Site Characterization Report
Bridge Cleaners
39-26 30th Street
Long Island City, Queens County, New York

Site Number: 2-41-127

May 2012

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway
Albany, New York 12233

Prepared by:

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
368 Pleasant View Drive
Lancaster, New York 14086

Table of Contents

Section **Page**

Table of Contents (cont.)

List of Tables

List of Figures

Figure **Page**

List of Abbreviations and Acronyms

ASP	Analytical Services Protocol
BGS	below ground surface
Con-Test	Con-Test Analytical Laboratory
°C	degrees Celsius
DER	Division of Environmental Remediation
DOT	(United States) Department of Transportation
DUSR	Data Usability Summary Report
EDR	Environmental Data Resources Inc.
EEEPC	Ecology and Environment Engineering, P.C.
EPA	(United States) Environmental Protection Agency
EPS	Environmental Products and Service of Vermont, Inc.
GC/MS	gas chromatography/mass spectroscopy
HASP	health and safety plan
HVAC	heating, ventilating, and air conditioning
ID	inner diameter
IDW	investigation-derived waste
LAWES	Land, Air, and Water Environmental Services, Inc.
MD	matrix duplicate
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MS/MSD	matrix spike/matrix spike duplicate
NAD	North American Datum
NAVD 88	North American Vertical Datum of 1988
NTU	nephelometric turbidity units
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health

List of Abbreviations and Acronyms (cont.)

PCE	perchloroethylene
PID	photoionization detector
PPE	personal protective equipment
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
SC	site characterization
SCO	Soil Cleanup Objective
SOW	scope of work
SVOC	semivolatile organic compound
TCE	trichloroethylene
USCS	Unified Soil Classification System
VOC	volatile organic compound

1 Site Assessment Summary

1.1 Introduction

Pursuant to Work Assignment Number D007617-1, Ecology and Environment Engineering, P.C. (EEEPC) performed a site characterization (SC) at the Bridge Cleaners site (Site No. 2-41-127).

1.2 Purpose

The primary objective of this SC is assessment of subsurface soil and groundwater conditions to identify the possible source area of chlorinated volatile organic compounds (VOCs) in the area around the Bridge Cleaners site.

1.3 Site Description

The Bridge Cleaners site is a 0.1700-acre parcel located at 39-26 30th Street (Block 00399, Lot 0031), Long Island City, borough of Queens, Queens County, New York (see Figure 1-1). The Bridge Cleaners property consists of a single-story, 7,500-square-foot concrete building that occupies the entire lot (see Figure 1-2). The building was vacant at the time of this investigation; however, records indicate the building was occupied by a commercial laundry and dry cleaner since 1997. A list of former tenants is presented in Appendix A.

The study area consists of the city block surrounding the Bridge Cleaners site and is zoned in an area of mixed residential and manufacturing. The study area is bounded by 39th Avenue to the north, 30th Street to the east, 40th Avenue to the south, and 29th Street to the west. Other properties located on this block include: a faith-based organization, a parking garage, a vacant lot, and a telecommunications wholesaling business along 30th Street (east side of site). Occupants along 29th Street (west side of site) include another faith-based organization, a plumbing and heating, ventilating, and air conditioning (HVAC) business, the same parking garage also found on 30th Street, a greeting card publishing company, a multi-story concrete building under renovation, and a hotel.

The study area is approximately 30 feet above mean sea level and the topography is relatively flat with a gentle slope to the south and southeast. The nearest water bodies are Dutch Kills, approximately 3,500 feet to the south of Bridge Cleaners site, and the East River, located approximately 4,500 feet to the northwest.

1.4 Previous Investigations

Previous investigations conducted in the area include Phase I and Phase II environmental assessments performed on the adjoining property at 39-27 29th Street (the multi-story concrete building under renovation). The Phase I assessment conducted in 2007 stated that Bridge Cleaners was in operation as a commercial dry cleaner at that time (AVT Enterprises 2007). The Phase II assessment conducted in 2010 included installation of soil borings and collection of soil, groundwater, and soil vapor samples (Preferred Environmental Solutions 2010). Results of the assessment supported the conclusion that groundwater contamination may come from the Bridge Cleaners property. Additional information from the Phase II assessment is presented in Section 3.3.

A limited sub-surface investigation was conducted on the Bridge Cleaners property in 2011 by Long Island Analytical Laboratories Inc. This investigation was performed on behalf of the property owner and included installation of five soil borings and collection of soil and groundwater samples. Sample results indicated the presence of trichloroethylene (TCE), PCE, and petroleum hydrocarbons in groundwater samples; perchloroethylene (PCE) was present in soil samples (Long Island Analytical Laboratories Inc. 2011). Additional information from the limited subsurface investigation conducted on the Bridge Cleaners property is presented in Section 3.3.

2 Site Characterization

The SC for the Bridge Cleaners site was designed to identify the source of the area of contamination by investigating the magnitude and extent of chlorinated VOC contamination in soils and groundwater in the study area. These activities included a review of previous site investigations; development of a work plan; installation of five soil borings; collection of subsurface soil samples from the borings; installation of five groundwater monitoring wells in the borings; well development and groundwater sample collection; laboratory analysis of soil and groundwater samples; a site survey; and preparation of a summary report.

The study area consists of the city block surrounding the Bridge Cleaners site. Specific areas where intrusive work was conducted during this investigation include the east sidewalk along 29th Street between 39th and 40th Avenue; the west sidewalk along 30th Street between 39th and 40th Avenue; and the north sidewalk along 40th Avenue between 29th and 30th streets.

The SC field work was conducted between February 13 and 23, 2012. Photos from the field work are presented in Appendix B. Figure 2-1 depicts locations of the wells installed as part of this investigation. SC activities were performed in accordance with the scope of work described in the Work Assignment cost estimate submitted on January 11, 2012. A summary of the field procedures and modifications to the planned field investigation is provided below.

2.1 Preliminary Activities

Prior to beginning field activities, the EEEPC team reviewed the initial scope of work (SOW) and discussed the purpose of the investigation with the NYSDEC project manager. The original SOW included the collection of indoor air and soil vapor samples from inside the building, as well as the installation and sampling of monitoring wells both inside and outside of the building. Drilling subcontractors were initially consulted to discuss equipment options and identify specific methodologies to conduct the indoor work. All indoor work was subsequently cancelled due to site access challenges and limitations imposed by the property owner.

Following additional discussions with the NYSDEC project manager, a modified SOW was agreed upon as described in the January 11, 2012, Work Authorization cost estimate letter. The letter described the proposed investigation activities, methodologies, and schedule. It also identified the number and locations of monitoring wells. Detailed sampling methodologies and standard operating procedures were completed in accordance with applicable NYSDEC protocols, including DER-10 (NYSDEC 2010a).

After NYSDEC's approval of the final budget estimate, subcontracts were completed for drilling, analytical, survey, and waste disposal services; and a site-specific health and safety plan (HASP) was prepared.

2.2 Health and Safety Monitoring

During the intrusive site activities, EEEPC performed air monitoring to characterize airborne contaminant concentrations, including those of volatile organic vapors and explosive gases. A photoionization detector (PID) was used to monitor the concentration of organic vapors in the workers' breathing zone and adjacent to the boreholes during intrusive sampling. An oxygen/explosive gas meter was also used during intrusive activities to monitor for potentially explosive conditions. The monitoring indicated that there were no chemical impacts on worker or nearby resident health and safety and all work was performed in "Level D" personal protective equipment (PPE; i.e., no respiratory protection was required).

2.3 Direct-Push Activities

Monitoring well installation activities were conducted at the site between February 13 and 16, 2012. EEEPC subcontracted Land, Air, and Water Environmental Services, Inc. (LAWES), of Center Moriches, New York, to drill and install five monitoring wells in the sidewalks of three streets (29th Street, 30th Street, and 40th Avenue) around the Bridge Cleaners property (see Figure 2-1). LAWES used a Geoprobe Model 6610DT to conduct soil core collection and install the wells.

2.3.1 Subsurface Soil Sampling

Prior to initiating intrusive subsurface activities, LAWES obtained the proper drilling permits from New York City and coordinated with the Underground Facilities Protection Organization to identify and locate underground utilities in the vicinity of the soil borings. After the proposed drilling locations were cleared of utilities, a diamond hole saw was used to core through surface concrete at each well location. In accordance with New York City requirements, the top 5 feet of soil was then hand-dug at each location to verify buried utilities were not present. No utilities or other buried hazards were observed at any of the locations, so drilling activities at each location commenced when hand-clearing was complete.

The purpose of the subsurface soil investigation was to assess the extent of VOC contamination present in subsurface soil, as well as provide lithologic information and estimate the depth of groundwater. At each borehole, the Macro-Core system

was used to collect continuous soil cores in discrete, 5-foot-long dedicated acetate liners from 5 feet below grade to approximately 8 feet below the estimated depth of groundwater. Upon retrieval, each acetate liner was cut longitudinally and the EEEPC field geologist screened the soil for organic vapors using a PID and logged soil characteristics in accordance with the Unified Soil Classification System (USCS). Soil boring logs completed at each monitoring well location are provided in Appendix C.

A minimum of two subsurface soil samples were collected for laboratory analysis from each soil boring, one from soil believed to be contaminated (based on PID response, odor, or visual indicators) and the other collected from the estimated top of the water table. All 13 soil samples (plus one duplicate sample) were submitted for both VOC (United States Environmental Protection Agency [EPA] Method SW8260B) and percent solids analyses (EPA Method SM 2540G). A hydrocarbon-like odor similar to gasoline was detected in MW-4 starting at 29.5 feet below ground surface (BGS). Based on discussions with the NYSDEC Project Manager, the four samples from MW-4 were also analyzed for semivolatile organic compounds (SVOCs) (EPA Method 8270D). Table 2-1 presents depths that soil samples were collected as well as laboratory analytical data.

Soil samples were submitted to Con-Test Analytical Laboratory (Con-Test), of East Longmeadow, Massachusetts, under subcontract with EEEPC. All subsurface soil samples collected for VOC analysis were collected using the procedures described in EPA Method 5035: an approximately 5-gram subsample was collected with a dedicated polyethylene syringe and placed into pre-weighed vials containing methanol and deionized water. An additional aliquot was placed in a glass jar for percent solids determination. Upon collection, the sample containers were labeled and immediately placed in a cooler maintained with ice at 4°Celsius (C). Samples packaging and transportation were performed in accordance with the procedures outlined in the Master Quality Assurance Project Plan (QAPP) (EEEPC 2011).

2.3.2 Monitoring Well Installation

Upon completion of soil core collection, all boreholes were constructed as flush-mount monitoring wells (MW-1 through MW-5). Each monitoring well was constructed using 10 feet of 1.5-inch inner diameter (ID) polyvinyl chloride (PVC) well screen with a 0.010-inch slot size pre-packed inside a 40-mesh size sand filter surrounded by stainless-steel mesh followed by 1.5-inch ID Schedule 40 PVC riser to approximately 6 inches below grade. All PVC connections were flush-threaded, with a PVC cap placed on the bottom of the screen. The pre-packed well assembly and riser were installed through 3-inch ID coring rods advanced to the target well depth. After the well screen reached the desired depth, the 3-inch probe rids were retracted to near the top of the screen and 2 feet of U.S. Silica #0 sand was installed through the rod annulus, followed by a 2-foot-thick pelletized bentonite seal. Following a minimum 30-minute respite that allowed the bentonite to hydrate, a 5% bentonite/cement grout was installed from the top of the seal

to 1 foot BGS. The monitoring wells were constructed with flush-mount protective casings and fitted with a locked water tight cap (J-plug). Well construction details are summarized in Table 2-2 and well construction logs are provided in Appendix C.

2.4 Monitoring Well Development

Following a minimum of 24 hours after well installation activities were complete, the EEEPC field team developed the five monitoring wells on February 20 and 21, 2012. Development was performed by bailing the wells using dedicated 0.75-inch ID by 3-foot-long weighted polyethylene bailers. Development was performed to remove fine sediments from the sand pack and maximize hydraulic communication with the surrounding formation. Temperature, pH, conductivity, and turbidity measurements were recorded to monitor the progress of the development process. Water level in the wells remained relatively unchanged during well development. Due to the fine sandy and silty nature of the overburden aquifer, turbidity remained high in all wells except MW-3, in which turbidity was estimated to have reduced below 50 NTU. In the remaining wells, development was considered complete after at least five well volumes were removed. Development water was containerized and managed as IDW as discussed in Section 2.6. Well development records are included in Appendix C.

2.5 Monitoring Well Sampling

All monitoring wells were sampled at least 24 hours following well development using dedicated polyethylene bailers. Prior to purging and sampling the monitoring wells, static water levels were measured and used to determine the volume of standing water in each well. Temperature, pH, conductivity, and turbidity measurements were recorded throughout the well purging process and immediately prior to sampling. Due to the fine sand and silty nature of the overburden aquifer, groundwater turbidity was never below 50 nephelometric turbidity units (NTUs) in any of the wells. As such, purging continued until a minimum of five well volumes of water were removed from the wells (as per NYSDEC requirements), at which point all the groundwater quality parameters besides turbidity were stable (varying less than 10%) for three consecutive readings. Final groundwater quality parameters measured at the time of sampling are provided in Table 2-3. Monitoring well purge and sample records are included in Appendix C.

Upon collection, the sample containers were labeled and immediately placed in a cooler maintained with ice at 4°C. Samples were packaged and submitted to Con-Test for VOC analysis (EPA Method 8260B). A trip blank accompanied each shipment of water samples.

2.6 Investigation-Derived Waste (IDW) Management

The SC field effort generated investigation-derived waste (IDW) that included soil cuttings from monitoring well installation; groundwater from monitoring well development; purging and sampling; and spent PPE.

Due to site access limitation requirements by the site owner, IDW was not allowed to be stored on the Bridge Cleaners site overnight. As such, EEEPC subcontracted Environmental Products and Service of Vermont, Inc. (EPS) to pick-up and dispose of soil and water IDW on a daily basis. The soil cuttings and groundwater IDW were placed in U.S. Department of Transportation (DOT)-approved steel 55-gallon drums and transported to Cycle Chem, Inc., of Lewisberry, Pennsylvania, for disposal. Based on the expected contamination levels in the soil and water, no waste disposal analytical samples were collected as the IDW was classified as F-Listed waste by EPS for disposal purposes.

Spent macrocore liners were wiped clean and properly disposed of off-site as non-regulated solid waste with the PPE by LAWES.

2.7 Site Survey

YEC, Inc., of Valley Cottage, New York, was subcontracted to perform the site survey at the end of the well sampling phase on February 23, 2012. Surveying included setting a benchmark at the site, as well as measuring the horizontal locations and vertical elevations of pertinent features in the site area (e.g., monitoring well locations, building corners, and conventional and overhead doors). Horizontal control for the site benchmark was established in the New York State Plane East Zone (feet), North American Datum (NAD) 1983 to an accuracy of ±0.1 foot. The vertical control for the site benchmark was established to the nearest ±0.05 foot relative to the North American Vertical Datum of 1988 (NAVD 88). All ground level readings and monitoring well inner casing elevations were surveyed using a site level and rod measured to the nearest 0.01 foot relative to the NAVD 88, with an estimated accuracy of ±0.05 feet.

2.8 Static Groundwater Elevation Measurement

Depth-to-water measurements were collected from all monitoring wells on February 23, 2012. Measurements were made using an electronic water level indicator capable of measuring depth to water to within 0.01 feet and were taken from a surveyed point at the top of each inside well casing at least 24 hours after well development. Depth-to-water measurements were used in conjunction with surveyed top of casing elevations to establish static groundwater level elevations for each measured location (see Table 2-2). Static water level elevations were used to plot interpreted groundwater isopleths presented on Figure 2-1 and indicate groundwater flow to the south-southwest. Estimated horizontal groundwater gradient ranges from 0.002 to 0.005 foot per foot across the site.

