to be unnecessary. Monitoring wells MW-01, MW-02, and MW-04 are included in the SMP but have since been removed from the monitoring program (Section 3.1) and were below SCGs when sampled in June 2017. Following approval from NYSDEC, abandonment will be completed in accordance with the procedures outlined in the SMP.

SECTION 7

Works Cited

CH2M HILL Engineers, Inc. (CH2M). 2015. *Remedial Action Work Plan. Former Dowell Depew Facility 311 Walden Avenue, Depew, New York*. August.

CH2M HILL Engineers, Inc. (CH2M). 2017a. *Final Engineer Report. Former Dowell Depew Facility 311 Walden Avenue, Depew, New York*. March.

CH2M HILL Engineers, Inc. (CH2M). 2017b. *Periodic Review Report (July 7, 2016 through July 7, 2017). Former Dowell Depew Facility 311 Walden Avenue, Depew, New York*. August.

URS Corporation (URS). 2004. *Remedial Action Report for the Former Dowell Facility 3311 Walden Avenue Depew New York.* Depew, New York. July.

URS Corporation (URS). 2010. *Final Remedial Action Report for the Former Dowell Facility 3311 Walden Avenue Depew New York.* Depew, New York. September.

URS Corporation (URS). 2011. *Site Management Plan for the Former Dowell Facility 3311 Walden Avenue Depew New York.* Depew, New York. May.

URS Corporation (URS). 2013. *Periodic Review Report (December 7, 2011 – July 7, 2013) for the Former Dowell Facility 3311 Walden Avenue Depew New York.* Depew, New York. August.

Tables

Table 1-1. Chronology of Site Investigations and Remedial Actions

Periodic Review Report

Former Dowell Facility, Depew, New York

Date	Work Performed
September 1989	Removal and offsite disposal was completed of the 1,000-gallon UST and its associated dispenser, the 8,000-gallon AST, and contaminated soils.
May 1990	Site investigation was performed to determine the presence or absence of chemical constituents in site soil and groundwater. Low-level VOC concentrations were detected in shallow groundwater.
January 1992	Physical and chemical evaluation of groundwater was performed at former UST location. No contamination was detected in the groundwater sample.
September 1996 to March 1997	Monitoring well installation (MW-01, MW-02, MW-03, and MW-04) and sampling: VOC concentrations exceeded SCG values at MW-03, and lead exceeded the MCL at MW-02 and MW-04. The mud separator was decommissioned.
November 1997	Supplemental investigation was performed, soil samples were collected, and groundwater samples were collected from existing monitoring wells.
July 1998	Removal and offsite disposal was completed of former acid plant concrete revetment, 500 tons of VOC-contaminated soil from around the acid plant, cement bulk plant debris, and other miscellaneous debris.
July 1998 to January 2000	Groundwater samples for VOCs were collected four times during this period from MW-01 through MW-04.
February 26, 2001	The Volunteers entered into a Voluntary Cleanup Agreement with NYSDEC.
July 2001	Site investigation was performed to collect soil, sediment, and groundwater samples. Hydraulic conductivity testing was performed. An asbestos survey and land survey of investigation locations was completed.
October 2003 to May 2004	Remedial activities were completed, including asbestos abatement, building/structure demolition, monitoring well abandonment and installation, and excavation and offsite disposal of approximately 4,610 tons of VOC-contaminated soil.
October 2005	Installation of monitoring well MW-07D was completed.
April 2008	Offsite groundwater investigation was completed.
June 2009	Six injection wells upgradient of monitoring wells MW-06S and MW-06D were installed and implemented; 377 gallons of hydrogen peroxide and sodium persulfate were injected between August and November 2009.
September 2010	The final remedial action report was prepared and submitted to NYSDEC.
May 2011	A site management plan was submitted to NYSDEC.
December 2011	NYSDEC issued a Certificate of Completion for the site remediation.
August 2013	The first Periodic Review Report was submitted and presented a summary of the remedy performance during the period from December 7, 2011, through July 7, 2013.
August 2014	The second Periodic Review Report was submitted and presented a summary of the remedy performance during the period from July 7, 2013, through July 7, 2014.
August 2015	The third Periodic Review Report was submitted and presented a summary of the remedy performance during the period from July 7, 2014, through July 7, 2015.
August 2015	A remedial action work plan was prepared and submitted to NYSDEC for the final onsite remedy to remediate onsite VOC-impacted groundwater.
October 2015	Installation of an ISTT system was completed to remediate onsite VOC-impacted groundwater.
February 2016	Start-up of ISTT system was completed to remediate onsite VOC-impacted groundwater.
August 2016	The fourth Periodic Review Report was submitted and presented a summary of the remedy performance during the period from July 7, 2015, through July 7, 2016.
October 2016	Operation of the ISTT system was ceased to remediate onsite VOC-impacted groundwater.
November 2016 to December 2016	Decommissioning of the ISTT system and site restoration were completed. Recovery wells X-A-1, X-A-3, and X-C-3 were retrofitted into long-term site monitoring wells to replace previously abandoned site monitoring wells MW-06S, MW-06D, and RW-01.
August 2017	The fifth Periodic Review Report was submitted and presented a summary of the remedy performance during the period from July 7, 2016, through July 7, 2017.
October 2017	A post-ISTT confirmation sampling event was completed.
June 2018	A post-ISTT confirmation sampling event was completed.

Notes:

AST = aboveground storage tank

ISTT = in situ thermal treatment

MCL = maximum contaminant level

NYSDEC = New York State Department of Environmental Conservation

SCG = applicable standards, criteria, and guidelines

UST = underground storage tank

VOC = volatile organic compound

Table 3-1. Volatile Organic Compounds in Groundwater

Periodic Review Report

Former Dowell Facility, Depew, New York

	Location	X-A-1		X-A-3	X-C-3		MW-07D	MW-07S	RW-02
	Sample ID	X-A-1-102017	X-A-1-061918	X-A-3-102017	X-C-3-102017	X-C-3-061918	MW-07D-102017	MW-07S-102017	RW-02-102017
	Sample Date	10/20/2017	6/19/2018	10/20/2017	10/20/2017	6/19/2018	10/20/2017	10/20/2017	10/20/2017
Analyte	**SCG Values**								
VOC (µg/L)									
1,1,1-Trichloroethane	5	0.820 U	0.820 U	0.820 U	0.820 U	0.820 U	1.64 U	0.820 U	0.820 U
1,1-Dichloroethane	5	**0.685 J**	**0.743 J**	0.380 U	**0.743 J**	**0.811 J**	0.760 U	**0.761 J**	0.380 U
1,1-Dichloroethene	5	0.290 U	0.290 U	0.290 U	0.290 U	0.290 U	0.580 U	0.290 U	0.290 U
1,2-Dichloroethane	0.6	0.210 U	0.210 U	0.210 U	0.210 U	0.210 U	0.420 U	0.210 U	0.210 U
1,2-Dichloroethene (Total)	5[a]	**3.75**	**1.51 J**	0.810 U	**1.50 J**	**1.16 J**	1.62 U	0.810 U	**3.44**
Acetone	50	3.00 U	**11.2 J**	3.00 U	3.00 U	**3.70 J**	6.00 U	3.00 U	3.00 U
Benzene	1	0.410 U	0.410 U	0.410 U	0.410 U	0.410 U	0.820 U	0.410 U	0.410 U
Chloroethane	5	0.320 U	0.320 U	**3.01**	0.320 U	0.320 U	0.640 U	0.320 U	0.320 U
cis-1,2-Dichloroethene	5	**3.75**	**1.51**	0.810 U	**1.50**	**1.16**	1.62 U	0.810 U	**3.44**
Ethylbenzene	5	0.740 U	0.740 U	0.740 U	0.740 U	0.740 U	1.48 U	0.740 U	0.740 U
Tetrachloroethene	5	0.360 U	0.360 U	0.360 U	0.360 U	0.360 U	0.720 U	0.360 U	0.360 U
Trichloroethene	5	0.460 U	0.460 U	0.460 U	0.460 U	0.460 U	0.920 U	0.460 U	**1.29**
Vinyl Chloride	2	**6.65**	**6.26**	0.900 U	**5.06**	**4.84**	1.80 U	0.900 U	0.900 U
Xylenes, Total	5	0.660 U	0.660 U	0.660 U	0.660 U	0.660 U	1.32 U	0.660 U	0.660 U

Notes:

[a] Screening level for cis-1,2-Dichloroethene used for total 1,2-Dichloroethene.

SCG Values = Applicable standards, criteria, and guideline values. Division of Water Technical & Operational Guidance Series (TOGS) 1.1.1 New York State Ambient Water Quality Standards and Guidance Values and Ground Water Effluent Limitations

- Table 1 and Table 5 - Class GA; June 1998; modified January 1999; modified April 2000; modified June 2004

Bold indicates that the analyte was detected.

Grey shading indicates that the result exceeded the screening level.

µg/L = microgram per liter

ID = identification

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

SCG = applicable standards, criteria, and guidelines

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

VOC = volatile organic compound

Table 3-2. Groundwater Quality Parameters

Periodic Review Report

Former Dowell Facility, Depew, New York

Location	Sample Date	Water Quality Parameter / Sample Depth (feet from bottom of well)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH (SU)	ORP (mV)
		1	27.90	0.754	0.16	7.65	117.0
	10/20/2017	15	26.35	0.751	0.16	7.48	125.4
		1	20.26	0.676	0.52	7.61	-101.1
X-A-1[a]	6/19/2018	15	18.00	0.674	0.49	7.53	-125.6
		1	22.93	0.691	0.36	7.34	182.9
X-A-3[a]	10/20/2017	15	20.40	0.723	0.86	7.20	144.7
		1	26.48	0.665	0.22	7.68	125.1
	10/20/2017	15	23.53	0.628	0.21	7.50	138.4
		1	18.13	0.558	0.49	8.10	33.5
X-C-3[a]	6/19/2018	15	17.20	0.527	0.53	8.67	18.9
		1	10.85	0.926	0.55	7.19	-132.1
MW-01[b]	6/19/2018	15	10.01	0.915	0.59	7.19	-62.7
		1	10.60	0.876	0.20	7.33	-102.5
MW-02[b]	6/19/2018	15	9.92	0.876	0.43	7.40	-25.9
		1	11.77	5.771	2.01	7.67	-199.5
MW-04[b]	6/19/2018	15	10.91	5.791	1.88	7.33	-160.3
		1	14.80	0.411	1.17	6.92	266.0
RW-02[b]	10/20/2017	10	14.88	0.415	0.72	7.13	260.6
		1	11.61	0.812	0.24	7.09	118.7
MW-07S[b]	10/20/2017	15	13.61	0.839	0.43	7.22	121.3
		1	11.63	0.662	1.04	7.20	139.8
	10/20/2017	15	12.27	0.674	1.49	7.31	137.9
		1	13.78	0.917	2.60	7.38	66.4
MW-07D[b]	6/19/2018	15	12.48	0.917	2.60	7.34	75.9

Notes:

[a] Monitoring well within the In Situ Thermal Treatment Area

[b] Monitoring well outside of the In Situ Thermal Treatment Area

°C = degrees Celsius

mg/L = milligram per liter

mS/cm = milliSiemen per centimeter

mV = millivolt

ORP = Oxidation-reduction Potential

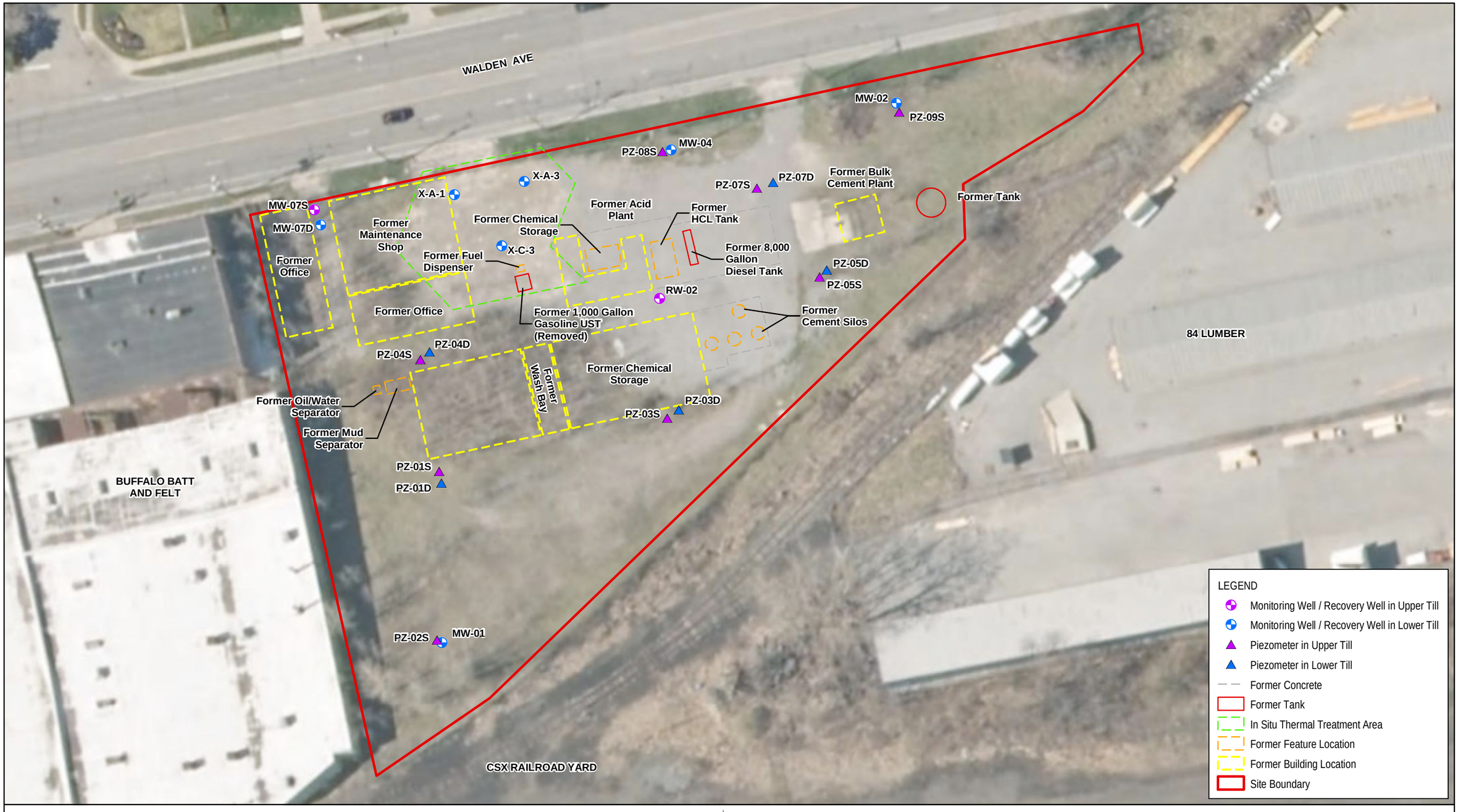
SU = standard unit

Figures

Source:
Imagery: ESRI - Microsoft 2011

Figure 1-1.
Site Location Map
Periodic Review Report
Former Dowell Facility, Depew, New York

\\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\D\DOWELL\DOWELL_DEPEW_480860\MAPFILES\2018\PERIODIC REVIEW REPORT\FIG1-1_LOCATION_MAP.MXD SG062264 7/27/2018



Notes:
1. Location of former buildings, tanks, concrete, and features is approximate.
Acronyms:
HCL = hydrochloric acid
UST = underground storage tank
Source:
Imagery: ESRI - Microsoft 2011

FIGURE 1-2.
Site Map
Periodic Review Report
Former Dowell Facility, Depew, New York

ch2m.