2.9 Sample Analysis

Soil and groundwater sample analyses were performed by Con-Test using EPA SW-846 Methods as noted above (EPA 1996). These analytical protocols are incorporated by reference into the NYSDEC Analytical Services Protocol (ASP) (NYSDEC 2005). Laboratory reports were consistent with NYSDEC ASP Cate-

gory B deliverable requirements and were provided in a format consistent with the NYSDEC Environmental Information Management System.

2.10 Work Plan Deviations

The initial intent of the SC was to install two wells each on the sidewalks of 29th and 30th Streets and one well on the sidewalk of 40th Avenue. As a result of the use of an outdated site plan figure to establish well locations, well MW-2 was installed an estimated 75 feet south-southwest of the correct location. To remedy the situation, two options were considered. One was to install all five wells as planned and to install a sixth well, at the location at which well MW-2 was intended. This option was considered feasible due to drilling and well installation proceeding ahead of schedule. Another option was to install one well on 29th Street instead of two, and install a third well on 30th Street, at the location at which well MW-2 was intended. The NYSDEC project manager selected the latter option, so a total of five wells were installed, including one on the sidewalk of 29th Street, three on the sidewalks of 30th Street, and one on the sidewalk of 40th Avenue.

During soil coring at MW-04, a gray-stained sandy soil with a strong gasoline-type odor and substantially elevated PID readings was observed beginning at a depth of approximately 29.5 feet BGS and below. At the request of the NYSDEC project manager, a fourth soil sample was collected from the soil cores and all soil samples were analyzed for VOCs by EPA SW-846 Method 8260B and SVOCs by EPA SW-846 Method 8270D.

During well development the turbidity meter malfunctioned. After numerous attempts to recalibrate the instrument and after consultation with the instrument vendor the only option identified to remedy the situation was to have a replacement unit shipped to the site. This was not feasible, however, because sampling would have been completed before the replacement instrument could arrive. Well development and sampling proceeded using visual estimation and photo documentation to show groundwater turbidity.

2.11 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) samples, including field duplicates, trip blanks, and additional volume for matrix spike/matrix spike duplicate (MS/MSD) analysis were collected for groundwater and soil samples in accordance with the specifications of EEEPC's *Master Quality Assurance Project Plan (QAPP) for NYSDEC Projects* (2011). For groundwater and soil samples, field duplicates and MS/MSD samples were collected at the rate of one per 20 field samples. Trip blanks were included with each laboratory shipment of groundwater samples. Samples were collected using dedicated sampling equipment for each individual location.

Duplicate samples provide insight into the homogeneity of the sample matrix and establish a degree of confidence that the sample represents site conditions.

Groundwater duplicates were collected by filling additional laboratory vials. Soil duplicates consisted of additional volume and were collected directly into a separate VOC sample collection syringe immediately adjacent to the original sample. A review of the duplicate sample results is provided in the Data Usability Summary Reports (DUSRs) provided in Appendix D. Where the relative percent difference between the original and duplicate sample results exceeded data review guidelines, "J" flags were added to indicate that the results are estimated; however, there were no significant impacts on data usability associated with the field duplicate sample results.

In addition to analytical error introduced by machinery and sample handling, error can also occasionally result from analytical process interference by a sample matrix. This can result in the reporting of analytes at concentrations higher or lower than the true concentrations. Laboratory or matrix spike duplicates are aliquots of the same sample that are split prior to analysis and are treated exactly the same throughout the analytical method. The relative percent difference (RPD) between the values of the MS and MSD or between the original and the matrix duplicate (MD) was taken as a measure of the precision of the analytical method.

Trip blanks were collected to establish that the transport of sample vials to and from the field did not result in the contamination of the samples from external sources. Trip blanks consisted of laboratory vials containing deionized water. One trip blank was shipped to and from the field with each sample shipment of groundwater samples. Trip blank results are discussed in the DUSRs (see Appendix D). For the groundwater samples, no compounds were detected in the trip blanks; therefore, there were no impacts on data usability associated with the trip blank sample results.

2.12 Data Validation Review

All laboratory deliverables were reviewed in accordance with the QAPP (EEEPC 2011). The data were qualified following general guidelines in the *EPA CLP National Functional Guidelines for Organic Data Review, EPA 540/R-99-008* (October 1999). DUSRs were prepared for each laboratory report (based on sample delivery group) as specified in NYSDEC's *Guidance for the Development of Quality Assurance Plans and Data Usability Summary Reports* (2010b). The data review included an evaluation of the following:

- Holding times;
- Initial and continuing calibration;
- Reporting limits;

- Laboratory blanks;
- MS/MSD samples;
- Laboratory control samples;
- Field duplicates;
- Sample result verification; and
- Method-specific QC samples (e.g., gas chromatography/mass spectroscopy [GC/MS]).

DUSRs were prepared by EEEPC's data validation chemist (see Appendix D). Any deviations from acceptable QC specifications are discussed in the DUSRs. Qualifiers were added to the data, if appropriate, to indicate potential concerns with data usability and these qualifiers were transferred to the data summary tables discussed in Section 3. In general, there were no significant impacts on data usability.

3 Analytical Results

This section presents the analytical results of field sampling activities in order to develop an understanding of the nature and extent of soil and groundwater contamination at the Bridge Cleaners site. Tables 3-1 and 3-2 summarize current analytical results by presenting the analytes that were present in at least one sample at a concentration exceeding the analyte-specific detection limit. Complete laboratory analytical results are presented in Appendix E. Data in Tables 3-1 and 3-2 were screened against New York State Standards, Criteria, and Guidelines to identify the samples containing analytes that may represent a possible threat to human health and the environment. This screening process involved comparison of current soil analytical results in Table 3-1 to the NYSDEC 6 New York Codes Rules and Regulations (NYCRR) Subpart 375-6 Remedial Program Soil Cleanup Objectives (SCOs) for both Unrestricted Use and Restricted-Residential Use (NYSDEC 2006). The Unrestricted Use SCO is defined as a use without imposed restrictions, such as environmental easements or other land use controls. The Restricted-Residential Use SCO is a land use category that is considered when there is common ownership or a single owner/managing entity of the site, which at a minimum prohibits any vegetable gardens on a site (although community vegetable gardens may be considered with NYSDEC's approval) and single-family housing. Active recreational uses, which are public uses with a reasonable potential for soil contact, such as parks, are also included under this category.

Groundwater standards are promulgated standards with which all ambient waters of the state of New York must comply. The groundwater analytical results summarized in Table 3-2 were compared to Class GA Groundwater Standards and Guidance Values where applicable (NYSDEC 1999).

3.1 Subsurface Soil Sampling Results

A total of 13 soil samples (and one duplicate sample) were collected from the five monitoring well locations (MW-1 through MW-05) to characterize the horizontal and vertical extent of soil contamination at the site. All soil samples were submitted to the laboratory for VOC (EPA Method 8260B) and percent solids analysis. In addition, based on the hydrocarbon-like odor similar to gasoline that was detected in MW-4, these four samples were also analyzed for SVOCs (EPA Method 8270D). The percent solids ranged from 80% to 99%, with an average percent

solid value of 86.6%. A summary of the analytical results is provided below, as well as in Table 3-1.

VOCs

Fourteen VOCs (PCE, TCE, and 12 petroleum hydrocarbons) were detected in the 13 soil samples submitted to the laboratory for analysis. PCE was detected in nine of 13 soil samples, with only one sample (MW4-02) exceeding the Unrestricted Use SCO of 1.3 milligrams per kilogram (mg/kg) and no samples exceeding the Restricted-Residential use SCO of 19 mg/kg. TCE was reported in two of 13 soil samples, with no samples exceeding the Unrestricted Use SCO of 0.47 mg/kg or the Restricted-Residential Use SCO of 21 mg/kg. Soil sample MW4-02 was collected below the water table, which likely explains the detection of PCE and other compounds.

A total of 12 non-chlorinated petroleum hydrocarbon VOCs (m- and p-xylenes were reported as a sum) were detected between two soil samples collected from monitoring well MW-04 (MW4-02 from 29.8 feet BGS and MW4-04 from 31.8 feet BGS. Seven non-chlorinated contaminants from the MW4-02 sample exceeded Unrestricted SCOs (m- and p-xylenes were reported as a sum), with five of the compounds (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenezene m- and p-xylenes and o-xylene) also exceeding Restricted-Residential SCOs.

SVOCs

SVOCs were not detected in any of the four samples from MW-4 submitted for analysis.

3.2 Monitoring Well Sampling Results

A total of 12 VOCs (PCE, TCE, chloroform, and eight petroleum hydrocarbons) were detected in the five groundwater samples submitted for VOC (Method 8260B) analysis to characterize the horizontal extent of groundwater contamination at the site. A summary of groundwater data from the current and previous investigations is presented in Figure 2-1.

PCE was detected above the Class GA Groundwater Standard of 5 micrograms per liter (µg/L) in all five groundwater samples, with the highest concentration of PCE (440 µg/L) reported in sample MW3-01W. PCE concentrations in the remaining four samples ranged from 18 µg/L in sample MW1-01W to 31 µg/L in samples MW4-01W and MW5-01W.

TCE was detected in four of the five groundwater samples, with the highest concentration of TCE (31 µg/L) reported in sample MW3-01W, exceeding the Class GA Groundwater Standard of 5 µg/L. TCE concentrations in the remaining samples ranged from 1 µg/L in sample MW1-01W to 5 µg/L in sample MW4-01W.

Chloroform was detected in monitoring well MW1-01 at 9.9 µg/L, which exceeds the Class GA Groundwater Standard of 7 µg/L.

Nine petroleum hydrocarbons were detected in sample MW4-01W, all of which exceed their Class GA Groundwater Standards. M- and p-xylenes were reported as a sum, at 1,300 µg/L, while the groundwater standard is 5 µg/L for each isomer. The total concentration of non-chlorinated VOCs detected in sample MW4-01W was approximately 2,437 µg/L.

One petroleum hydrocarbon (naphthalene) was also detected in the MW5-01W sample, but it was below the 10 µg/L Class GA Groundwater Standard.

3.3 Previous Investigation Sampling Results

Two previous investigations were conducted at the adjacent property 39-27 29th Street, and a limited subsurface investigation was performed on the Bridge Cleaners site in 2010. The 2007 Phase I ESA completed at 39-27 29th Street was completed as a precursor to a possible real estate transaction and did not include collection of samples for laboratory analysis. However, the 2010 Phase II ESA included the collection of six soil samples from four soil borings; two groundwater samples collected from temporary wells installed at two of the four soil borings; and four soil vapor samples from below the basement and first floor of the building. The soil and groundwater samples were submitted for VOC, SVOC, pesticides, PCBs, TAL metals and mercury analysis, while the soil vapor samples were only submitted for VOCs analysis.

No PCBs were detected in any of the soil samples. Only one soil sample, SB-4, collected from 0 to 2 feet BGS on the west portion of the site, revealed VOCs and SVOCs above method detection limits. However, concentrations of these compounds were well below Unrestricted Use SCOs. Low levels of various TAL metals were detected in all six soil samples; also well below Unrestricted Use SCOs. The pesticide Aldrin was reported in two soil samples, one of which slightly exceeded the Restricted-Residential SCO of 97 µg/kg. The pesticide Dieldrin was also reported in two soil samples, both exceeding the Residential SCO of 39 µg/kg but below the Restricted-Residential SCO of 200 µg/kg.

No SVOCs or PCBs were reported in either of the two groundwater samples. However, both groundwater samples exceeded the NYSDEC Class GA Ambient Water Quality Standard of 5 µg/L, with 910 µg/L of PCE detected in sample GW-1 (the eastern portion of the property closest to the Bridge Cleaners site), while 120 µg/L of PCE was detected in sample GW-2 (the western portion of the property farther away from Bridge Cleaners). Elevated iron, magnesium, manganese, and sodium were reported in total metals analysis; however, only sodium and magnesium were reported in the dissolved metals analysis.

Both PCE and TCE were detected in all four soil vapor samples collected from 6 feet below grade in the cellar and first floors at the site. PCE was detected above the NYSDOH Air Guidance Value of 100 µg/m^3 in two of the samples, at

400 µg/m^3 in one sample and at 16,900 µg/m^3 in another, indicating that mitigation is necessary.

The limited subsurface investigation completed on the Bridge Cleaners property in 2011 by the property owner included installation of five soil borings throughout the Bridge Cleaners building and collection of three soil samples for VOC analysis from each soil boring. Groundwater samples were collected from three of the five soil borings and submitted for analysis of VOCs. PCE was detected in five of 15 soil samples (up to 143 µg/kg), however none of the samples exceeded the Unrestricted use SCO of 1.3 mg/kg. PCE was detected in all three groundwater samples, up to 1,470 µg/L with all three samples exceeding the NYSDEC Class GA Ambient Water Quality Standard of 5 µg/L. TCE was detected in two of the three groundwater samples (up to 12.5 µg/L) and both samples exceeded the NYSDEC Class GA Ambient Water Quality Standard of 5 µg/L. Six non-chlorinated petroleum hydrocarbons were detected in groundwater sample BCGW-3 totaling 86.97 total non-chlorinated VOC, with each compound exceeding applicable NYSDEC Class GA Ambient Water Quality Standards of 5 µg/L.

4 Summary and Conclusions

4.1 Summary

The primary objective of this investigation is to assess subsurface soil and groundwater conditions to identify the possible source area of chlorinated VOCs identified in the area around the Bridge Cleaners site.

Five monitoring wells were drilled and installed in the sidewalks of three streets surrounding the Bridge Cleaners site. During drilling activities, 13 soil samples (plus one duplicate sample) were submitted for both VOC (EPA Method SW8260B) and percent solids analyses (EPA Method SM 2540G). While drilling at location MW-4, a hydrocarbon-like odor similar to gasoline was detected starting at 29.5 feet BGS, so these four samples were also analyzed for SVOC (EPA Method 8270D). After monitoring well construction and well development activities were complete, water level measurements were made and all five monitoring wells were sampled for VOCs (EPA Method 8260B).

Fourteen VOCs were detected in the 13 soil samples submitted to the laboratory for analysis. Samples were screened against the NYSDEC 6 NYCRR Subpart 375-6 Remedial Program SCOs for both Unrestricted use and Restricted-Residential use. PCE was detected in nine of 13 soil samples, with one sample exceeding the unrestricted use SCO and no samples exceeding the restricted-residential use SCO. TCE was reported in two of 13 soil samples. No samples exceeded the unrestricted use or the restricted-residential use SCOs. Twelve non-chlorinated VOCs were detected in two soil samples collected from monitoring well MW-04, however these soil samples were collected below the water table. The majority of the contamination was found in the MW4-02 sample from 29.8 feet BGS. While seven compounds exceed the unrestricted SCOs, four compounds (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenezene and total xylenes) also exceed restricted-residential SCOs. No SVOCs were detected in any of the samples from MW-4. The percent solids ranged from 80% to 99%, with an average percent solid value of 86.6%.

Twelve VOCs were detected in the five groundwater samples submitted for VOC (EPA Method 8260B) analysis and screened against New York State Class GA Groundwater Standards and Guidance Values. M-and p-xylenes were reported as

a sum. PCE was detected and exceeded the Class GA Groundwater Standard of 5 µg/L in all five samples. TCE was detected in four of the five groundwater samples, with one sample (MW3-01W) exceeding the Class GA Groundwater Standard of 5 µg/L. Chloroform was detected in the groundwater sample from MW1-01 exceeding the Class GA Groundwater Standard. Ten petroleum hydrocarbons were detected in the MW4-01W sample (m-and p-xylenes were reported as a sum), all of which exceed their Class GA Groundwater Standards. A total of approximately 2,437 µg/L of non-chlorinated VOCs were detected at MW-4.

Six soil samples from four soil borings, two groundwater samples, and four soil vapor samples were collected from an adjacent property (39-27 29th Street) during the 2010 Phase II ESA. No SVOCs or PCBs were detected in any of the soil and groundwater samples collected at the site. However, low levels of VOCs were reported in one soil sample, two pesticides (Aldrin and Dieldrin) were detected in two soil samples. PCE was detected in both groundwater samples at levels exceeding the NYSDEC Class GA Ambient Water Quality and elevated levels of iron, magnesium, manganese and sodium were also detected. Both PCE and TCE were detected in all four soil vapor samples collected at the site, with the sub-slab PCE results exceeding the New York State Department of Health (NYSDOH) Air Guidance Value of 100 µg/m^3, suggesting that mitigation is necessary.