RDD \\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\D\DOWELL\DOWELL_DEPEW_480860\MAPFILES\2018\PERIODIC REVIEW REPORT\FIG1-2_SITE_MAP.MXD SG062264 7/27/2018 11:12:16 AM

Location	X-A-1	
Sample Date	10/20/2017	6/19/2018
Analyte	Results (µg/L)	
Vinyl Chloride	**6.65**	**6.26**

Location	X-A-3
Sample Date	10/20/2017
Analyte	Results (µg/L)
Vinyl Chloride	0.900 U

Location	X-C-3	
Sample Date	10/20/2017	6/19/2018
Analyte	Results (µg/L)	
Vinyl Chloride	**5.06**	**4.84**

Location	MW-07S
Sample Date	10/20/2017
Analyte	Results (µg/L)
Vinyl Chloride	0.900 U

Location	MW-07D
Sample Date	10/20/2017
Analyte	Results (µg/L)
Vinyl Chloride	1.80 U

Location	RW-02
Sample Date	10/20/2017
Analyte	Results (µg/L)
Vinyl Chloride	0.900 U

WALDEN AVE

MW-02
PZ-09S
MW-04
PZ-08S
PZ-07S
PZ-07D
Former Bulk Cement Plant
Former Tank
X-A-1
X-A-3
MW-07S
MW-07D
Former Maintenance Shop
Former Chemical Storage
Former Acid Plant
Former HCL Tank
X-C-3
Former Fuel Dispenser
Former 8,000 Gallon Diesel Tank
PZ-05D
PZ-05S
RW-02
Former Office
Former Office
Former 1,000 Gallon Gasoline UST (Removed)
Former Cement Silos
84 LUMBER
PZ-04S
PZ-04D
Former Chemical Storage
Former Wash Bay
Former Oil/Water Separator
PZ-03D
PZ-03S
Former Mud Separator
PZ-01S
PZ-01D
BUFFALO BATT AND FELT
PZ-02S
MW-01
CSX RAILROAD YARD

LEGEND

- Monitoring Well / Recovery Well in Upper Till
- Monitoring Well / Recovery Well in Lower Till
- Piezometer in Upper Till
- Piezometer in Lower Till
- Former Concrete
- Former Tank
- In Situ Thermal Treatment Area
- Former Feature Location
- Former Building Location
- Site Boundary

Notes:
1. U = The analyte was analyzed for, but was not detected above the reported sample detection limit.
2. **Bold** indicates the analyte was detected
3. Shading indicates that the result exceeded applicable standards, criteria, and guideline (SCG) values.
4. The SCG for vinyl chloride is 2 µg/L.

Acronyms:
µg/L = micrograms per liter

Source:
Imagery: ESRI - Microsoft 2011

N

0 25 50

Feet

FIGURE 3-1.
Vinyl Chloride Results
Periodic Review Report
Former Dowell Facility, Depew, New York

ch2m.

RDD \\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\D\DOWELL\DOWELL_DEPEW_480860\MAPFILES\2018\PERIODIC REVIEW REPORT\FIG3-1_VINYL_CHLORIDE_RESULTS.MXD SG062264 7/30/2018 12:18:21 PM

Appendix A
IC/EC Certification Form

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. V00410

Site Name Former Dowell Facility

Site Address: 3311-3313 Walden Ave Zip Code: 14043
City/Town: Depew
County: Erie
Site Acreage: 1.8

Reporting Period: July 07, 2017 to July 07, 2018

	YES	NO
1. Is the information above correct?	■	□
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?	□	■
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	□	■
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	■	□
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	□	■

Box 2

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

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. V00410 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
104.09-1-14	Dowell Schlumberger Inc.	Ground Water Use Restriction Landuse Restriction O&M Plan Monitoring Plan Site Management Plan Ground Water Use Restriction Landuse Restriction Monitoring Plan Site Management Plan O&M Plan

Prohibition of groundwater use, restriction of use to industrial (may request commercial use from Relevant Agency), annual reporting, no constructions without approval of Relevant Agency, adherence to an O & M Plan included as section 7-1 of the Remedial Action Report Dated July 2004 and any subsequent modifications (May 2011 Site Management Plan requires soil vapor study or installation of vapor mitigation system according to DOH guidelines before re-use.

104.09-1-15	Dowell Schlumberger Inc.	Ground Water Use Restriction Landuse Restriction Monitoring Plan Site Management Plan O&M Plan

Prohibition of groundwater use, annual reporting, no constructions without approval of Relevant Agency, adherence to an O & M Plan included as section 7-1 of the Remedial Action Report Dated July 2004 and any subsequent modifications (May 2011 Site Management Plan requires soil vapor study or installation of vapor mitigation system according to DOH guidelines before re-use.

Box 4

Description of Engineering Controls

None Required

Not Applicable/No EC's

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
■	□

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
■	□

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. V00410

Box 6

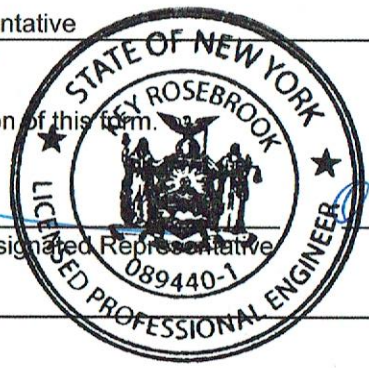
SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

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 Key Rosebrook (print name) at 2411 Dulles Corner Park, Suite 500 Herndon, VA 20171 (print business address),

am certifying as Designated Representative (Owner or Remedial Party)

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



Key Rosebrook — 07/26/18

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification — Date

Appendix B
Analytical Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-126349-1
Client Project/Site: Dowell - Depew Site

For:
CH2M Hill, Inc.
300 Hunter Avenue
Suite 305
St Louis, Missouri 63124

Attn: Ms. Shane Lowe

Authorized for release by:
11/2/2017 1:31:41 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Job ID: 480-126349-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-126349-1

Comments
No additional comments.

Receipt
The samples were received on 10/20/2017 1:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

GC/MS VOA
Method(s) 8260C: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-07D-102017 (480-126349-7). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: RW-02-102017 — Lab Sample ID: 480-126349-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichloroethene, Total	3.44		2.00	0.810	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	3.44		1.00	0.810	ug/L	1		8260C	Total/NA
Trichloroethene	1.29		1.00	0.460	ug/L	1		8260C	Total/NA

Client Sample ID: X-A-3-102017 — Lab Sample ID: 480-126349-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	3.01		1.00	0.320	ug/L	1		8260C	Total/NA

Client Sample ID: X-A-3-102017-DUP — Lab Sample ID: 480-126349-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	3.05		1.00	0.320	ug/L	1		8260C	Total/NA

Client Sample ID: X-C-3-102017 — Lab Sample ID: 480-126349-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.743	J	1.00	0.380	ug/L	1		8260C	Total/NA
1,2-Dichloroethene, Total	1.50	J	2.00	0.810	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	1.50		1.00	0.810	ug/L	1		8260C	Total/NA
Vinyl chloride	5.06		1.00	0.900	ug/L	1		8260C	Total/NA

Client Sample ID: X-A-1-102017 — Lab Sample ID: 480-126349-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.685	J	1.00	0.380	ug/L	1		8260C	Total/NA
1,2-Dichloroethene, Total	3.75		2.00	0.810	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	3.75		1.00	0.810	ug/L	1		8260C	Total/NA
Vinyl chloride	6.65		1.00	0.900	ug/L	1		8260C	Total/NA

Client Sample ID: MW-07S-102017 — Lab Sample ID: 480-126349-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.761	J	1.00	0.380	ug/L	1		8260C	Total/NA

Client Sample ID: MW-07D-102017 — Lab Sample ID: 480-126349-7

No Detections.