The Bridge Cleaners property owner completed a limited subsurface investigation at the Bridge Cleaners property in 2011, collecting 15 soil and three groundwater samples for VOC analysis from five soil borings. While PCE was detected in five of 15 soil samples, it was detected in all three groundwater samples. TCE was detected in two of the three groundwater samples, while various low-level petroleum hydrocarbons were detected in one groundwater sample.

4.2 Conclusions

Chlorinated Plume

PCE and, to a lesser extent, TCE appear to be a significant concern in the Bridge Cleaners area. Chlorinated contamination was detected in all groundwater samples.

The soil and groundwater samples collected from inside the Bridge Cleaners building by the site owner and the Phase II conducted at 39-27 29th Street revealed chlorinated contamination generally one to two orders of magnitude higher than the samples collected during this SC near the edges of the city block. This information indicates the source of the chlorinated contamination is from this city block, most likely the southwest corner of the Bridge Cleaners property.

Groundwater elevations indicate that groundwater flow is to the south-southwest, with the highest chlorinated groundwater contamination found along the southern portion of the investigation area (MW3-01W). This matches the conclusion that

the chlorinated contamination likely originates from the southwest corner of the Bridge Cleaners building as this monitoring well is directly downgradient of that area.

At one location, MW-04, on the western portion of the site, a second plume comprised of petroleum hydrocarbons appears to be a concern (see discussion below).

Secondary Plume

Although the focus of this SC was to track down the source of PCE and TCE contamination in the area, during the investigation a second contamination plume was identified at monitoring well location MW-4. Although PCE was detected in the soil and groundwater samples, a variety of "other" VOC contaminants were identified at this location. Approximately 589 mg/kg of total VOCs were detected in a soil sample from MW-4 and approximately 2,437 µg/L of total VOCs were detected in the groundwater sample. In general, the five main contaminants found at this location were 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, N-proplbenzene, and xylenes.

Based on the common uses of these compounds, the source of this second contamination plume is likely an aged gasoline spill (based on the lack of lighter benzene and toluene compounds). Based on the observed groundwater flow direction, the source of this second contamination plume is likely located on the city block northwest of the project area (between 28th and 29th Street).

4.3 Recommendations

EEEPC recommends that NYSDEC consider the following:

- Performing an additional investigation at the Bridge Cleaners site as well as in the vicinity of the 39-27 29th Street property to determine whether vapor mitigation is necessary.

- Performing further investigations around the inferred Bridge Cleaners source area in the southwest portion of the building to determine the extent of contamination and to assess feasible in situ remediation options.

- Performing additional investigation along and to the north and west of 29th Street to determine the source of a second non-chlorinated hydrocarbon contamination plume.

- Performing further studies in each of these areas, which include installation and sampling of additional monitoring wells; collection of additional soils data vertical profiling; or vapor intrusion studies.

5 References

Agency for Toxic Substances and Disease Registry. 2007. *Ethylbenzene, CAS #100-41-4.* http://www.atsdr.cdc.gov/tfacts110.pdf

AVT Enterprises. 2007. *Phase I Environmental Assessment for 39-27 29th Street, Long Island City, New York 11101.*

Chemical Book. 2008. *N-Propylbenzene (103-65-1).* http://www.chemicalbook.com/ProductChemicalPropertiescb1128336_EN.htm

Ecology and Environment Engineering, P.C. (EEEPC). 2011. *Master Quality Assurance Project Plan (QAPP) for New York State Department of Environmental Conservation Projects.* Prepared for the New York State Department of Environmental Conservation.

Long Island Analytical Laboratories Inc. 2011. *Limited Sub-Surface Site Investigation for 39-28 30th Street, Long Island City, NY.*

New York State Department of Environmental Conservation (NYSDEC). 1998. *Technical and Operational Guidance Series Memorandum #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.*

_____. 1999. 6 New York Codes Rules and Regulations 703.5 Water quality standards for taste-, color- and odor-producing, toxic and other deleterious substances.

_____. 2005. New York State Department of Environmental Conservation Analytical Services Protocol.

_____. 2006, *Remedial Program Soil Cleanup Objectives*, 6 NYCRR Subpart 375-6, December 14, 2006.

_____. 2010a. *DER-10/Technical Guidance for Site Investigation and Remediation.*

_____. 2010b. *Guidance for the Development of Quality Assurance Plans and Data Usability Summary Reports.*

National Institute of Occupational Safety and Health. 2002. *International Chemical Safety Cards: 1,3,5-Trimethylbenzene.* http://www.cdc.gov/niosh/ipcsneng/neng1155.html

Preferred Environmental Services. 2010. *Phase II Site Investigation Report for 39-27 29th Street, Long Island City, New York.*

United States Environmental Protection Agency (EPA). 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

_____. October 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA 540/R-99-008.*

_____. 1994. *Chemicals In The Environment: 1,2,4-Trimethylbenzene.* http://www.epa.gov/chemfact/f_trimet.txt

_____. 2012. *Basic Information about Xylenes in Drinking Water.* http://water.epa.gov/drink/contaminants/basicinformation/xylenes.cfm

United States Geographical Service (USGS). 1979. 7.5 Minute Series (Topo) Quadrangles; Central Park, New York-New Jersey, 1979, and Brooklyn, New York, 1980.

Tables

Table 2-1 Soil Sampling Depths, Bridge Cleaners, Long Island City, New York

Sample ID	Depth (ft BGS)	Sample ID	Depth (ft BGS)
MW1-01	14.5	MW4-01	7.8
MW1-02	23.0	MW4-02	29.8
MW2-01	18.8	MW4-03	27.3
MW2-02	23.8	MW4-04	31.8
MW3-01	19.9	MW5-01	10.5
MW3-02	23.8	MW5-02	17.8
		MW5-03	23.5

Key:

BGS = Below Ground Surface

ft = feet

Table 2-2 Summary of Field Water Quality Data
Bridge Cleaners Site Characterization

Well ID	Sample Date	pH	Temperature (° Celcius)	Specific Conductance (mS/cm)	Turbidity* (NTU)
MW-01	22-Feb-2012	7.37	12.10	113.7	250
MW-02	21-Feb-2012	6.78	15.40	194.5	500
MW-03	22-Feb-2012	7.47	16.90	104.7	500
MW-04	22-Feb-2012	7.62	16.20	120.8	250
MW-05	21-Feb-2012	6.82	16.20	199.1	250

Key:
* = Visual estimate due to turbidity meter malfunction
(mS/cm) = milliSiemens per centimeter
mg/L = milligrams per liter
NTU = nephelometric turbidity unit

Table 2-3 Well Construction and Groundwater Elevation Summary, Bridge Cleaners, Long Island City, New York

Well ID	Latitude	Longitude	TOIC Elevation (ft AMSL) [1]	Ground Surface Elevation (ft AMSL) [1]	Depth to Water (ft TOIC) [2]	Groundwater Elevation (ft AMSL) [1]	Total Well Depth (ft BGS) [3]	Screen Interval (ft BGS)	Sand Pack Interval (ft BGS)	Seal Interval (ft BGS)
MW-01	40.752735	-73.934135	34.74	35.05	23.70	11.04	30.30	20.30 - 30.30	18.8 - 31.0	16.8 - 18.8
MW-02	40.752206	-73.934619	26.15	26.55	16.00	10.15	26.64	16.64 - 26.64	15.0 - 27.0	13.0 - 15.0
MW-03	40.752173	-73.935161	29.70	30.15	19.69	10.01	27.29	17.29 - 27.29	15.8 - 27.8	13.8 - 15.8
MW-04	40.752670	-73.935170	38.36	38.72	27.85	10.51	34.10	24.10 - 34.10	22.0 - 34.1	20.0 - 22.0
MW-05	40.752345	-73.934491	28.49	28.78	18.01	10.48	25.89	15.89 - 25.89	14.0 - 26.5	12.0 - 14.0

Notes:

1 North American Vertical Datum 1988.

2 Measured on February 23, 2012.

3 Measured after well development on February 20 or 21, 2012.

Key:

AMSL = Above Mean Sea Level

BGS = Below Ground Surface

ft = feet

TOIC = Top of Inside Casing

Table 3-1 Bridge Cleaners Soil Analytical Results, February 2012

Analyte[1]	Unrestricted SCO[2]	Sample ID: Date: Depth (feet bgs): Restricted-Residential SCO [3]	MW1-01 02/13/12 14.5	MW1-02 02/13/12 23.0	MW2-01 02/14/12 18.8	MW2-02 02/14/12 23.8	MW2-02/D 02/14/12 23.8	MW3-01 02/14/12 19.9	MW3-02 02/14/12 23.8	MW4-01 02/15/12 7.8	MW4-03 02/15/12 27.3	MW4-02 02/15/12 29.8	MW4-04 02/15/12 31.8	MW5-01 02/16/12 10.5	MW5-02 02/16/12 17.8	MW5-03 02/16/12 23.5
Percent Solids by Method SM 2540G (%)																
SOLIDS, PERCENT	NA	NA	**99**	**92**	**82**	**85**	**83**	**89**	**88**	**97**	**81**	**80**	**81**	**94**	**82**	**80**
VOCs by Method SW8260B (mg/kg)																
1,2,4-TRIMETHYLBENZENE	3.6	52	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	***120***	**0.071**	0.00059 U	0.00058 U	0.00057 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	8.4	52	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	***60***	**0.028**	0.00044 UJ	0.00043 UJ	0.00043 UJ
CYMENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	**10**	**0.0023**	0.00059 U	0.00058 U	0.00057 U
ETHYLBENZENE	1	41	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	***43***	**0.067**	0.00059 U	0.00058 U	0.00057 U
ISOPROPYLBENZENE (CUMENE)	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**50**	**0.023 J**	0.00052 U	0.00051 U	0.0005 U
M AND P XYLENES [4]	0.26	100	0.00091 U	0.0012 U	0.0011 U	0.0014 U	0.001 U	0.001 U	0.00094 U	0.0011 U	0.0011 U	***130***	**3.1**	0.0013 U	0.0012 U	0.0012 U
NAPHTHALENE	NA	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.32 U	**0.0031**	0.00052 U	0.00051 U	0.0005 U
N-BUTYLBENZENE	12	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**6.3**	**0.0017**	0.00052 U	0.00051 U	0.0005 U
N-PROPYLBENZENE	3.9	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**55**	**0.02**	0.00052 UJ	0.00051 UJ	0.0005 UJ
O-XYLENE (1,2-DIMETHYLBENZENE) [4]	0.26	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	***41***	**0.07**	0.00052 U	0.00051 U	0.0005 U
SEC-BUTYLBENZENE	11	100	0.00054 U	0.00072 U	0.00065 U	0.00081 U	0.00061 U	0.00061 U	0.00055 U	0.00064 U	0.00062 U	**11**	**0.0021**	0.00074 U	0.00072 U	0.00072 U
T-BUTYLBENZENE	5.9	100	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	**2.5**	0.00055 U	0.00067 U	0.00065 U	0.00064 U
TETRACHLOROETHYLENE (PCE)	1.3	19	**0.0018**	0.00094 U	**0.0018**	**0.0024**	**0.002**	**0.014**	**0.076**	0.00084 U	**0.0061**	**3.3**	0.00079 U	0.00096 U	**0.0044**	**0.0048**
TRICHLOROETHYLENE (TCE)	0.47	21	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	**0.0028**	**0.005**	0.00058 U	0.00056 U	0.18 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U

Key:

-- = Analyte not analyzed for.

bgs = below ground surface

/D Designates field duplicate sample.

(g) = Guidance value (no applicable standard).

J = Estimated value.

mg/kg = Milligrams per kilogram.

SCO = Soil Clean-up Objectives (6 NYCRR Part 375-6)

SVOCs = Semi-Volatile organic compounds.

U = Not detected (lab reporting limit shown).

UJ = Not detected/Estimated Value.

VOCs = Volatile organic compounds.

Notes:

1) Bold values in unshaded cell denotes analytes reported above method detection limits.

2) Bold values in shaded cell denotes analytes reported to exceed Part 375 Unrestricted SCO.

3) Bold, italicized values in shaded cell dentoes analytes reported to exceed Part 375 Unrestricted and Restricted-Residential

4) The Part 375 SCO for xylene (mixed), and the sum of the xylene detections was used for comparison.

Table 3-2 Bridge Cleaners Groundwater Analytical Results, February 2012

Analyte[1]	Sample ID: / Date: / Screening Criteria [2, 3]	MW1-01W 02/22/12	MW1-01W/D 02/22/12	MW2-01W 02/21/12	MW3-01W 02/22/12	MW4-01W 02/22/12	MW5-01W 02/21/12	TB022112 02/21/12	TB022212 02/22/12
VOCs by Method SW8260B (µg/L)									
1,2,4-TRIMETHYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**220**	0.06 U	0.06 U	0.06 U
1,3,5-TRIMETHYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**83**	0.06 U	0.06 U	0.06 U
CHLOROFORM	7	**9.9**	**9.7**	0.04 U	0.4 U	0.2 U	0.04 U	0.04 U	0.04 U
ETHYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**290**	0.05 U	0.05 U	0.05 U
ISOPROPYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**80**	0.06 U	0.06 U	0.06 U
M AND P XYLENES [4]	5	0.07 U	0.07 U	0.07 U	0.7 U	**1300**	0.07 U	0.07 U	0.07 U
NAPHTHALENE	10	0.21 UJ	0.21 UJ	0.21 UJ	2.1 UJ	**18 J**	**3.2 J**	0.21 UJ	0.21 UJ
N-PROPYLBENZENE	5	0.04 U	0.04 U	0.04 U	0.4 U	**60**	0.04 U	0.04 U	0.04 U
O-XYLENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**380**	0.05 U	0.05 U	0.05 U
SEC-BUTYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**5.6**	0.05 U	0.05 U	0.05 U
TETRACHLOROETHYLENE (PCE)	5	**18**	**21**	**25**	**440**	**31**	**31**	0.14 U	0.14 U
TRICHLOROETHYLENE (TCE)	5	**1**	**1.1**	0.12 U	**32**	**5**	**2.1**	0.12 U	0.12 U

Key:

-- = Analyte not analyzed for.

/D Designates field duplicate sample.

(g) = Guidance value (no applicable standard).

J = Estimated value.

mg/L = Milligrams per liter.

U = Not detected (lab reporting limit shown).

UJ = Not detected/Estimated Value.

µg/L = Micrograms per liter.

VOCs = Volatile organic compounds.

Notes:

1) Bold values in unshaded cell denotes analyte reported above method detection limits.

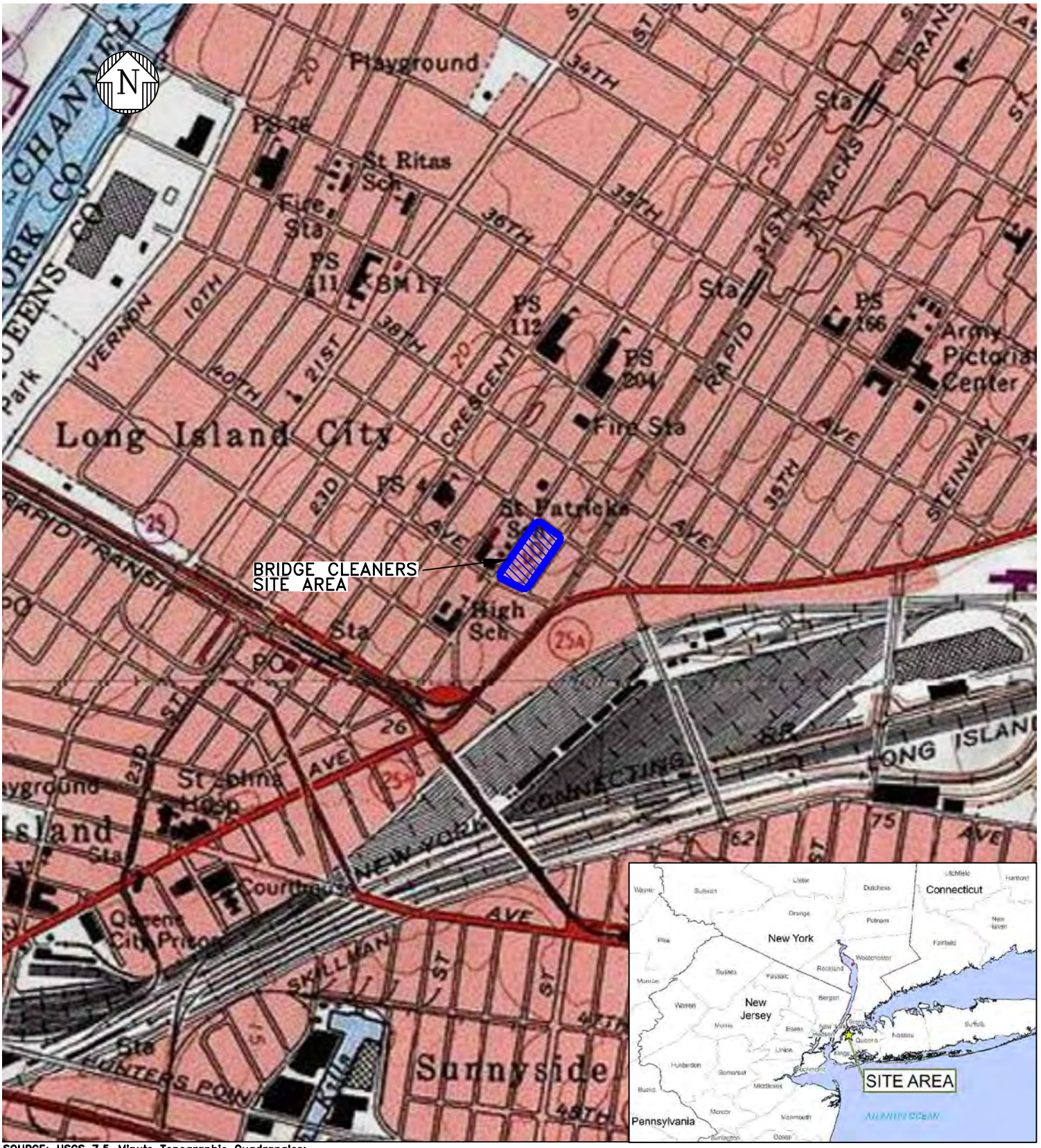
2) Bold values in shaded cell denotes analyte reported above the screening criteria.

3) New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

4) The groundwater standard is 5 ug/L for each isomer.

Figures

F:\BRIDGE CLEANER SITE\5-4-12\Figure 1-1.dwg



SOURCE: USGS 7.5-Minute Topographic Quadrangles:
Central Park, NY-NJ 1979; Brooklyn, NY 1980

SCALE IN FEET

0 1000 2000 3000

ecology and environment

FIGURE 1-1 SITE LOCATION MAP
BRIDGE CLEANERS SITE CHARACTERIZATION
LONG ISLAND CITY, NEW YORK

F:\BRIDGE CLEANER SITE\Bridge cleaner_gw elev and isopleths.dwg

SCALE IN FEET

0 100 200 300

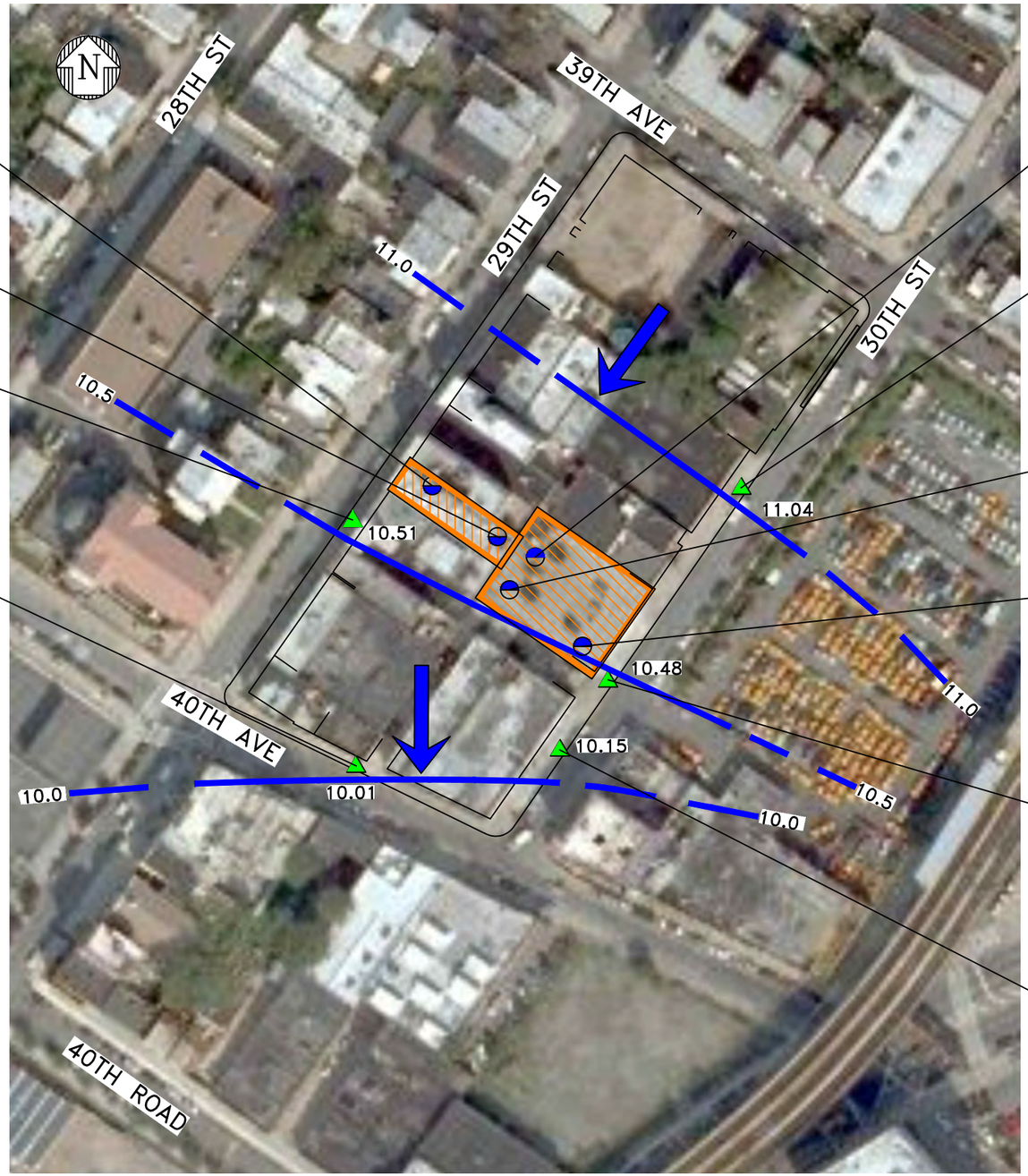
LEGEND

39-26 30TH STREET (BRIDGE CLEANERS)

ecology and environment

FIGURE 1-2 ENLARGED SITE PLAN
BRIDGE CLEANERS SITE CHARACTERIZATION
LONG ISLAND CITY, NEW YORK

F:\BRIDGE CLEANER SITE\5-4-12\Figure 2-1.dwg



GW-2	
ANALYTE	µg/L
MTBE	6
NAPTHALENE	30
PCE	120

GW-1	
ANALYTE	µg/L
PCE	910

MW-4	
ANALYTE	µg/L
PCE	31
TCE	5
TOTAL NON-CHLORINATED VOCs	2,436.6

MW-3	
ANALYTE	µg/L
PCE	440
TCE	32

BCGW-2	
ANALYTE	µg/L
PCE	537

MW-1	
ANALYTE	µg/L
PCE	21
TCE	1.1
CHLOROFORM	9.9

BCGW-1	
ANALYTE	µg/L
PCE	1,470
TCE	12.5

BCGW-3	
ANALYTE	µg/L
PCE	841
TCE	11
TOTAL NON-CHLORINATED VOCs	87

MW-5	
ANALYTE	µg/L
NAPTHALENE	3.2
PCE	31
TCE	2.1

MW-2	
ANALYTE	µg/L
PCE	25

LEGEND

- PREFERRED ENVIRONMENTAL SERVICES GROUNDWATER SAMPLE (DECEMBER 2009; APPROXIMATE LOCATION)
- LONG ISLAND ANALYTICAL LABORATORIES INC. GROUNDWATER SAMPLE (SEPTEMBER 2011; APPROXIMATE LOCATION)
- NYSDEC/EEEPC GROUNDWATER SAMPLE (FEBRUARY 2012)
- 10.15 GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- ESTIMATED GROUNDWATER FLOW DIRECTION
- 10.0 GROUNDWATER ISOPLETH (DASHED WHERE INFERRED)
- 39-27 29TH STREET
- 39-26 30TH STREET (BRIDGE CLEANERS)

NOTE

1. TOTAL NON-CHLORINATED VOC's VALUE DOES NOT INCLUDE TENTATIVELY IDENTIFIED COMPOUNDS (TICs).
2. 2009 INVESTIGATION ANALYZED GROUNDWATER FOR VOC, SVOC, PCB, PESTICIDES, TAL METALS AND MERCURY. RESULTS PRESENTED HERE FOR VOC ONLY. 2011 AND 2012 INVESTIGATIONS ANALYZED GROUNDWATER FOR VOC ONLY.
3. HIGHLIGHTED VALUES EXCEED NYSDEC CLASS GA AMBIENT WATER QUALITY OF 5 ug/L FOR PCE/TCE.

SCALE IN FEET

0 100 200 300

ecology and environment

FIGURE 2-1 GROUNDWATER DATA SUMMARY AND ISOPLETHS
BRIDGE CLEANERS SITE CHARACTERIZATION
LONG ISLAND CITY, NEW YORK

A List of Former Tenants

39-26 30TH STREET
LONG ISLAND CITY, NY 11101

1983	Tenant:	Commander Control, Inc. 298 East 149th Street Bronx, NY 10451
	Use:	Sale & Distribution of Electrical Components
1988	Tenant:	LSL Hydro Systems, Inc. 141 West 28th Street New York, NY 10001
	Use:	Warehouse & Distribution of Bottled Water
1994	Tenant:	Mr. Song Sung Chin d/b/a Main Trading Co. 31-12 23rd Street Astoria, NY 11106
	Use:	Embroidery & Sewing Factory
1995	Tenant:	Aerosonic Corporation 100 West 43rd Street New York, NY 10036
	Use:	Domestic & International Courier Service
1997	Tenant:	Park East French Cleaning Corp. 322 East 39th Street New York, NY 10016 c/o Mr. Young Moo Yoo 144-10 Roosevelt Avenue, Apt. 5K Flushing, NY 11355
	Use:	Commercial Dry Cleaning & Laundry
2002	Tenant (Assignee):	Queens Bridge Cleaners, Inc. 40-35 24th Street Long Island, NY 11101 c/o Mr. Kook Rip Kim 113 Searingtown Road Manhasset, NY 11030
	Use:	Commercial Dry Cleaning & Laundry

39-26 30TH STREET
LONG ISLAND CITY, NY 11101

2004	Tenant (Assignee):	Jetomi Cleaners, Inc. 77-05 37th Avenue Jackson Heights, NY 11372 c/o Mr. Dong Heui Son
	Use:	Commercial Dry Cleaning & Laundry
2006	Tenant (Assignee):	Fresh Cleaners and Laundry Co. Mr. Moon S. Park & Mr. Edward Park 307 Vreeland Avenue Leonia, NJ 07605
	Use:	Commercial Dry Cleaning & Laundry
2008	Tenant (Assignee):	Queens Boro Yang Cleaners, Inc. c/o Mr. Soo H. Yang 6 Stonywood Road Commack, NY 11725
	Use:	Commercial Shirt Laundry
May, 2011		Building Vacant

B Photo Log

Photo No.:	001	**Direction:**	North-northeast
Date:	February 2012	**Subject:**	Driller set up on MW-1.
Photographer:	B. Cole		

Photo No.:	002	**Direction:**	NA
Date:	February 2012	**Subject:**	One five-foot section of 1.5-inch pre-packed screen.
Photographer:	B. Cole		

Photo No.:	003	**Direction:**	NA
Date:	February 2012	**Subject:**	Flush threaded joint between two 5-foot pre-packed screen sections.
Photographer:	B. Cole		

Photo No.:	004	**Direction:**	South-southwest
Date:	February 2012	**Subject:**	Drillers installing well MW-1.
Photographer:	B. Cole		

Photo No.:	005	**Direction:**	Down
Date:	February 2012	**Subject:**	Completed well MW-1.
Photographer:	B. Cole		

Photo No.:	006	**Direction:**	North-northeast
Date:	February 2012	**Subject:**	Completed well MW-2.
Photographer:	B. Cole		

Photo No.:	007	**Direction:**	West-northwest
Date:	February 2012	**Subject:**	Coring concrete at well MW-3.
Photographer:	B. Cole		

Photo No.:	008	**Direction:**	Northeast
Date:	February 2012	**Subject:**	Drilling well MW-3.
Photographer:	B. Cole		

Photo No.:	009	**Direction:**	Southeast
Date:	February 2012	**Subject:**	Pre-existing concrete in deteriorated condition at well MW-3.
Photographer:	B. Cole		

Photo No.:	010	**Direction:**	West
Date:	February 2012	**Subject:**	Hand-clearing top 5 feet bgs, well MW-4.
Photographer:	B. Cole		

Photo No.:	011	**Direction:**	Down
Date:	February 2012	**Subject:**	Well MW-4 soil from 5-10 feet bgs.
Photographer:	B. Cole		

Photo No.:	012	**Direction:**	Down
Date:	February 2012	**Subject:**	Gray-stained soil from well MW-4, 30 to 35 feet bgs.
Photographer:	B. Cole		

Photo No.:	013	**Direction:**	Down
Date:	February 2012	**Subject:**	Well MW-4 soil with deepest interval (30 to 35 feet bgs, stained gray) to right in photo.
Photographer:	B. Cole		

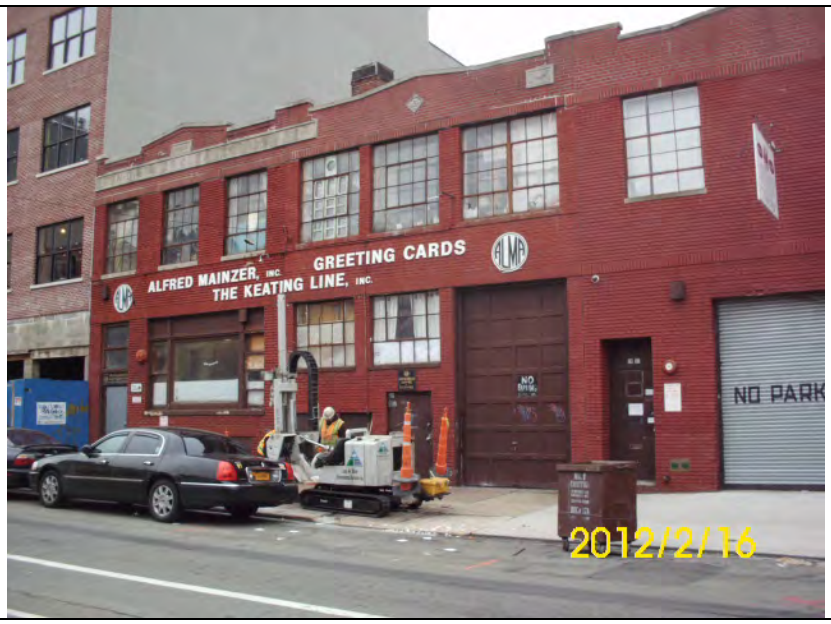


Photo No.:	014	**Direction:**	Northeast
Date:	February 2012	**Subject:**	Drillers advancing 3-inch rods in well MW-4.
Photographer:	B. Cole		