Client Sample ID: TB-001-102017 — Lab Sample ID: 480-126349-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: RW-02-102017
Date Collected: 10/20/17 10:30
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 16:32	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			11/01/17 16:32	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 16:32	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 16:32	1
1,2-Dichloroethene, Total	**3.44**		2.00	0.810	ug/L			11/01/17 16:32	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 16:32	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 16:32	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 16:32	1
cis-1,2-Dichloroethene	**3.44**		1.00	0.810	ug/L			11/01/17 16:32	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 16:32	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 16:32	1
Trichloroethene	**1.29**		1.00	0.460	ug/L			11/01/17 16:32	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 16:32	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*77 - 120*		*11/01/17 16:32*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*11/01/17 16:32*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*11/01/17 16:32*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/01/17 16:32*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: X-A-3-102017
Date Collected: 10/20/17 10:45
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 16:59	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			11/01/17 16:59	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 16:59	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 16:59	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			11/01/17 16:59	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 16:59	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 16:59	1
Chloroethane	**3.01**		1.00	0.320	ug/L			11/01/17 16:59	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			11/01/17 16:59	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 16:59	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 16:59	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 16:59	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 16:59	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*		*11/01/17 16:59*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*11/01/17 16:59*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*11/01/17 16:59*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/01/17 16:59*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: X-A-3-102017-DUP
Date Collected: 10/20/17 10:50
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 17:26	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			11/01/17 17:26	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 17:26	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 17:26	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			11/01/17 17:26	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 17:26	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 17:26	1
Chloroethane	**3.05**		1.00	0.320	ug/L			11/01/17 17:26	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			11/01/17 17:26	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 17:26	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 17:26	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 17:26	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 17:26	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*		*11/01/17 17:26*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*11/01/17 17:26*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*11/01/17 17:26*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*11/01/17 17:26*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: X-C-3-102017
Date Collected: 10/20/17 11:00
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 17:52	1
1,1-Dichloroethane	**0.743**	**J**	1.00	0.380	ug/L			11/01/17 17:52	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 17:52	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 17:52	1
1,2-Dichloroethene, Total	**1.50**	**J**	2.00	0.810	ug/L			11/01/17 17:52	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 17:52	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 17:52	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 17:52	1
cis-1,2-Dichloroethene	**1.50**		1.00	0.810	ug/L			11/01/17 17:52	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 17:52	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 17:52	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 17:52	1
Vinyl chloride	**5.06**		1.00	0.900	ug/L			11/01/17 17:52	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*77 - 120*		*11/01/17 17:52*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*11/01/17 17:52*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*11/01/17 17:52*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/01/17 17:52*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: X-A-1-102017
Date Collected: 10/20/17 11:15
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 18:19	1
1,1-Dichloroethane	**0.685**	**J**	1.00	0.380	ug/L			11/01/17 18:19	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 18:19	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 18:19	1
1,2-Dichloroethene, Total	**3.75**		2.00	0.810	ug/L			11/01/17 18:19	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 18:19	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 18:19	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 18:19	1
cis-1,2-Dichloroethene	**3.75**		1.00	0.810	ug/L			11/01/17 18:19	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 18:19	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 18:19	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 18:19	1
Vinyl chloride	**6.65**		1.00	0.900	ug/L			11/01/17 18:19	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*11/01/17 18:19*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*11/01/17 18:19*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 123*		*11/01/17 18:19*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*11/01/17 18:19*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: MW-07S-102017
Date Collected: 10/20/17 11:30
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 18:46	1
1,1-Dichloroethane	**0.761**	**J**	1.00	0.380	ug/L			11/01/17 18:46	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 18:46	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 18:46	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			11/01/17 18:46	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 18:46	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 18:46	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 18:46	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			11/01/17 18:46	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 18:46	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 18:46	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 18:46	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 18:46	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 18:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*77 - 120*		*11/01/17 18:46*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*11/01/17 18:46*	*1*
Dibromofluoromethane (Surr)	*89*		*75 - 123*		*11/01/17 18:46*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/01/17 18:46*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: MW-07D-102017
Date Collected: 10/20/17 11:45
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.64	U	2.00	1.64	ug/L			11/01/17 19:13	2
1,1-Dichloroethane	0.760	U	2.00	0.760	ug/L			11/01/17 19:13	2
1,1-Dichloroethene	0.580	U	2.00	0.580	ug/L			11/01/17 19:13	2
1,2-Dichloroethane	0.420	U	2.00	0.420	ug/L			11/01/17 19:13	2
1,2-Dichloroethene, Total	1.62	U	4.00	1.62	ug/L			11/01/17 19:13	2
Acetone	6.00	U	20.0	6.00	ug/L			11/01/17 19:13	2
Benzene	0.820	U	2.00	0.820	ug/L			11/01/17 19:13	2
Chloroethane	0.640	U	2.00	0.640	ug/L			11/01/17 19:13	2
cis-1,2-Dichloroethene	1.62	U	2.00	1.62	ug/L			11/01/17 19:13	2
Ethylbenzene	1.48	U	2.00	1.48	ug/L			11/01/17 19:13	2
Tetrachloroethene	0.720	U	2.00	0.720	ug/L			11/01/17 19:13	2
Trichloroethene	0.920	U	2.00	0.920	ug/L			11/01/17 19:13	2
Vinyl chloride	1.80	U	2.00	1.80	ug/L			11/01/17 19:13	2
Xylenes, Total	1.32	U	4.00	1.32	ug/L			11/01/17 19:13	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*77 - 120*		*11/01/17 19:13*	*2*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*11/01/17 19:13*	*2*
Dibromofluoromethane (Surr)	*92*		*75 - 123*		*11/01/17 19:13*	*2*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/01/17 19:13*	*2*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: TB-001-102017
Date Collected: 10/20/17 00:00
Date Received: 10/20/17 13:00

Lab Sample ID: 480-126349-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 19:39	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			11/01/17 19:39	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 19:39	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 19:39	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			11/01/17 19:39	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 19:39	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 19:39	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 19:39	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			11/01/17 19:39	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 19:39	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 19:39	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 19:39	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 19:39	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*77 - 120*		*11/01/17 19:39*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*11/01/17 19:39*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*11/01/17 19:39*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*11/01/17 19:39*	*1*

Surrogate Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(75-123)	(80-120)
480-126349-1	RW-02-102017	92	106	98	102
480-126349-2	X-A-3-102017	91	100	93	97
480-126349-3	X-A-3-102017-DUP	91	105	94	98
480-126349-4	X-C-3-102017	90	104	94	101
480-126349-5	X-A-1-102017	94	107	95	103
480-126349-5 MS	X-A-1-102017-MS	86	102	90	101
480-126349-5 MSD	X-A-1-102017-MSD	87	104	93	102
480-126349-6	MW-07S-102017	88	101	89	102
480-126349-7	MW-07D-102017	92	105	92	102
480-126349-8	TB-001-102017	89	104	93	103
LCS 480-384942/4	Lab Control Sample	87	100	88	99
MB 480-384942/6	Method Blank	90	104	92	102

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-384942/6
Matrix: Water
Analysis Batch: 384942

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			11/01/17 11:13	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			11/01/17 11:13	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			11/01/17 11:13	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			11/01/17 11:13	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			11/01/17 11:13	1
Acetone	3.00	U	10.0	3.00	ug/L			11/01/17 11:13	1
Benzene	0.410	U	1.00	0.410	ug/L			11/01/17 11:13	1
Chloroethane	0.320	U	1.00	0.320	ug/L			11/01/17 11:13	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			11/01/17 11:13	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			11/01/17 11:13	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			11/01/17 11:13	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			11/01/17 11:13	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			11/01/17 11:13	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			11/01/17 11:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*77 - 120*		*11/01/17 11:13*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*11/01/17 11:13*	*1*
Dibromofluoromethane (Surr)	*92*		*75 - 123*		*11/01/17 11:13*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/01/17 11:13*	*1*

Lab Sample ID: LCS 480-384942/4
Matrix: Water
Analysis Batch: 384942

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	20.30		ug/L		81	73 - 126
1,1-Dichloroethane	25.0	20.54		ug/L		82	77 - 120
1,1-Dichloroethene	25.0	19.54		ug/L		78	66 - 127
1,2-Dichloroethane	25.0	19.12		ug/L		76	75 - 120
Acetone	125	97.00		ug/L		78	56 - 142
Benzene	25.0	20.69		ug/L		83	71 - 124
Chloroethane	25.0	21.48		ug/L		86	69 - 136
cis-1,2-Dichloroethene	25.0	20.54		ug/L		82	74 - 124
Ethylbenzene	25.0	22.09		ug/L		88	77 - 123
Tetrachloroethene	25.0	21.43		ug/L		86	74 - 122
Trichloroethene	25.0	19.69		ug/L		79	74 - 123
Vinyl chloride	25.0	21.55		ug/L		86	65 - 133
Xylenes, Total	50.0	42.88		ug/L		86	76 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*
Dibromofluoromethane (Surr)	*88*		*75 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-126349-5 MS
Matrix: Water
Analysis Batch: 384942

Client Sample ID: X-A-1-102017-MS
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	0.820	U	25.0	26.82		ug/L		107	73 - 126
1,1-Dichloroethane	0.685	J	25.0	26.44		ug/L		103	77 - 120
1,1-Dichloroethene	0.290	U	25.0	27.63		ug/L		111	66 - 127
1,2-Dichloroethane	0.210	U	25.0	21.73		ug/L		87	75 - 120
Acetone	3.00	U	125	97.80		ug/L		78	56 - 142
Benzene	0.410	U	25.0	25.93		ug/L		104	71 - 124
Chloroethane	0.320	U	25.0	29.04		ug/L		116	69 - 136
cis-1,2-Dichloroethene	3.75		25.0	27.95		ug/L		97	74 - 124
Ethylbenzene	0.740	U	25.0	28.37		ug/L		113	77 - 123
Tetrachloroethene	0.360	U	25.0	28.26		ug/L		113	74 - 122
Trichloroethene	0.460	U	25.0	25.35		ug/L		101	74 - 123
Vinyl chloride	6.65		25.0	38.26		ug/L		126	65 - 133
Xylenes, Total	0.660	U	50.0	54.50		ug/L		109	76 - 122