Photo No.:	015	**Direction:**	North-northeast
Date:	February 2012	**Subject:**	Coring concrete at well MW-5.
Photographer:	B. Cole		

Photo No.:	016	**Direction:**	North
Date:	February 2012	**Subject:**	Developing well MW-5.
Photographer:	B. Cole		

Photo No.:	017	**Direction:**	West-northwest
Date:	February 2012	**Subject:**	Completed well MW-5.
Photographer:	B. Cole		

Photo No.:	018	**Direction:**	North-northeast
Date:	February 2012	**Subject:**	Completed well MW-2.
Photographer:	B. Cole		

Photo No.:	019	**Direction:**	West-northwest
Date:	February 2012	**Subject:**	Completed well MW-3.
Photographer:	B. Cole		

Photo No.:	020	**Direction:**	North-northeast
Date:	February 2012	**Subject:**	Completed well MW-4.
Photographer:	B. Cole		

Photo No.:	021	**Direction:**	Northeast
Date:	February 2012	**Subject:**	Drum of well development water IDW being loaded into van.
Photographer:	B. Cole		

C Field Data Logs

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-1

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/13/2012

WATER LEVEL DATA				
DATE	TIME	WATER LEVEL		REF. PT.
2/13/2012	10:15	22.8'		grnd sfc
2/20/2012	17:35	23.70'		top inside csng
2/22/2012	9:35	23.69'		top inside csng
2/23/2012	9:16	23.7'		top inside csng

TYPE OF DRILL RIG: Geoprobe 66DT
AUGER / CASING SIZE: 2 inch and 3 inch OD probing rods
SOIL SAMPLING METHOD: Macrocore
FINISHED TOTAL DEPTH: 30.30' btoic, measured post-development

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	NA	NA	NA	0	NA	0-5': Hand dug, not cored. Observed in bucket.
1						Poorly graded brown med sand, ltl gravel and organic material.
2						
3						
4						
5						
	1	NA	35"	0	NA	5-10': Med loose poorly graded fn to med sand, brown, homogenous
6						except btm 8-10">light and dark brwn layering 3-10mm.
						No odor/PID/gravel.
7						
8						
9						
10						
	2	NA	40"	0	MW1-01	10-15': Poorly graded med dense to loose fn/med brown sand.
11					14.5' bgs	Bottom 7" is fine grained.
					9:50	No odor/PID/gravel. Little silt.
12						Mod bedding, color ranges from light to dark brown. Dry.
13						
14						
15						
	3	NA	45"	0	NA	15-20': Poorly graded med dense silt fine sand, brown. No bedding
16						observed. No odor/PID/gravel. Dry.

Method of Completion / Backfill: Installed MW-01

Signature:

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/13/2012

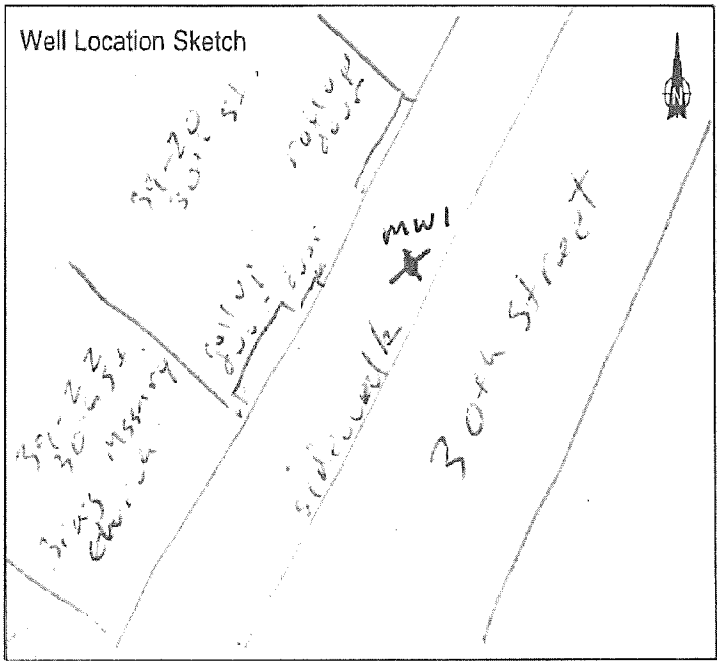
Depth (ft. BGS)	SAMPLE INFORMATION					SOIL DESCRIPTION / COMMENTS
	Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	
	See Previous Page for 15 to 20' bgs.					
16						
17						
18						
19						
20	4	NA	42"	0	MW1-02	20-25': Med dense poorly graded med sand, trc to no silt,
					23' bgs	no odor/PID/gravel. Bottom 20" grades from moist to wet.
21					10:20	
22						
23						
24						
25	5	NA	48"	0	NA	25-30': Loose to med dense poorly graded med sand.
						Trc to few frags mica. No odor/PID/gravel. Wet.
26						
27						
28						
29						
30						
31						

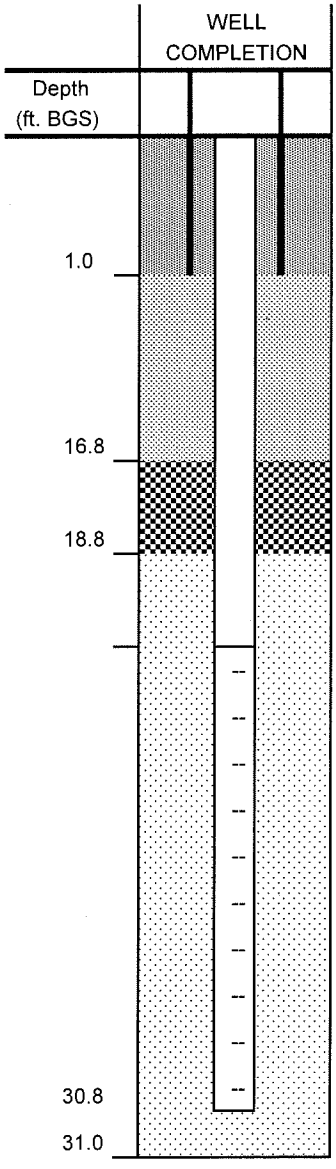
Method of Completion / Backfill: Installed MW-01

Signature:

WELL/BORING No. MW-1

Well Location Sketch





Stick-up: -0.31 ft

Protective Casing Type: Steel, curb bo

Inner Casing Size & Type: 1.5" ID, PVC

Grout: 5% bentonite, cement

Bentonite Seal: 16.8 to 18.8' bgs

Type: Granular

Sand: 18.8 to 31' bgs

Type: 40 mesh, silica

Screen: 20.8 to 30.8' bgs

Type: pre-packed

Diameter: 1.5" ID

Length: 10'

Slot size: 0.010"

Borehole Diameter: 8.25"

Total Depth: 31 ft BGS

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-2

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/13/12 to 2/14/12

WATER LEVEL DATA				
DATE	TIME	WATER LEVEL		REF. PT.
2/13/2012	8:30	18.0'		bgs
2/20/2012	15:23	16.08'		btoic
2/21/2012	15:25	16.04'		btoic
2/23/2012	9:27	16.0'		btoic

TYPE OF DRILL RIG: Geoprobe 66DT
AUGER / CASING SIZE: 2 inch and 3 inch OD probing rods
SOIL SAMPLING METHOD: Macrocore
FINISHED TOTAL DEPTH: 26.64' btoic, measured post-development

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	NA	NA	NA	0	NA	0-5': Hand dug, not cored. Observed in bucket.
						Mixed size possible fill: sand with silt and some small and large gravel.
1						Dry.
2						
3						
4						
5						
	1	NA	38"	0	NA	5-10': Med-stiff sandy silt, lt to drk brown, no bedding, ltl to few sm gravl
						No odor/PID. Slightly moist. ~0.5' of black sand in top of core.
6						Dry.
7						
8						
9						
10						
	2	NA	48"	0	NA	10-15': All med stiff sandy silt with some clay. Non-cohesive/plastic.
						Few sm gravel, trc to ltl black sand. No odor/PID.
11						Moist.
12						
13						
14						
15						
	3	NA	54"	0	MW2-01	15-20': Med dense poorly graded silty fine sand. Trc gravl. Color is light
					18.8' bgs	brown/tan at top, chages to drk orange brwn approx midway in core.
16					8:35	No odor/PID. Wet at 18' bgs. Checked water level in MW-1 (cont nxt pg)

Method of Completion / Backfill: Installed MW-2

Signature:

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-2

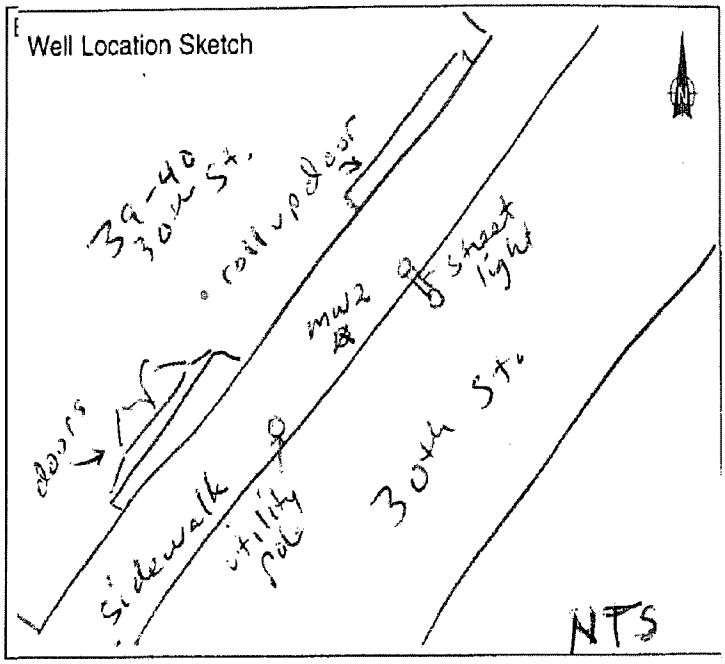
SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/13/12 to 2/14/12

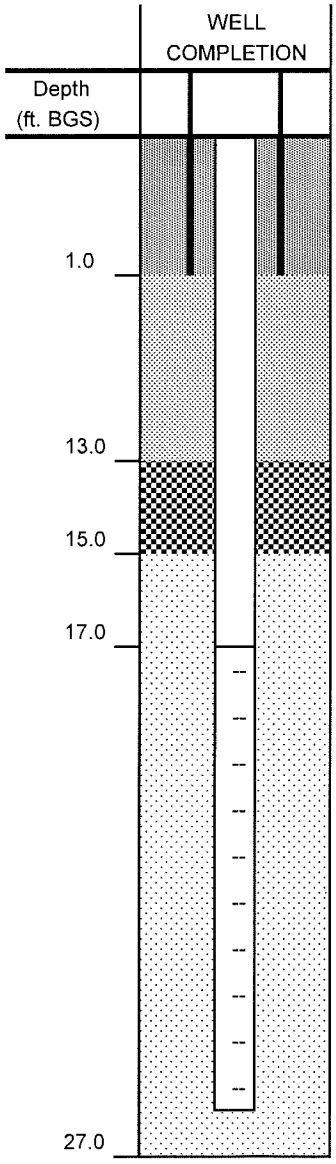
Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	See previous page.					(15-20' bgs cont)
						MW-1 showed water at 23.8' bgs.
16						Difficult to tell where water table is precisely. Considering water level
						showed ~1 ft deeper than observed during install, will set screen here
17						at 17 to 27' bgs.
18						
19						
20	4	NA	50"	0	MW2-02	20-25': Dense/stiff poorly graded silty fine sand. Wet. No odor/PID/gravl
					23.8' bgs	Few flakes mica. Wet.
21					9:30	
					MW2-02/D also	
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Method of Completion / Backfill: Installed MW-2

Signature:

WELL/BORING No. MW-2





Stick-up:	-0.40 ft
Protective Casing Type:	Steel, curb bo
Inner Casing Size & Type:	1.5" ID, PVC
Grout:	5% bentonite, cement
Bentonite Seal:	13 to 15' bgs
Type:	Granular
Sand:	15 to 27' bgs
Type:	40 mesh, silica
Screen:	17 to 27' bgs
Type:	pre-packed
Diameter:	1.5" ID
Length:	10'
Slot size:	0.010"
Borehole Diameter:	8.25:
Total Depth:	27 ft BGS

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-3

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/14/2012

WATER LEVEL DATA

DATE	TIME	WATER LEVEL		REF. PT.
2/14/2012	14:15	19.8'		bgs
2/21/2012	9:45	19.75'		btoic
2/22/2012	11:25	19.69'		btoic
2/23/2012	9:32	19.69'		btoic

TYPE OF DRILL RIG: Geoprobe 66DT
AUGER / CASING SIZE: 2 inch and 3 inch OD probing rods
SOIL SAMPLING METHOD: Macrocore
FINISHED TOTAL DEPTH: 27.29' btoic, measured post-development

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	NA	NA	NA	0	NA	0-5': Hand dug, not cored. Observed in bucket.
1						Sandy silt and gravel, brown, dry.
2						
3						
4						
5						
	1	NA	32"	0	NA	5-10': Mostly med stiff/dense brown silty sand. Top half somewhat
6						well graded. Mmore poorly graded in bottom half, fine grained sand. Littl
7						small and large gravl. Moist.
8						
9						
10						
	2	NA	46"	0	NA	10-15': All med dense brown silty sand. Bottom foot has less/little silt
11						than above. Sand in top half somewhat graded fine and med grain.
12						Sand in bottom half poorly graded, fine grain. Some bedding visible
13						in bottom 1.5 ft. Moist.
14						
15						
	3	NA	50"	0	MW3-01	15-20': Med dense poorly graded fine brown sand. Trc to no silt. Little
16					19.9' bgs	fine mica flakes. No odor/PID. Wet at 19.8' bgs.
					14:15	

Method of Completion / Backfill: Installed MW-3

Signature:

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-3

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/14/2012

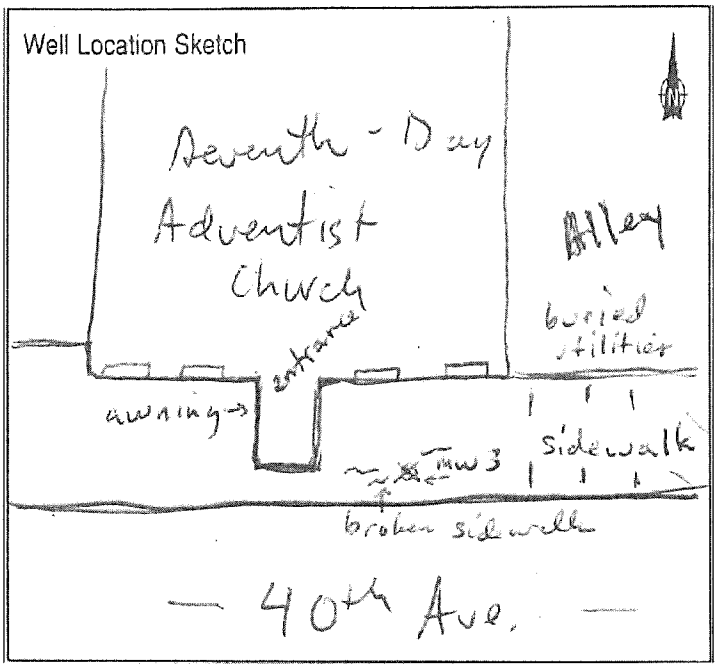
Depth (ft. BGS)	SAMPLE INFORMATION					SOIL DESCRIPTION / COMMENTS
	Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	
	See Previous Page for 15 to 20' bgs.					
16						
17						
18						
19						
20	4	NA	48"	0	MW3-02	20-25': All med dense poorly graded brown fine sand. Few fine mica
					23.8	flakes. Trace to no silt. No odor/PID/gravel. Wet.
21					14:30	
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

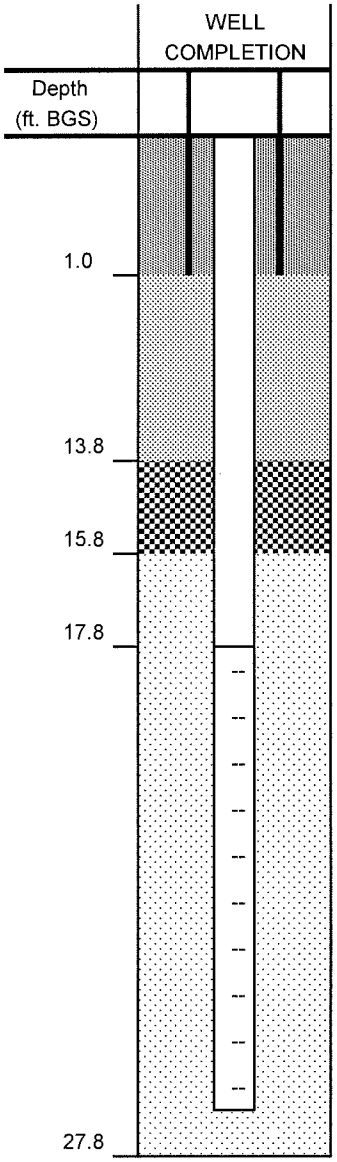
Method of Completion / Backfill: Installed MW-3

Signature:

WELL/BORING No. MW-3

Well Location Sketch





Stick-up:	-0.45 ft
Protective Casing Type:	steel, curb bo:
Inner Casing Size & Type:	1.5" ID, PVC
Grout:	5% bentonite, cement
Bentonite Seal:	13.8 to 15.8' bgs
Type:	granular
Sand:	15.8 to 27.8' bgs
Type:	40 mesh, silica
Screen:	17.8 to 27.8' bgs
Type:	pre-packed
Diameter:	1.5" ID
Length:	10'
Slot size:	0.010"
Borehole Diameter:	8.25
Total Depth:	27.8 ft BGS

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-4

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/15/2012

WATER LEVEL DATA				
DATE	TIME	WATER LEVEL		REF. PT.
2/15/2012	15:05	25.5'		bgs
2/20/2012	12:15	27.65'		btoic
2/22/2012	14:05	27.83'		btoic
2/23/2012	9:09	27.85'		btoic

TYPE OF DRILL RIG: Geoprobe 66DT
AUGER / CASING SIZE: 2 inch and 3 inch OD probing rods
SOIL SAMPLING METHOD: Macrocore
FINISHED TOTAL DEPTH: 34.10' btoic measured post-development

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	NA	NA	NA	0	NA	0-5': Hand dug, not cored. Observed in bucket.
						Mix of gray-brown sand, silt, gravel. Dry.
1						
2						
3						
4						
5						
	1	NA	43"	0	MW4-01	5-10': All but bottom 8" is very well graded mix of sand and small gravl
					7.8' bgs	with few lrg gravl. Bottom 8" is poorly graded sand, no silt. Fine-grained
6					14:30	with some bedding. Brown-orange, no odor/PID. Looks like mixed fill
						above 9' and native material below. Dry.
7						
8						
9						
10						
	2	NA	52"	0	NA	10-15': Nearly all med dense, poorly graded fine sand. Trace silt, no
						gravel/clay/odor/PID. Uniform brown-tan.
11						
12						
13						
14						
15						
	3	NA	45"	0	NA	15-20': Top 1 ft poorly graded brwn fine sand w/ ltl slt, trc cl ~ 0.5 ft from
						core top. All brown, no gravl/odor/PID. Transition to poorly graded, sltly
16						coarser grain (med-fine) gray sand, no slt/cl/grvl. All med dense, dry.

Method of Completion / Backfill: Installed MW-4

Signature:

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-4

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/15/2012

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	See Previous Page for 15 to 20' bgs.					
16						
17						
18						
19						
20	4	NA	49"	0	NA	20-25': All med poorly graded tan-gray fine sand, no silt/clay/gravl.
						No odor. Bottom slightly moist.
21						
22						
23						
24						
25						
	5	NA	54"	15	MW4-03	25-30': All med dense sand. Top 0.5' is moist. Appears groundwater is
					27.3' bgs	~25.5' bgs. Bottom 0.5' (29.5 to 30' bgs) is dark gray, fuel (gasoline)
26					15:20	odor. PID peaked at 689ppm at 31.5 to 32 ft bgs.
				50		
27					MW4-02	
					29.8	
28				350	15:10	
29						
				650		
30	6	NA	50"	651		30-35': All med dense, uniform gray, poorly graded fine sand.
						Fuel/organic odor. No gravl/silt. Wet.
31				689		

Method of Completion / Backfill: Installed MW-4

Signature:

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-4

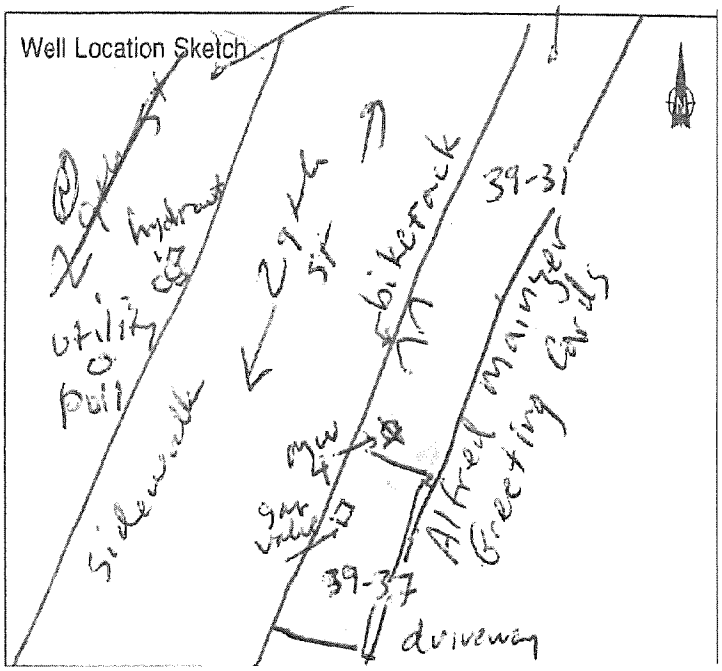
SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/15/2012

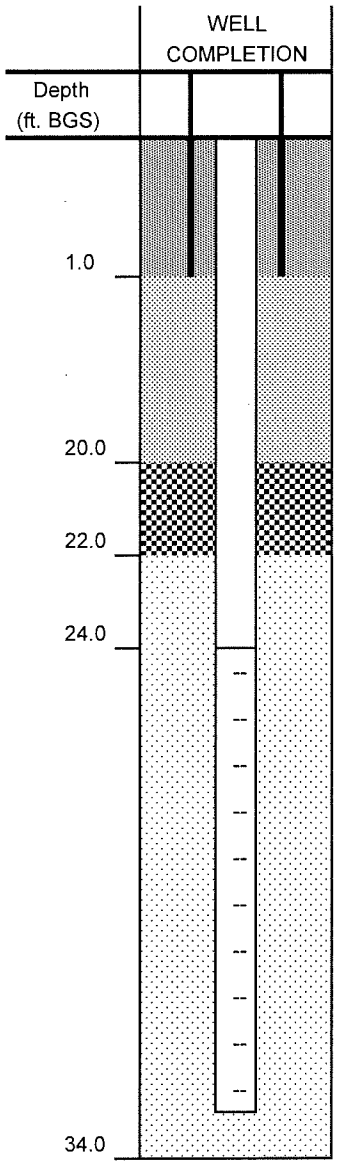
Depth (ft. BGS)	SAMPLE INFORMATION					SOIL DESCRIPTION / COMMENTS
	Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	
	6	NA	50"	689	MW4-04	
					31.8' bgs	See Previous Page for 30-35' bgs.
32				172	15:35	
33				257		
34						
				26.7		
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						

Method of Completion / Backfill: Installed MW-4

Signature:

WELL/BORING No. MW-4





Stick-up:	-0.36 ft
Protective Casing Type:	steel, curb box
Inner Casing Size & Type:	1.5" ID, PVC
Grout:	5% bentonite, cement
Bentonite Seal:	20 to 22' bgs
Type:	granular
Sand:	22 to 34' bgs
Type:	40 mesh, silica
Screen:	24 to 34' bgs
Type:	pre-packed
Diameter:	1.5" ID
Length:	10'
Slot size:	0.010"
Borehole Diameter:	8.25"
Total Depth:	34 ft BGS

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-5

SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/16/2012

WATER LEVEL DATA				
DATE	TIME	WATER LEVEL		REF. PT.
2/16/2012	12:40	17.5'		bgs
2/20/2012	12:50	18.05'		btoic
2/21/2012	13:40	18.08'		btoic
2/23/2012	9:22	18.01'		btoic

TYPE OF DRILL RIG: Geoprobe 66DT
AUGER / CASING SIZE: 2 inch and 3 inch OD probing rods
SOIL SAMPLING METHOD: Macrocore
FINISHED TOTAL DEPTH: 25.89' btoic measured post-development

Depth (ft. BGS)	SAMPLE INFORMATION Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	SOIL DESCRIPTION / COMMENTS
	NA	NA	NA	0	NA	0-5': Hand dug, not cored. Observed in bucket.
						Brown, well graded sand and gravel mix. Dry.
1						
2						
3						
4						
5						
	1	NA	34"	0	NA	5-10': Med dense poorly graded med sand, orange-brown
						few small gravl, some silt in top 0.5'. Dry.
6						
7						
8						
9						
10						
	2	NA	38"	0.1	MW5-01	10-15': Med dense poorly graded tan-brown sand, some bedding visible
					MS/MSD	0.1 to 1 cm. Little silt w/ sand from 14 to 16" from top of core. Dry.
11				3.5	10.5' bgs	
					12:25	
12				1.5		
13				0.3		
14						
15						
	3	NA	48"	0	MW5-02	15-20': Water at 17.5' in core. All med dense poorly graded med silty
					17.8' bgs	sand. Few mica flakes, little bedding.
16					12:50	No silt/gravel.

Method of Completion / Backfill: Installed MW-5

Signature:

ecology and environment engineering, p.c.
International Specialists in the Environment

WELL/BORING No. MW-5

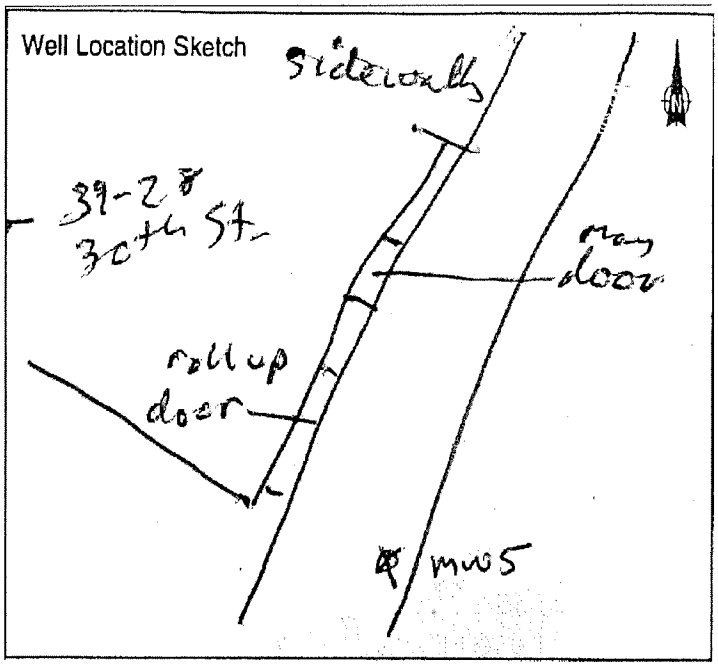
SUBCONTRACTOR: Land Air and Water Environmental Services Inc. (LAWES)
SITE NAME / LOCATION: Bridge Cleaners / Long Island City, NY
DRILLER: Carl Pederson
E & E PROJECT ID: EN-003074-0001
E & E GEOLOGIST: Ben Cole
DATE: 2/15/2012

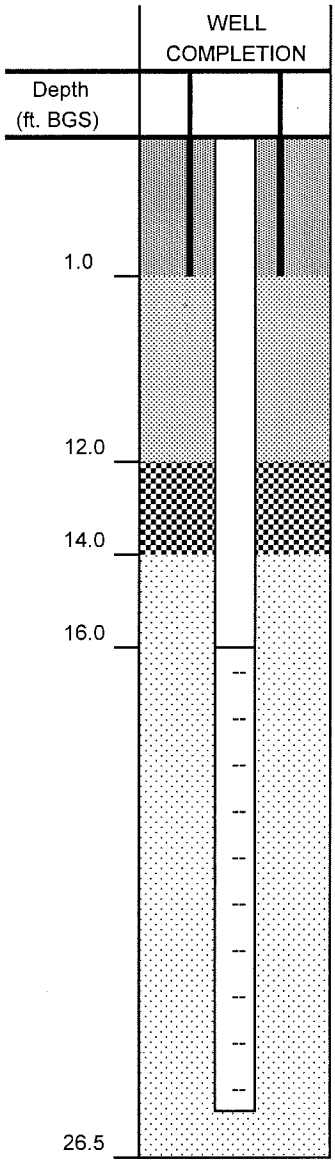
Depth (ft. BGS)	SAMPLE INFORMATION					SOIL DESCRIPTION / COMMENTS
	Core/SS No.	Blow Count	Recovery (ft)	PID/FID (ppm)	Lab/Field Sample ID & Analysis	
	See Previous Page for 15 to 20' bgs.					
16						
17						
18						
19						
20	4	NA	40"	0	MW5-03	20-25': All med dense poorly graded brown med sand, no silt, little
					23.5' bgs	mica flakes. Trace black to dark orange sand. Wet.
21					13:00	
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Method of Completion / Backfill: Installed MW-5

Signature:

Well Location Sketch





Stick-up:	-0.29 ft
Protective Casing Type:	steel, curb bo:
Inner Casing Size & Type:	1.5" ID, PVC
Grout:	5% bentonite, cement
Bentonite Seal:	12 to 14' bgs
Type:	granular
Sand:	14 to 26.5' bgs
Type:	40 mesh, silica
Screen:	16 to 26' bgs
Type:	pre-packed
Diameter:	1.5" ID
Length:	10'
Slot size:	0.010"
Borehole Diameter:	8.25
Total Depth:	26.5 ft BGS

WELL DEVELOPMENT RECORD

SITE Bridge Cleaners DATE 2/20/12

LOCATION Long Island City, NY WELL NO. MW1
30th Ave. near 39th Ave

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2(0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 0.61 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
1 1/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
2 1/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
3 1/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
4 1/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
5 1/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 23.7
WELL DEPTH (TD) 30.30
COLOR brown-tan
ODOR none
CLARITY opaque - translucent

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 23.70
WELL DEPTH (TD) 30.30
COLOR tan
ODOR none
CLARITY translucent

DESCRIPTION OF DEVELOPMENT TECHNIQUE bailed

2/20/12

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

MW 1

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1535	-		7.26	1163	15.8	452	
1545	0.5		7.33	1138	15.4	188	
1554	1.0		7.32	1110	15.7	538	
1604	1.5		7.17	1104	15.9	360	
1615	2.0		7.41	1077	15.8	321	
1625	2.5		7.37	1109	15.8	315	
1635	3.0		7.33	1097	15.5	571	
1645	3.5		7.32	1096	15.6	757	
1655	4.5		7.32	1088	5.4	406	
1705	5.5		7.34	1066	15.8	513	
1715	6.0		7.25	1047	15.3	419	
1725	7.0		7.21	1104	15.4	508	
1735	7.7		7.23	1087	15.4	454	

DEVELOPED BY: Cole /Cheplowitz

DATE 2/20/12

BOREHOLE NO. MW 2

WELL DEVELOPMENT RECORD

SITE Bridge Cleaners DATE 2/20/12

LOCATION Long Island City, NY 30th St. near 40th Ave. WELL NO. MW2

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2(0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 0.97 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 16.08
WELL DEPTH (TD) 26.64
COLOR tan
ODOR none
CLARITY slightly translucent

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 16.08
WELL DEPTH (TD) 26.64
COLOR light tan to clear
ODOR none
CLARITY nearly clear

DESCRIPTION OF DEVELOPMENT TECHNIQUE
bailing

B 2/20/12

WELL DEVELOPMENT - PARAMETER MEASUREMENTS MW2

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1300	—		6.85	1825	15.7	153	
1310	0.5		6.75	1780	16.1	>1000	
1320	1.0		6.74	1853	16.2	>1000	
1330	1.5		6.71	1882	16.5	>1000	
1340	2.0		6.72	1908	16.4	1063	
1350	2.5		6.69	1907	16.4	856	
1400	3.0		6.58	1889	16.0	360	
1410	3.5		6.60	1904	16.0	251	
1420	4.0		6.68	1901	16.7	301	
1430	4.5		6.69	1906	16.7	358	
1440	5.0		6.70	1904	16.1	240	
1450	5.5		6.71	1907	16.5	195	
1455	6.0		6.68	1907	16.1	187	
1500	6.5		6.70	1915	16.1	347	
1510	7.0		6.62	1907	16.1	175	
1515	7.2		6.70	1908	16.2	100.4	
1518	7.4		6.68	1906	16.1	83.3	
1520	7.5		6.57	1924	16.2	98.3	
1523	7.7		6.66	1910	16.1	91.4	

DEVELOPED BY: Cole / Chaplowitz

DATE 2/20/12

WELL DEVELOPMENT RECORD

SITE Bridge Cleaners DATE 2/21/12

LOCATION Long Island City, NY WELL NO. MW 3
40th Ave. b/w 29+30th St.