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*77 - 120*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*
Dibromofluoromethane (Surr)	*90*		*75 - 123*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: 480-126349-5 MSD
Matrix: Water
Analysis Batch: 384942

Client Sample ID: X-A-1-102017-MSD
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	0.820	U	25.0	25.15		ug/L		101	73 - 126	6	15
1,1-Dichloroethane	0.685	J	25.0	24.93		ug/L		97	77 - 120	6	20
1,1-Dichloroethene	0.290	U	25.0	25.94		ug/L		104	66 - 127	6	16
1,2-Dichloroethane	0.210	U	25.0	20.87		ug/L		83	75 - 120	4	20
Acetone	3.00	U	125	93.28		ug/L		75	56 - 142	5	15
Benzene	0.410	U	25.0	25.15		ug/L		101	71 - 124	3	13
Chloroethane	0.320	U	25.0	27.82		ug/L		111	69 - 136	4	15
cis-1,2-Dichloroethene	3.75		25.0	26.86		ug/L		92	74 - 124	4	15
Ethylbenzene	0.740	U	25.0	27.05		ug/L		108	77 - 123	5	15
Tetrachloroethene	0.360	U	25.0	27.18		ug/L		109	74 - 122	4	20
Trichloroethene	0.460	U	25.0	24.19		ug/L		97	74 - 123	5	16
Vinyl chloride	6.65		25.0	36.15		ug/L		118	65 - 133	6	15
Xylenes, Total	0.660	U	50.0	52.74		ug/L		105	76 - 122	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*
Dibromofluoromethane (Surr)	*93*		*75 - 123*
Toluene-d8 (Surr)	*102*		*80 - 120*

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

GC/MS VOA

Analysis Batch: 384942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-126349-1	RW-02-102017	Total/NA	Water	8260C	
480-126349-2	X-A-3-102017	Total/NA	Water	8260C	
480-126349-3	X-A-3-102017-DUP	Total/NA	Water	8260C	
480-126349-4	X-C-3-102017	Total/NA	Water	8260C	
480-126349-5	X-A-1-102017	Total/NA	Water	8260C	
480-126349-6	MW-07S-102017	Total/NA	Water	8260C	
480-126349-7	MW-07D-102017	Total/NA	Water	8260C	
480-126349-8	TB-001-102017	Total/NA	Water	8260C	
MB 480-384942/6	Method Blank	Total/NA	Water	8260C	
LCS 480-384942/4	Lab Control Sample	Total/NA	Water	8260C	
480-126349-5 MS	X-A-1-102017-MS	Total/NA	Water	8260C	
480-126349-5 MSD	X-A-1-102017-MSD	Total/NA	Water	8260C	

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: RW-02-102017
Lab Sample ID: 480-126349-1
Date Collected: 10/20/17 10:30
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 16:32	ARS	TAL BUF

Client Sample ID: X-A-3-102017
Lab Sample ID: 480-126349-2
Date Collected: 10/20/17 10:45
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 16:59	ARS	TAL BUF

Client Sample ID: X-A-3-102017-DUP
Lab Sample ID: 480-126349-3
Date Collected: 10/20/17 10:50
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 17:26	ARS	TAL BUF

Client Sample ID: X-C-3-102017
Lab Sample ID: 480-126349-4
Date Collected: 10/20/17 11:00
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 17:52	ARS	TAL BUF

Client Sample ID: X-A-1-102017
Lab Sample ID: 480-126349-5
Date Collected: 10/20/17 11:15
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 18:19	ARS	TAL BUF

Client Sample ID: MW-07S-102017
Lab Sample ID: 480-126349-6
Date Collected: 10/20/17 11:30
Matrix: Water
Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 18:46	ARS	TAL BUF

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Client Sample ID: MW-07D-102017

Lab Sample ID: 480-126349-7

Date Collected: 10/20/17 11:45

Matrix: Water

Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	384942	11/01/17 19:13	ARS	TAL BUF

Client Sample ID: TB-001-102017

Lab Sample ID: 480-126349-8

Date Collected: 10/20/17 00:00

Matrix: Water

Date Received: 10/20/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	384942	11/01/17 19:39	ARS	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,2-Dichloroethene, Total

Method Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-126349-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-126349-1	RW-02-102017	Water	10/20/17 10:30	10/20/17 13:00
480-126349-2	X-A-3-102017	Water	10/20/17 10:45	10/20/17 13:00
480-126349-3	X-A-3-102017-DUP	Water	10/20/17 10:50	10/20/17 13:00
480-126349-4	X-C-3-102017	Water	10/20/17 11:00	10/20/17 13:00
480-126349-5	X-A-1-102017	Water	10/20/17 11:15	10/20/17 13:00
480-126349-6	MW-07S-102017	Water	10/20/17 11:30	10/20/17 13:00
480-126349-7	MW-07D-102017	Water	10/20/17 11:45	10/20/17 13:00
480-126349-8	TB-001-102017	Water	10/20/17 00:00	10/20/17 13:00

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Jayson Burtard	Lab PM: Schove, John R	Carrier Tracking No(s): Hand Delivery	COC No: 480-103289-23407.1
Client Contact: Ms. Shane Lowe	Phone: 314-477-7284	E-Mail: john.schove@testamericainc.com		Page: Page 1 of 2
Company: CH2M Hill, Inc.				Job #:
Address: 300 Hunter Avenue Suite 305	Due Date Requested: Nov. 3rd			
City: St Louis	TAT Requested (days): 10 Business Days			
State, Zip: MO, 63124				
Phone: 314-335(Tel)	PO #: ~~10381-7-112346~~ Direct Bill			
Email: Shane.Lowe@ch2m.com	WO #:			
Project Name: Dowell - Depew Site	Project #: 48009920			
Site: New York	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic A
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Other: 480-126349 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - Site Specific Compound List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
RW-02-102017	10/20/17	1030	G	Water	N	N	X		
X-A-3-102017	10/20/17	1045	G	Water	N	N	X		
X-A-3-102017-DUP	10/20/17	1050	G	Water	N	N	X		
X-C-3-102017	10/20/17	1100	G	Water	N	N	X		
X-A-1-102017	10/20/17	1115	G	Water	N	Y	X		
X-A-1-102017-MS	10/20/17	1115	G	Water	N	Y	X		
X-A-1-102017-MSD	10/20/17	1115	G	Water	N	Y	X		
MW-07S-102017	10/20/17	1130	G	Water			X		
MW-07D-102017	10/20/17	1145	G	Water			X		
TB-001-102017	10/20/17	—	G	Water			X		
				Water					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Jayson Burtard	10/20/17	CH2M		10-20-17 1300	TA.
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.1 #1

11/2/2017

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 480-126349-1

Login Number: 126349

List Source: TestAmerica Buffalo

List Number: 1

Creator: Janish, Carl M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	CH2M
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-137682-1
Client Project/Site: Dowell - Depew Site

For:
CH2M Hill, Inc.
501 N Broadway Ave.
St Louis, Missouri 63102

Attn: Ms. Shane Lowe

Authorized for release by:
6/28/2018 11:14:16 AM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

Table of Contents

Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-137682-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-137682-1

Comments
No additional comments.

Receipt
The samples were received on 6/19/2018 1:48 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9º C.

GC/MS VOA
Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-421163 recovered above the upper control limit for Acetone, 1,2-Dichloroethane, and 1,1,1-Trichloroethane. The sample associated with this CCV was non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: TB-001-061918 (480-137682-4).