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2 (0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 0.7 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 19.73
WELL DEPTH (TD) 27.29
COLOR none
ODOR none
CLARITY clear

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 19.75
WELL DEPTH (TD) 27.29
COLOR none
ODOR none
CLARITY clear

DESCRIPTION OF DEVELOPMENT TECHNIQUE Bailing

2/21/12

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

MW3

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
0817	—		8.73	1000	14.1	est <100	*turb meter out of
0826	1 gal		7.52	1063	15.1	est 500	cal. wtr is brown -
0838	2		7.39	1068	15.3	est 400	translucent, est. 500 NTU
0847	2.5		7.58	1054	14.4	est 400	Called vendor but
0900	3.5		7.63	1065	15.0	est 250	could not fix. they
0910	4.5		7.46	1055	15.5	est 200	offered to send replacement
0920	5.5		7.46	1059	15.3	est <100	but will be done sampling
0930	6.0		7.41	1066	15.6	est 50	before it would arrive.
0940	7.0		7.39	1064	15.4	est <50	
0945	7.5		7.40	1063	15.5	est <50	

DEVELOPED BY: Cole / Chaplowitz DATE 2/21/12

WELL DEVELOPMENT RECORD

SITE Bridge Cleaners DATE 2/20/12

LOCATION Long Island City, NY 30 54 St. WELL NO. ~~MW5~~ MW4

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2(0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 0.6 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) ~~18.05~~ 27.55
WELL DEPTH (TD) ~~35.89~~ 34.0
COLOR colorless
ODOR none
CLARITY clear

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 27.65
WELL DEPTH (TD) 34.10
COLOR tan
ODOR none
CLARITY translucent

DESCRIPTION OF DEVELOPMENT TECHNIQUE bailing

2/20/12

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

MW4

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm) mS/cm	TEMP. (°C/F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1002	-		7.40	2390	12.9 est <100 →		turb meter not working
1015	1.0		7.51	2112	14.7	est 500	see photo. initial conte
1026	2.0		7.53	1909	14.6	est 300	very clear est 50-100 NTU
1035	2.5		7.56	1816	14.8	est 300	
1045	3.2		7.53	1769	14.9	est 300	
1055	4.0		7.58	1755	15.2	est 300	
1105	4.5		7.55	1598	14.7	est 300	
1114	5.0		7.58	1595	15.1	est 300	
1125	6.0		7.60	1553	14.8	est <500	
1135	6.5		7.53	1449	14.7	est 250	
1150	7.0		7.54	1360	15.1	~~est~~ 50-100	
1205	7.5		7.57	1396	14.5	~~est~~ 50	
1215	8.0		7.57	1369	15.1	~~est~~ 250	

DEVELOPED BY: Cole/Cheplowitz

DATE 2/20/12

WELL DEVELOPMENT RECORD

SITE Bridge Cleaners DATE 2/20/12

LOCATION Long Island city, NY 3080 St. WELL NO. MW 5

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2(0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 0.72 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 18.05
WELL DEPTH (TD) 25.89
COLOR tan - brown
ODOR none
CLARITY translucent

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 18.05
WELL DEPTH (TD) 25.89
COLOR tan to colorless
ODOR none
CLARITY clear

DESCRIPTION OF DEVELOPMENT TECHNIQUE bailing

2/20/12

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

MW5

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1032	0		6.35	1469	16.1	267	
1040	0.5		6.74	1438	16.6	527	
1045	1.0		6.76	1492	17.0	410	
1050	1.5		6.71	1572	16.5	539	
1055	2.0		6.72	1448	16.6	543	
1100	2.5		6.69	1600	16.0	563	
1105	3.0		6.74	1647	16.1	552	
1115	3.5		6.73	1642	16.0	524	
1125	4.0		6.68	1730	15.8	557	
1135	4.5		6.63	1730	14.5	267	
1145	5.0		6.60	1775	16.0	130	
1155	5.5		6.60	1794	13.9	79.7	
1205	6.0		6.61	1834	14.0	77.2	
1215	6.5		6.63	1895	14.9	46.6	
1225	7.0		6.70	1871	15.2	61.7	
1235	7.5		6.71	1810	15.1	44.4	
240	8.0		6.73	1865	15.7	48.8	
250	8.5		6.82	1870	15.6	74.9	

DEVELOPED BY: Cole / Chaplowitz

DATE 2/20/12

WELL PURGE & SAMPLE RECORD

Site Name/Location: Bridge Cleaners Site Characterization
Well ID: MW-1
EEEPC Project No.: EN-003074-0001-02TTO
Date: 2/22/12

Initial Depth to Water: 23.69 feet TOIC
Total Well Depth: 30.30 feet TOIC
Depth to Pump: NA feet TOIC
Initial Pump Rate: ___ Lpm / gpm
adjusted to: ___ at NA minutes
adjusted to: ___ at ___ minutes

Start Time: 0830
End Time: 0935
☒ Bailer ☐ Pump
Pump Type: —
Well Diameter: 1.5 inches
1x Well Volume: 0.61 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
831	-	8.55	16.3	N/A	1168	N/A	HD -	23.69
0839	0.5	7.59	17.6	N/A	1144	N/A	looks clear	
0847	1.0	7.45	16.4	N/A	1172	N/A	est 250	
0854	1.5	7.42	16.7	N/A	1157	N/A	est 250	
0902	2.0	7.33	16.9	N/A	1163	N/A	est 250	
0910	2.5	7.37	17.1	N/A	1146	N/A	est 250	
0917	3.0	7.38	17.2	N/A	1163	N/A	est 250	
0928	3.5	7.37	17.1	N/A	1137	N/A	est 250	
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
Final Sample Data:		7.37	17.1		1137		est 250	23.69

Sample ID: 09@MW1-01W
Sample Time: 0935
Duplicate? ☒
MS/MSD? ☐
Dupe Samp ID: MW1-01W/D

Analyses:	Methods:
X VOCs+B6	☐ CLP
☐ SVOCs	☒ SW846
☐ PCBs	☐ Drink. Wtr.
☐ Metals	☐ _____
☐ _____	☐ _____

Comments: turb meter not working - very clear initial purge water (est 250 NTU).
final purge water was est 250-500 NTU

Sampler(s): B. Cole, M Chaplowty

WELL PURGE & SAMPLE RECORD

Site Name/Location: Bridge Cleaners Site Characterization
Well ID: MW 2
EEEPC Project No.: EN-003074-0001-02TTO
Date: 2/21/12

Initial Depth to Water: 16.04 feet TOIC
Total Well Depth: 26.65 feet TOIC
Depth to Pump: NA feet TOIC
Initial Pump Rate: NA Lpm / gpm
adjusted to: ↓ at ↓ minutes
adjusted to: ↓ at ↓ minutes

Start Time: 1410
End Time: 1520
☒ Bailer ☐ Pump
Pump Type: NA
Well Diameter: 1.5 inches
1x Well Volume: 0.98 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1410	—	6.95	14.6	N/A	1880	N/A	~~14.6~~ clear	16.04
1420	0.5	6.85	15.2	N/A	1930	N/A		
1427	1.6	6.86	14.9	N/A	1914	N/A		
1435	1.5	6.91	15.1	N/A	1905	N/A	1en	
1447	2.0	6.89	14.9	N/A	1899	N/A	est 500	
~~1455~~ 1505	2.5	6.84	14.6	N/A	1908	N/A	NTU	
1505	3.0	6.80	14.7	N/A	1899	N/A		
1515	4.5	6.84	15.0	N/A	1900	N/A	est 500	
1520	5.0	6.75	15.5	N/A	1940	N/A		
1525	5.4	6.78	15.4	N/A	1945	N/A	est 500	
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
Final Sample Data:		6.78	15.4	NA	1945	NA	500 (est)	

Sample ID: MW2-01W
Sample Time: 1525
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID:

Analyses: Methods:
☒ VOCs+B6 ☐ CLP
☐ SVOCs ☒ SW846
☐ PCBs ☐ Drink. Wtr.
☐ Metals ☐ _____
☐ _____ ☐ _____

Comments: turbidity meter malfunctioned. initial water looked clear

Sampler(s): B. Cole, M. Cheplowitz

WELL PURGE & SAMPLE RECORD

Site Name/Location: Bridge Cleaners Site Characterization
Well ID: MW 3
EEEPC Project No.: EN-003074-0001-02TTO
Date: 2/22/12

Initial Depth to Water: 19.69 feet TOIC
Total Well Depth: 27.30 feet TOIC
Depth to Pump: NA feet TOIC
Initial Pump Rate: ____ Lpm / gpm
adjusted to: ____ at NA minutes
adjusted to: ↓ at ↓ minutes

Start Time: 1020
End Time: 1125
☒ Bailer ☐ Pump
Pump Type: —
Well Diameter: 1.5 inches
1x Well Volume: 0.7 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1023		7.82	16.2	N/A	936	N/A	est 50	19.69
1032	0.5	7.53	16.5	N/A	1018	N/A	est 50	
1036	1.0	7.47	16.5	N/A	1016	N/A	est 50	
1043	1.5	7.43	16.6	N/A	1039	N/A	est 50	
1049	2.0	7.39	16.8	N/A	1040	N/A	est 250	
1055	2.5	7.54	16.5	N/A	1031	N/A	est 250	
1103	3.0	7.50	16.7	N/A	1038	N/A	est 500	
1113	3.5	7.47	16.9	N/A	1047	N/A	est 500	↓
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
Final Sample Data:		7.97	16.9		1047	est	500	19.69

Sample ID: MW 3-01W
Sample Time: 1125
Duplicate? ☐ Dupe Samp ID: ____
MS/MSD? ☒

Analyses: Methods:
☒ VOCs+B6 ☐ CLP
☐ SVOCs ☒ SW846
☐ PCBs ☐ Drink. Wtr.
☐ Metals ☐ ____
☐ ____ ☐ ____

Comments: turbidity meter not working - water appeared clear for first ~1.5 g (est 50 NTU) then became cloudy - est 250 to 500 NTU -

Sampler(s): B Cole, M Chaplowitz

WELL PURGE & SAMPLE RECORD

Site Name/Location: Bridge Cleaners Site Characterization
Well ID: MW 4
EEEPC Project No.: EN-003074-0001-02TTO
Date: 2/22/12

Initial Depth to Water: 27.83 feet TOIC
Start Time: 1255
Total Well Depth: 33.88 feet TOIC
End Time: 1357
Depth to Pump: NA feet TOIC
☒ Bailer ☐ Pump
Initial Pump Rate: ↓ Lpm / gpm
Pump Type: N/A
adjusted to: ↓ at NA minutes
Well Diameter: 1.5 inches
adjusted to: ↓ at ↓ minutes
1x Well Volume: 0.6 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1255	—	7.74	15.9	N/A	2239	N/A	hole	27.83
1308	0.5	7.44	15.4	N/A	1480	N/A	clear 2nd <50 NTU	
1314	1.0	7.47	15.7	N/A	1775	N/A	est 250	
1324	1.5	7.36	15.6	N/A	1570	N/A	est 250	
1333	2.0	7.40	15.6	N/A	1486	N/A	est 500	
1343	2.5	7.61	15.6	N/A	1217	N/A	est 250	
1357	3.0	7.62	16.2	N/A	1208	N/A	est 250	
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
Final Sample Data:		7.62	16.2		1208		est 250	27.83

Sample ID: MW4-01W
Duplicate? ☐
Dupe Samp ID:
Sample Time: 1405
MS/MSD? ☐

Analyses: Methods:
☒ VOCs+B6 ☐ CLP
☐ SVOCs ☒ SW846
☐ PCBs ☐ Drink. Wtr.
☐ Metals ☐ _____
☐ _____ ☐ _____

Comments: turb mtr malfunctioned - visual estimate.

Sampler(s): B Cole, M Choplowitz

WELL PURGE & SAMPLE RECORD

Site Name/Location: Bridge Cleaners Site Characterization
Well ID: MW5

EEEPC Project No.: EN-003074-0001-02TTO
Date: 2/21/12

Initial Depth to Water: 18.08 feet TOIC
Start Time: 1239

Total Well Depth: 25.90 feet TOIC
End Time: 1335

Depth to Pump: NA feet TOIC
☒ Bailer ☐ Pump

Initial Pump Rate: NA Lpm / gpm
Pump Type: —

adjusted to: ↓ at NA minutes
Well Diameter: 1.5 inches

adjusted to: ↓ at ↓ minutes
1x Well Volume: 0.72 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1239		7.22	15.7	N/A	1904	N/A	est 250	18.08
1250	1.0	7.02	16.3	N/A	1979	N/A	est 500	
1300	1.5	6.95	16.0	N/A	1962	N/A	est 500	
1308	2.0	6.89	16.3	N/A	1996	N/A		
1314	2.5	6.90	16.3	N/A	1983	N/A	↓	
1326	3.0	6.86	16.2	N/A	1918	N/A		
1331	3.5	6.88	16.1	N/A	1996	N/A	est 250	
1335	4.0	6.82	16.2	N/A	1991	N/A	est 250	
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
				N/A		N/A		
Final Sample Data:		6.82	16.2		1991		est 250	18.08

Sample ID: MW5-01W
Duplicate? ☐ Dupe Samp ID: —

Sample Time: 1340
MS/MSD? ☐

Analyses: Methods:

☒ VOCs+B6 ☐ CLP
☐ SVOCs ☒ SW846
☐ PCBs ☐ Drink. Wtr.
☐ Metals ☐ —
☐ — ☐ —

Comments: turb mtr malfunction - visual estimate

Sampler(s): B. Cole, M. Claplowitz

D

Data Usability Summary Reports

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0427	SO	MW1-01	12B0427-01	02/13/2012		
12B0427	SO	MW1-02	12B0427-02	02/13/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6°C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- No field QC samples submitted with this SDG, QC for project is correct.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes – No MS/MSD submitted with this SDG, QC for project is correct
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	No MS/MSD submitted for this SDG.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – Isopropylbenzene was out of criteria for LCS and LCSD recovery high, no results qualified base on this non-conformance.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	Yes
Is continuing calibration for target compounds < 20.5%D.	No – Chloromethane, Dichlorodifluoromethane, and Methylene Chloride were >20.5%D, results qualified “J” as estimated in field samples.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	NA

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	No.
For samples, if results are <5 times the blank then "U" flag data.	No detections, no data qualified.
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	NA
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	NA
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	NA
Do field duplicate results show good precision for all compounds (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on CCV %D.