Method(s) 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 480-421513 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: X-A-1-061918 — Lab Sample ID: 480-137682-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.743	J	1.00	0.380	ug/L	1		8260C	Total/NA
1,2-Dichloroethene, Total	1.51	J	2.00	0.810	ug/L	1		8260C	Total/NA
Acetone	11.2		10.0	3.00	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	1.51		1.00	0.810	ug/L	1		8260C	Total/NA
Vinyl chloride	6.26		1.00	0.900	ug/L	1		8260C	Total/NA

Client Sample ID: X-C-3-061918 — Lab Sample ID: 480-137682-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.811	J	1.00	0.380	ug/L	1		8260C	Total/NA
1,2-Dichloroethene, Total	1.16	J	2.00	0.810	ug/L	1		8260C	Total/NA
Acetone	3.70	J	10.0	3.00	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	1.16		1.00	0.810	ug/L	1		8260C	Total/NA
Vinyl chloride	4.84		1.00	0.900	ug/L	1		8260C	Total/NA

Client Sample ID: X-C-3-061918-DUP — Lab Sample ID: 480-137682-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.737	J	1.00	0.380	ug/L	1		8260C	Total/NA
1,2-Dichloroethene, Total	1.22	J	2.00	0.810	ug/L	1		8260C	Total/NA
Acetone	10.2		10.0	3.00	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	1.22		1.00	0.810	ug/L	1		8260C	Total/NA
Vinyl chloride	5.26		1.00	0.900	ug/L	1		8260C	Total/NA

Client Sample ID: TB-001-061918 — Lab Sample ID: 480-137682-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: X-A-1-061918
Date Collected: 06/19/18 10:50
Date Received: 06/19/18 13:48

Lab Sample ID: 480-137682-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/23/18 19:38	1
1,1-Dichloroethane	**0.743**	**J**	1.00	0.380	ug/L			06/23/18 19:38	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/23/18 19:38	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/23/18 19:38	1
1,2-Dichloroethene, Total	**1.51**	**J**	2.00	0.810	ug/L			06/23/18 19:38	1
Acetone	**11.2**		10.0	3.00	ug/L			06/23/18 19:38	1
Benzene	0.410	U	1.00	0.410	ug/L			06/23/18 19:38	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/23/18 19:38	1
cis-1,2-Dichloroethene	**1.51**		1.00	0.810	ug/L			06/23/18 19:38	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/23/18 19:38	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/23/18 19:38	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/23/18 19:38	1
Vinyl chloride	**6.26**		1.00	0.900	ug/L			06/23/18 19:38	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/23/18 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*06/23/18 19:38*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*06/23/18 19:38*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/23/18 19:38*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*06/23/18 19:38*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: X-C-3-061918
Date Collected: 06/19/18 12:30
Date Received: 06/19/18 13:48

Lab Sample ID: 480-137682-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/23/18 20:06	1
1,1-Dichloroethane	**0.811**	**J**	1.00	0.380	ug/L			06/23/18 20:06	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/23/18 20:06	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/23/18 20:06	1
1,2-Dichloroethene, Total	**1.16**	**J**	2.00	0.810	ug/L			06/23/18 20:06	1
Acetone	**3.70**	**J**	10.0	3.00	ug/L			06/23/18 20:06	1
Benzene	0.410	U	1.00	0.410	ug/L			06/23/18 20:06	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/23/18 20:06	1
cis-1,2-Dichloroethene	**1.16**		1.00	0.810	ug/L			06/23/18 20:06	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/23/18 20:06	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/23/18 20:06	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/23/18 20:06	1
Vinyl chloride	**4.84**		1.00	0.900	ug/L			06/23/18 20:06	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/23/18 20:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*06/23/18 20:06*	*1*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*06/23/18 20:06*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/23/18 20:06*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*06/23/18 20:06*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: X-C-3-061918-DUP
Date Collected: 06/19/18 12:30
Date Received: 06/19/18 13:48

Lab Sample ID: 480-137682-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/23/18 20:33	1
1,1-Dichloroethane	**0.737**	**J**	1.00	0.380	ug/L			06/23/18 20:33	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/23/18 20:33	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/23/18 20:33	1
1,2-Dichloroethene, Total	**1.22**	**J**	2.00	0.810	ug/L			06/23/18 20:33	1
Acetone	**10.2**		10.0	3.00	ug/L			06/23/18 20:33	1
Benzene	0.410	U	1.00	0.410	ug/L			06/23/18 20:33	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/23/18 20:33	1
cis-1,2-Dichloroethene	**1.22**		1.00	0.810	ug/L			06/23/18 20:33	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/23/18 20:33	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/23/18 20:33	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/23/18 20:33	1
Vinyl chloride	**5.26**		1.00	0.900	ug/L			06/23/18 20:33	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/23/18 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*06/23/18 20:33*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*06/23/18 20:33*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/23/18 20:33*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*06/23/18 20:33*	*1*

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: TB-001-061918
Date Collected: 06/19/18 00:00
Date Received: 06/19/18 13:48

Lab Sample ID: 480-137682-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/23/18 02:17	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			06/23/18 02:17	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/23/18 02:17	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/23/18 02:17	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			06/23/18 02:17	1
Acetone	3.00	U	10.0	3.00	ug/L			06/23/18 02:17	1
Benzene	0.410	U	1.00	0.410	ug/L			06/23/18 02:17	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/23/18 02:17	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			06/23/18 02:17	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/23/18 02:17	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/23/18 02:17	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/23/18 02:17	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			06/23/18 02:17	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/23/18 02:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*77 - 120*		*06/23/18 02:17*	*1*
4-Bromofluorobenzene (Surr)	*115*		*73 - 120*		*06/23/18 02:17*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/23/18 02:17*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*06/23/18 02:17*	*1*

Surrogate Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)	(75-123)
480-137682-1	X-A-1-061918	110	107	96	100
480-137682-1 MS	X-A-1-061918	104	104	92	92
480-137682-1 MSD	X-A-1-061918	109	107	94	100
480-137682-2	X-C-3-061918	108	108	98	106
480-137682-3	X-C-3-061918-DUP	108	102	96	102
480-137682-4	TB-001-061918	116	115	100	107
LCS 480-421163/12	Lab Control Sample	108	117	100	105
LCS 480-421205/5	Lab Control Sample	106	108	100	98
LCS 480-421513/5	Lab Control Sample	115	104	95	109
MB 480-421163/8	Method Blank	114	114	102	107
MB 480-421205/7	Method Blank	108	109	99	100
MB 480-421513/7	Method Blank	110	105	93	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-421163/8
Matrix: Water
Analysis Batch: 421163

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/22/18 23:30	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			06/22/18 23:30	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/22/18 23:30	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/22/18 23:30	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			06/22/18 23:30	1
Acetone	3.00	U	10.0	3.00	ug/L			06/22/18 23:30	1
Benzene	0.410	U	1.00	0.410	ug/L			06/22/18 23:30	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/22/18 23:30	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			06/22/18 23:30	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/22/18 23:30	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/22/18 23:30	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/22/18 23:30	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			06/22/18 23:30	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/22/18 23:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*77 - 120*		*06/22/18 23:30*	*1*
4-Bromofluorobenzene (Surr)	*114*		*73 - 120*		*06/22/18 23:30*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/22/18 23:30*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*06/22/18 23:30*	*1*

Lab Sample ID: LCS 480-421163/12
Matrix: Water
Analysis Batch: 421163

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	24.49		ug/L		98	73 - 126
1,1-Dichloroethane	25.0	22.13		ug/L		89	77 - 120
1,1-Dichloroethene	25.0	17.39		ug/L		70	66 - 127
1,2-Dichloroethane	25.0	26.06		ug/L		104	75 - 120
Acetone	125	156.4		ug/L		125	56 - 142
Benzene	25.0	21.00		ug/L		84	71 - 124
Chloroethane	25.0	20.04		ug/L		80	69 - 136
cis-1,2-Dichloroethene	25.0	21.34		ug/L		85	74 - 124
Ethylbenzene	25.0	21.98		ug/L		88	77 - 123
Tetrachloroethene	25.0	23.74		ug/L		95	74 - 122
Trichloroethene	25.0	22.74		ug/L		91	74 - 123
Vinyl chloride	25.0	20.69		ug/L		83	65 - 133
Xylenes, Total	50.0	44.52		ug/L		89	76 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*
4-Bromofluorobenzene (Surr)	*117*		*73 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-421205/7
Matrix: Water
Analysis Batch: 421205

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/23/18 12:50	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			06/23/18 12:50	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/23/18 12:50	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/23/18 12:50	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			06/23/18 12:50	1
Acetone	3.00	U	10.0	3.00	ug/L			06/23/18 12:50	1
Benzene	0.410	U	1.00	0.410	ug/L			06/23/18 12:50	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/23/18 12:50	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			06/23/18 12:50	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/23/18 12:50	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/23/18 12:50	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/23/18 12:50	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			06/23/18 12:50	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/23/18 12:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*06/23/18 12:50*	*1*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*		*06/23/18 12:50*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/23/18 12:50*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*06/23/18 12:50*	*1*

Lab Sample ID: LCS 480-421205/5
Matrix: Water
Analysis Batch: 421205

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	22.49		ug/L		90	73 - 126
1,1-Dichloroethane	25.0	22.15		ug/L		89	77 - 120
1,1-Dichloroethene	25.0	20.28		ug/L		81	66 - 127
1,2-Dichloroethane	25.0	24.14		ug/L		97	75 - 120
Acetone	125	161.8		ug/L		129	56 - 142
Benzene	25.0	20.96		ug/L		84	71 - 124
Chloroethane	25.0	23.54		ug/L		94	69 - 136
cis-1,2-Dichloroethene	25.0	20.73		ug/L		83	74 - 124
Ethylbenzene	25.0	22.59		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.60		ug/L		94	74 - 122
Trichloroethene	25.0	22.03		ug/L		88	74 - 123
Vinyl chloride	25.0	21.32		ug/L		85	65 - 133
Xylenes, Total	50.0	45.51		ug/L		91	76 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*77 - 120*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 123*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-421513/7
Matrix: Water
Analysis Batch: 421513

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.820	U	1.00	0.820	ug/L			06/25/18 22:12	1
1,1-Dichloroethane	0.380	U	1.00	0.380	ug/L			06/25/18 22:12	1
1,1-Dichloroethene	0.290	U	1.00	0.290	ug/L			06/25/18 22:12	1
1,2-Dichloroethane	0.210	U	1.00	0.210	ug/L			06/25/18 22:12	1
1,2-Dichloroethene, Total	0.810	U	2.00	0.810	ug/L			06/25/18 22:12	1
Acetone	3.00	U	10.0	3.00	ug/L			06/25/18 22:12	1
Benzene	0.410	U	1.00	0.410	ug/L			06/25/18 22:12	1
Chloroethane	0.320	U	1.00	0.320	ug/L			06/25/18 22:12	1
cis-1,2-Dichloroethene	0.810	U	1.00	0.810	ug/L			06/25/18 22:12	1
Ethylbenzene	0.740	U	1.00	0.740	ug/L			06/25/18 22:12	1
Tetrachloroethene	0.360	U	1.00	0.360	ug/L			06/25/18 22:12	1
Trichloroethene	0.460	U	1.00	0.460	ug/L			06/25/18 22:12	1
Vinyl chloride	0.900	U	1.00	0.900	ug/L			06/25/18 22:12	1
Xylenes, Total	0.660	U	2.00	0.660	ug/L			06/25/18 22:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*06/25/18 22:12*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*06/25/18 22:12*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/25/18 22:12*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 123*		*06/25/18 22:12*	*1*

Lab Sample ID: LCS 480-421513/5
Matrix: Water
Analysis Batch: 421513

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	26.09		ug/L		104	73 - 126
1,1-Dichloroethane	25.0	26.40		ug/L		106	77 - 120
1,1-Dichloroethene	25.0	23.69		ug/L		95	66 - 127
1,2-Dichloroethane	25.0	27.92		ug/L		112	75 - 120
Acetone	125	191.9	*	ug/L		154	56 - 142
Benzene	25.0	24.99		ug/L		100	71 - 124
Chloroethane	25.0	29.53		ug/L		118	69 - 136
cis-1,2-Dichloroethene	25.0	25.56		ug/L		102	74 - 124
Ethylbenzene	25.0	23.57		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.89		ug/L		104	74 - 122
Trichloroethene	25.0	24.78		ug/L		99	74 - 123
Vinyl chloride	25.0	25.91		ug/L		104	65 - 133
Xylenes, Total	50.0	47.85		ug/L		96	76 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*115*		*77 - 120*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*
Dibromofluoromethane (Surr)	*109*		*75 - 123*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-137682-1 MS
Matrix: Water
Analysis Batch: 421513

Client Sample ID: X-A-1-061918
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	0.820	U	25.0	25.91		ug/L		104	73 - 126
1,1-Dichloroethane	0.743	J	25.0	27.34		ug/L		106	77 - 120
1,1-Dichloroethene	0.290	U	25.0	22.53		ug/L		90	66 - 127
1,2-Dichloroethane	0.210	U	25.0	28.06		ug/L		112	75 - 120
Acetone	11.2		125	189.4	F1	ug/L		143	56 - 142
Benzene	0.410	U	25.0	25.85		ug/L		103	71 - 124
Chloroethane	0.320	U	25.0	31.53		ug/L		126	69 - 136
cis-1,2-Dichloroethene	1.51		25.0	26.34		ug/L		99	74 - 124
Ethylbenzene	0.740	U	25.0	25.84		ug/L		103	77 - 123
Tetrachloroethene	0.360	U	25.0	27.55		ug/L		110	74 - 122
Trichloroethene	0.460	U	25.0	25.64		ug/L		103	74 - 123
Vinyl chloride	6.26		25.0	33.16		ug/L		108	65 - 133
Xylenes, Total	0.660	U	50.0	51.37		ug/L		103	76 - 122

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*
Toluene-d8 (Surr)	*92*		*80 - 120*
Dibromofluoromethane (Surr)	*92*		*75 - 123*

Lab Sample ID: 480-137682-1 MSD
Matrix: Water
Analysis Batch: 421513

Client Sample ID: X-A-1-061918
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	0.820	U	25.0	29.34		ug/L		117	73 - 126	12	15
1,1-Dichloroethane	0.743	J	25.0	29.85		ug/L		116	77 - 120	9	20
1,1-Dichloroethene	0.290	U	25.0	22.95		ug/L		92	66 - 127	2	16
1,2-Dichloroethane	0.210	U	25.0	30.86	F1	ug/L		123	75 - 120	9	20
Acetone	11.2		125	208.9	F1	ug/L		158	56 - 142	10	15
Benzene	0.410	U	25.0	27.53		ug/L		110	71 - 124	6	13
Chloroethane	0.320	U	25.0	33.85		ug/L		135	69 - 136	7	15
cis-1,2-Dichloroethene	1.51		25.0	28.88		ug/L		109	74 - 124	9	15
Ethylbenzene	0.740	U	25.0	27.16		ug/L		109	77 - 123	5	15
Tetrachloroethene	0.360	U	25.0	28.92		ug/L		116	74 - 122	5	20
Trichloroethene	0.460	U	25.0	28.66		ug/L		115	74 - 123	11	16
Vinyl chloride	6.26		25.0	36.28		ug/L		120	65 - 133	9	15
Xylenes, Total	0.660	U	50.0	53.90		ug/L		108	76 - 122	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*77 - 120*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*
Dibromofluoromethane (Surr)	*100*		*75 - 123*

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

GC/MS VOA

Analysis Batch: 421163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-137682-4	TB-001-061918	Total/NA	Water	8260C	
MB 480-421163/8	Method Blank	Total/NA	Water	8260C	
LCS 480-421163/12	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 421205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-137682-1	X-A-1-061918	Total/NA	Water	8260C	
480-137682-2	X-C-3-061918	Total/NA	Water	8260C	
480-137682-3	X-C-3-061918-DUP	Total/NA	Water	8260C	
MB 480-421205/7	Method Blank	Total/NA	Water	8260C	
LCS 480-421205/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 421513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-421513/7	Method Blank	Total/NA	Water	8260C	
LCS 480-421513/5	Lab Control Sample	Total/NA	Water	8260C	
480-137682-1 MS	X-A-1-061918	Total/NA	Water	8260C	
480-137682-1 MSD	X-A-1-061918	Total/NA	Water	8260C	

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Client Sample ID: X-A-1-061918
Lab Sample ID: 480-137682-1
Date Collected: 06/19/18 10:50
Matrix: Water
Date Received: 06/19/18 13:48

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	421205	06/23/18 19:38	AMM	TAL BUF

Client Sample ID: X-C-3-061918
Lab Sample ID: 480-137682-2
Date Collected: 06/19/18 12:30
Matrix: Water
Date Received: 06/19/18 13:48

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	421205	06/23/18 20:06	AMM	TAL BUF

Client Sample ID: X-C-3-061918-DUP
Lab Sample ID: 480-137682-3
Date Collected: 06/19/18 12:30
Matrix: Water
Date Received: 06/19/18 13:48

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	421205	06/23/18 20:33	AMM	TAL BUF

Client Sample ID: TB-001-061918
Lab Sample ID: 480-137682-4
Date Collected: 06/19/18 00:00
Matrix: Water
Date Received: 06/19/18 13:48

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	421163	06/23/18 02:17	NMC	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18 *

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,2-Dichloroethene, Total

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: Dowell - Depew Site

TestAmerica Job ID: 480-137682-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-137682-1	X-A-1-061918	Water	06/19/18 10:50	06/19/18 13:48
480-137682-2	X-C-3-061918	Water	06/19/18 12:30	06/19/18 13:48
480-137682-3	X-C-3-061918-DUP	Water	06/19/18 12:30	06/19/18 13:48
480-137682-4	TB-001-061918	Water	06/19/18 00:00	06/19/18 13:48

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-137682 COC

Client Information	Sampler: Chuck Dougherty	Lab PM: Schove, John R	Carrier Tracking No(s): Hand Carried	COC No: 480-112071-26007.1
Client Contact: Ms. Shane Lowe	Phone: 918-706-7889	E-Mail: john.schove@testamericainc.com		Page: Page 1 of 1
Company: CH2M Hill, Inc.				Job #:

Address: 300 Hunter Avenue Suite 305	Due Date Requested:
City: St Louis	TAT Requested (days): 5 day TAT
State, Zip: MO, 63124	
Phone: 314-335(Tel)	PO #: 10381-7-112346
Email: Shane.Lowe@ch2m.com	WO #:
Project Name: Dowell - Depew Site	Project #: 48009920
Site: New York	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - Site Specific Compound List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
X-A-1-061918	6-19-18	1050	G	Water	N	Y	✓	9	
X-C-3-061918	6-19-18	1230	G	Water	N	N	✓	3	
X-C-3-061918-DUP	6-19-18	1230	G	Water	N	N	✓	3	
				Water					
6-19-18				Water					
Trip Blank TB-001-061918	6-19-18	1000	G	Water	N	N		~~3~~ 1	VOA
6-19-18									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Charles Dougherty / Chuck Dougherty	6-19-18/1348	CH2M		6/19/18 1348	TUFS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.9 #1

Ver: 08/04/2016

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 480-137682-1

Login Number: 137682
List Number: 1
Creator: Harper, Marcus D

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	CHZM
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Appendix C
Data Quality Evaluation Report

Data Quality Evaluation
Former Dowell Facility, Depew, New York

PREPARED FOR:	Schlumberger Technology Corporation and The Dow Chemical Company
PREPARED BY:	CH2M HILL Engineers, Inc.
DATE:	July 2018

Introduction

The objective of this data quality evaluation (DQE) report is to assess the data quality of analytical results for groundwater collected from the Former Dowell Facility in Depew, New York. Groundwater samples were collected on October 20, 2017 and June 19, 2018. Guidance for this DQE report came from the site-specific *Quality Assurance Project Plan, June 2011*; *U.S. Environmental Protection Agency (USEPA) Contract Laboratory National Functional Guidelines (NFG) for Organic Superfund Methods Data Review, January 2017;* and individual method requirements.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC). This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers eight groundwater samples, two field duplicates (FD), one matrix spike (MS)/matrix spike duplicate (MSD), and two trip blanks (TB). The samples were reported in two sample delivery groups identified as 480-126349-1 and 480-137682-1. Samples were collected and delivered to TestAmerica Laboratories, Inc., in Buffalo, New York. The samples were analyzed by the method listed in Table 1.

Table 1. Analytical Parameters
Former Dowell Facility, Depew, New York

Parameter	Method	Laboratory
Volatile Organic Compounds	SW8260C	TestAmerica Laboratories, Inc., in Buffalo, New York

The sample delivery groups were assessed by reviewing the following: (1) the chain-of-custody documentation, (2) holding-time compliance, (3) calibration criteria, (4) method blanks/field blanks, (5) laboratory control sample (LCS)/laboratory control sample duplicates (LCSD), (6) surrogate spike recoveries, (7) MS/MSD, (8) internal standard recoveries, (9) field duplicate recoveries, and (10) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the NFG, substituting method criteria where applicable. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the NFG and are defined as follows:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R = The sample result was rejected due to serious deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified.
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

Summaries of the data validation are contained in the following subsections.

Holding Time/Preservation

Acceptance criteria were met.

Calibration

Initial and continuing calibration analyses were performed as required by the methods, and acceptance criteria were met, with the following exception:

- The percent difference for acetone was greater than method criteria in one continuing calibration verification standard (CCV), indicating a possible high bias. The data were qualified as estimated and flagged “J” in the associated samples.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Laboratory Control Samples

LCS/LCSDs were analyzed as required, and accuracy and precision criteria were met with the following exception:

- Acetone was recovered greater than the upper control limits in one LCS, indicating a possible high bias. The data were qualified as estimated and flagged “J” in the associated samples.

Matrix Spike

MS/MSD samples were analyzed as required, and accuracy and precision criteria were met, with the following exceptions:

- Acetone and 1,2-dichlorethane were recovered greater than the upper control limits in the MS/MSD for sample X-A-1-061918, indicating a possible high bias. Acetone was qualified as estimated and flagged “J” in the parent sample; 1,2-dichoroethane was not qualified as it was not detected in the parent sample.

Internal Standards

Internal standards were added to the samples, and acceptance criteria were met.

Surrogates

Surrogates were added to the samples, and acceptance criteria were met.

Field Duplicates

FDs were collected as required and precision criteria were met.

Field Blanks

TBs were collected, analyzed, and were free of contamination.

Chain of Custody

Required procedures were followed and were generally free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision-making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD, LCS/LCSD and MS/MSD relative percent differences. Precision was acceptable.
- Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, MS/MSD, internal standards and surrogate standard recoveries, as well as the evaluation of method/field blank data. Accuracy was generally acceptable; however, acetone was qualified as estimated in three samples due to calibration, LCS and/or MS/MSD issues (Table 2). The method/field blank data were free of contamination. Data users should consider the impact to any result that is qualified because it may contain a bias that could affect the decision-making process.
- Representativeness of the data was verified through the sample's collection, storage, and preservation procedures, and the verification of holding-time compliance. No issues were noted due to sample collection, storage, or preservation procedures. The data were reported from analyses within the USEPA-recommended holding time.
- Comparability of the data was verified through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as data that are not rejected for project use. The data were considered valid. The completeness goal of 90 percent was met for the method/analyte combination. The data can be used for project decisions taking into consideration the validation flags applied to the data.

Table 2. Qualified Data

Former Dowell Facility, Depew, New York

Native ID	Method	Analyte	Units	Final Result	Validation Flag	Validation Reason
X-A-1-061918	SW8260C	Acetone	µg/L	11.2	J	LCS>UCL, CCV>UCL, MS>UCL, SD>UCL
X-C-3-061918	SW8260C	Acetone	µg/L	3.70	J	LCS>UCL, CCV>UCL
X-C-3-061918-DUP	SW8260C	Acetone	µg/L	10.2	J	LCS>UCL, CCV>UCL

µg/L = micrograms per liter

Validation Reasons:

CCV>UCL	The continuing calibration verification standard was recovered greater than method criteria.
LCS>UCL	The laboratory control sample was recovered greater than the upper control limit.
MS>UCL	The matrix spike sample was recovered greater than the upper control limit.
SD>UCL	The matrix spike sample was recovered greater than the upper control limit.

Appendix D
Sitewide Inspection Form

FORMER DOWELL FACILITY – DEPEW, NEW YORK
SITE MANAGEMENT PLAN

NYSDEC SITE NO. V-00410-9

SITE-WIDE INSPECTION FORM

Date: 6-20-18 **Inspector:** Chuck Dougherty

Weather: Partly Cloudy **Signature:** [signature]

Temperature: ~mid 70s F **Company:** CHZM/Jacobs

Quarter: First Second Third Fourth
(Circle One)

Item Inspected	Maintenance Needed (Y/N)	Comments
General Site Access	No	No problems with access.
Soil /Grass Cover	No	Grass is tall, but site is not overgrown
Security Fencing, Gates and Locks	No	No gaps in fence, gate is secure
Monitoring Wells	No	N/A
Site Drainage	No	No ponding visible
Trees, Bushes, Other Vegetation	No	N/A
Miscellaneous	No	N/A