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046249-BS1	Isopropylbenzene	SW8260	143	70	130	0	None
B046249-BSD1	Isopropylbenzene	SW8260	144	70	130	0	None

Table 6 –Samples that were Reanalyzed
None

Table 7 – Summary of Field Duplicate Results
None

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0482	SO	MW 2-01	12B0482-01	02/14/2012		
12B0482	SO	MW 2-02	12B0482-02	02/14/2012		
12B0482	SO	MW 2-02/D	12B0482-03	02/14/2012		
12B0482	SO	MW 3-01	12B0482-04	02/14/2012		
12B0482	SO	MW 3-02	12B0482-05	02/14/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- Field duplicate included in this SDG MW 2-02/D (parent sample MW 2-02).
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

Go to Tables List

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes – No MS/MSD submitted with this SDG, QC for project is correct
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	No MS/MSD submitted for this SDG.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – Isopropylbenzene was out of criteria for LCS and LCSD recovery high, no results qualified base on this non-conformance.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	Yes
Is continuing calibration for target compounds < 20.5%D.	No – Acetone, Chloromethane, and Dichlorodifluoromethane were >20.5%D, results qualified “J” as estimated in field samples.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	Yes

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	No.
For samples, if results are <5 times the blank then "U" flag data.	No detections, no data qualified.
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	NA
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	NA
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	NA
Do field duplicate results show good precision for all compounds (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046315-BS1	Isopropylbenzene	SW8260	134	70	130	0	None
B046315-BSD1	Isopropylbenzene	SW8260	136	70	130	0	None

Table 6 –Samples that were Reanalyzed
None

Table 7 – Summary of Field Duplicate Results

Method	Analyte	Unit	PQL	MW 2-02	MW 2-02/D	RPD	RPD Rating	Qualifier
SW8260	Tetrachloroethylene	ug/kg	0.001	0.0024	0.002	18.2	Good	None

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0540	SO	MW4-01	12B0540-01	02/15/2012		
12B0540	SO	MW4-02	12B0540-02	02/15/2012		
12B0540	SO	MW4-03	12B0540-03	02/15/2012		
12B0540	SO	MW4-04	12B0540-04	02/15/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6°C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- No field QC samples submitted for this SDG, QC for project is correct.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes – No MS/MSD submitted with this SDG, QC for project is correct
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	No MS/MSD submitted for this SDG.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – Isopropylbenzene recovery high in batch B046315 in LCS/LCSD, detections qualified "J" as estimated, non-detects not qualified. Acetone, Chloromethane, 1,2-Dibromo-3-chloropropane, Dichlorodifluoromethane, and 2-Hexanone recovery low in batch B046413, detections qualified "J" as estimated and non-detects qualified "UJ" as estimated. Benzidine, Benzoic Acid, 4-Chloroaniline, 3-Nitroaniline recovery low in batch B046547 results in field samples are qualified "J" as estimated for detections, non-detects are qualified "UJ" as estimated. RPDs for several analytes in all batches are higher than criteria results are qualified "J" as estimated.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	No – 4-Chloroaniline, 4-Chlorophenylphenylether, Dibenzofuran, 1,2-Dichlorobenzene, 4,6-Dinitro-2-methylphenol, Fluorene, Hexachloroethane, 1-Methylnaphthalene, 2-Methylnaphthalene, 2-Methylphenol, ¾-Methylphenol, Naphthalene, and N-Nitrosodi-n-propylamine was >15 %RSD for initial calibration detections qualified "J" as estimated and non-detects qualified "UJ" as estimated.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Is continuing calibration for target compounds < 20.5%D.	No – Acetone, Chloromethane, and Dichlorodifluoromethane, were >20.5%D, results qualified "J" as estimated in field samples for batch B046315. Acetone, and trans-1,4-Dichloro-2-butene were >20.5%D, results qualified "J" as estimated in field samples for batch B046413. Benzidine, Benzo(g,h,i)perylene, Bis(2-Ethylhexyl)phthalate, Dibenz(a,h)anthracene, and Indeno(1,2,3-cd)pyrene were >20.5 %D, results qualified "J" as estimated in field samples in sequence S001875. Benzo(g,h,i)perylene, Bis(2-Ethylhexyl)phthalate, Butylbenzylphthalate, 4,6-Dinitro-2methylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, Hexachlorocyclopentadiene, 2-Nitroaniline, and Pyrene were >20.5% D, results qualified "J" as estimated in field samples in sequence S001904.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	Yes – Due to high concentration of target analytes MW4-02 and MW4-04 required dilution for method SW8260, the dilution results are reportable for the appropriate compounds.
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	NA

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	No.
For samples, if results are <5 times the blank then "U" flag data.	No detections, no data qualified.
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	NA
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	NA
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	NA
Do field duplicate results show good precision for all compounds (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on LCS Recoveries, LCS RPD, ICV %RSD and CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046315-BS1	Isopropylbenzene	SW8260	134	70	130	1	J
B046315-BSD1	Isopropylbenzene	SW8260	136	70	130	1	J
B046413-BS1	Acetone	SW8260	48.5	70	160	1	UJ
B046413-BS1	Chloromethane	SW8260	56.5	70	130	1	UJ
B046413-BS1	1,2-Dibromo-3-chloropropane	SW8260	67.9	70	130	1	UJ
B046413-BS1	Dichlorodifluoromethane	SW8260	39.0	40	160	1	UJ
B046413-BS1	2-Hexanone	SW8260	69.1	70	160	1	UJ
B046413-BSD1	Acetone	SW8260	58.8	70	160	1	UJ
B046413-BSD1	Chloromethane	SW8260	43.0	70	130	1	UJ
B046413-BSD1	Dichlorodifluoromethane	SW8260	36.2	40	160	1	UJ
B046547-BS1	Benzidine	SW8270	35.9	40	140	4	UJ
B046547-BS1	Benzoic Acid	SW8270	22.6	30	130	4	UJ
B046547-BS1	4-Chloroaniline	SW8270	NC	10	140	4	UJ

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046547-BSD1	Benzidine	SW8270	32.3	40	140	4	UJ
B046547-BSD1	Benzoic Acid	SW8270	22.5	30	130	4	UJ
B046547-BSD1	4-Chloroaniline	SW8270	NC	10	140	4	UJ
B046547-BSD1	3-Nitroaniline	SW8270	29.1	30	140	4	UJ

Sample ID	Analyte	Method	RPD	RPD Limit	No. of Affected Samples	Samp Qual
B046413-BSD1	Tert-Butyl Alcohol	SW8260	29.7	25	1	J
B046413-BSD1	Chloromethane	SW8260	27.1	25	1	J
B046413-BSD1	Tetrahydrofuran	SW8260	30.2	25	1	J
B046547-BSD1	2,4-Dinitrophenol	SW8270	32.5	30	4	J
B046547-BSD1	2-Methylphenol	SW8270	32.3	30	4	J

Table 6 –Samples that were Reanalyzed

Sample ID	Lab Sample ID	Method	Sample Type	Action
MW4-02	12B0540-02	SW8260	N	Dilution required due to high concentration of target analytes
MW4-04	12B0540-04	SW8260	Dilution1	Dilution Results Reportable

Table 7 – Summary of Field Duplicate Results
NA

Key:
A = Analyte
NC = Not Calculated

ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0599	SO	MW5-02	12B0599-01	02/16/2012		
12B0599	SO	MW5-03	12B0599-02	02/16/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6°C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- No field QC samples submitted for this SDG, QC for project is correct.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes – No MS/MSD submitted with this SDG, QC for project is correct
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	No MS/MSD submitted for this SDG.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – Isopropylbenzene was out of criteria for LCS and LCSD recovery high, no results qualified base on this non-conformance.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	Yes
Is continuing calibration for target compounds < 20.5%D.	No – Acetone, Acrylonitrile, Chloromethane, Dichlorodifluoromethane, Methylene Chloride, n-Propylbenzene, and 1,3,5-Trimethylbenzene were >20.5%D, results qualified “J” as estimated in field samples.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	NA

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	No.
For samples, if results are <5 times the blank then "U" flag data.	No detections, no data qualified.
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	NA
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	NA
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	NA
Do field duplicate results show good precision for all compounds (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 26, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046530-BS1	Isopropylbenzene	SW8260	143	70	130	0	None
B046530-BSD1	Isopropylbenzene	SW8260	144	70	130	0	None

Table 6 –Samples that were Reanalyzed
None

Table 7 – Summary of Field Duplicate Results
NA

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0600	SO	MW5-01	12B0600-01	02/16/2012	MS/MSD	

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- No field QC samples submitted for this SDG, QC for project is correct.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
MS/MSD within QC criteria (see Table 4)?	No- Several analytes were out of QC criteria for MS/MSD analysis recovery high, no qualification of the data necessary as no positive detections present for these compounds in parent sample. RPD of Methylene Chloride in MSD was outside criteria, analyte qualified “J” as estimated in parent sample.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – Isopropylbenzene was out of criteria for LCS and LCSD recovery high, no results qualified base on this non-conformance.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	Yes
Is continuing calibration for target compounds < 20.5%D.	No – Acetone, Acrylonitrile, Chloromethane, Dichlorodifluoromethane, Methylene Chloride, n-Propylbenzene, and 1,3,5-Trimethylbenzene were >20.5%D, results qualified “J” as estimated in field samples.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	NA

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	No.
For samples, if results are <5 times the blank then "U" flag data.	No detections, no data qualified.
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	NA
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	NA
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	NA
Do field duplicate results show good precision for all compounds (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on MS/MSD RPD, and CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046530-MS1	Acetone	SW8260	151	70	130	0	None
B046530-MS1	Isopropylbenzene	SW8260	131	70	130	0	None
B046530-MS1	Methylene Chloride	SW8260	157	70	130	0	None
B046530-MSD1	Acetone	SW8260	134	70	130	0	None

Sample ID	Analyte	Method	RPD	RPD Limit	No. of Affected Samples	Samp Qual
B046530-MSD1	Methylene Chloride	SW8260	39.3	30	1	J

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046530-BS1	Isopropylbenzene	SW8260	143	70	130	0	None
B046530-BSD1	Isopropylbenzene	SW8260	144	70	130	0	None

Table 6 –Samples that were Reanalyzed

None

Table 7 – Summary of Field Duplicate Results
NA

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0728	WG	MW5-01W	12B0728-01	02/21/2012		
12B0728	WG	MW2-01W	12B0728-02	02/21/2012		
12B0728	WQ	TB022112	12B0728-03	02/21/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6°C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- Trip blank submitted for this SDG, no field duplicate included in this SDG.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
MS/MSD within QC criteria (see Table 4)?	No MS/MSD included in this SDG.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	No – 1,1,2-Trichloro-1,2,2-trifluoroethane out of criteria for LCS, no detections in the field samples, no qualification of the data is required.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	No – Bromomethane, and trans-1,2-Dichloroethylene curve fit did not meet the specified linear regression criteria of 0.99, all compounds in field samples were non-detect and qualified “UJ” as estimated.
Is continuing calibration for target compounds < 20.5%D.	No – 2-Hexanone, and Naphthalene were >20.5 %D, results for field samples are qualified “J” and “UJ” as estimated.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No
For TICs are there any system related compounds that should not be reported?	No
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	NA

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on Initial Calibration %RSD and CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046789-BS1	1,1,2-Trichloro-1,2,2-trifluoroethane	SW8260	135	70	130	0	None

Table 6 –Samples that were Reanalyzed
None

Table 7 – Summary of Field Duplicate Results
NA

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
12B0780	WG	MW1-01W	12B0780-01	02/22/2012		
12B0780	WG	MW1-01W/D	12B0780-02	02/22/2012		
12B0780	WG	MW3-01W	12B0780-03	02/22/2012	MS/MSD	
12B0780	WG	MW4-01W	12B0780-04	02/22/2012		
12B0780	WQ	TB022212	12B0780-05	02/22/2012		

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes- Trip blank submitted for this SDG, field duplicate submitted MW1-01W/D (parent sample MW1-01W).
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No - All samples were prepared and analyzed within holding times.

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Go to Tables List

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No detections in blanks, no data qualified.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
MS/MSD within QC criteria (see Table 4)?	No – Several analytes were out of criteria for MS/MSD analysis, low recoveries are qualified "J" as estimated for detected compounds and "UJ" as estimated for non-detected compounds, high recoveries are qualified "J" as estimated for detected compounds only. RPDs for several compounds were greater than the QC criteria results are qualified "J" as estimated in field samples.
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	Yes – RPDs for several compounds were greater than the QC criteria results are qualified "J" as estimated in the field samples.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <15 %RSD or curve fit?	No – Bromomethane, and trans-1,2-Dichloroethylene had linear regression less than the 0.99 limit, detections are qualified "J" and non-detects are qualified "UJ" as estimated in all samples.
Is continuing calibration for target compounds < 20.5%D.	No – Naphthalene had %D >20.5, detections qualified "J" and non-detects qualified "UJ" as estimated in all samples.
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	Yes – Dilution of samples required due to high concentration of target analytes, dilution results are reportable for appropriate compounds.
For TICs are there any system related compounds that should not be reported?	No

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	Yes

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Results qualified as estimated based on MS/MSD recovery and RPDs, LCS RPD, Initial Calibration %RSD and CCV %D.

Data Usability Summary Report	Project: NYSDEC Bridge Cleaners
Date Completed: March 27, 2012	Completed by: Bryan Kroon

Table 2 - List of Positive Results for Blank Samples
None

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination
None

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits

Sample ID	Analyte	Method	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
B046833-MS1	Tert-Butyl Alcohol	SW8260	61.6	70	130	1	UJ
B046833-MS1	Dichlorodifluoromethane	SW8260	58.2	70	130	1	UJ
B046833-MS1	Naphthalene	SW8260	64.3	70	130	1	UJ
B046833-MSD1	Dichlorodifluoromethane	SW8260	61.6	70	130	1	UJ
B046833-MSD1	Hexachlorobutadiene	SW8260	131	70	130	0	None

Sample ID	Analyte	Method	RPD	RPD Limit	No. of Affected Samples	Samp Qual
B046833-MSD1	Tert-Butyl Alcohol	SW8260	31.9	30	1	J
B046833-MSD1	1,2,3-Trichlorobenzene	SW8260	30.3	30	1	J

Table 5 - List LCS Recoveries outside Control Limits

Sample ID	Analyte	Method	RPD	RPD Limit	No. of Affected Samples	Samp Qual
B046833-BSD1	Bromomethane	SW8260	31.1	25	5	J

Sample ID	Analyte	Method	RPD	RPD Limit	No. of Affected Samples	Samp Qual
B046833-BSD1	Naphthalene	SW8260	27.2	25	5	J
B046833-BSD1	1,2,3-Trichlorobenzene	SW8260	27.5	25	5	J

Table 6 –Samples that were Reanalyzed

Sample ID	Lab Sample ID	Method	Sample Type	Action
MW3-01W	12B0780-03	SW8260	N	Dilution required due to high concentration of target analytes
MW4-01W	12B0780-04	SW8260	N	Dilution required due to high concentration of target analytes

Table 7 – Summary of Field Duplicate Results

Method	Analyte	Unit	PQL	MW1-01W	MW1-01W/D	RPD	RPD Rating	Qualifier
SW8260	Tetrachloroethylene	ug/L	0.14	18	21	15.4	Good	None
SW8260	Chloroform	ug/L	0.04	9.9	9.7	2.0	Good	None
SW8260	Trichloroethylene	ug/L	0.12	1	1.1	9.5	Good	None

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

E Laboratory Analytical Data

Table E-1 Bridge Cleaners Soil Analytical Results, February 2012

Analyte[1]	Unrestricted SCO[2]	Restricted-Residential SCO [3]	Sample ID: MW1-01 Date: 02/13/12 Depth (feet bgs): 14.5	MW1-02 02/13/12 23.0	MW2-01 02/14/12 18.8	MW2-02 02/14/12 23.8	MW2-02/D 02/14/12 23.8	MW3-01 02/14/12 19.9	MW3-02 02/14/12 23.8	MW4-01 02/15/12 7.8	MW4-03 02/15/12 27.3	MW4-02 02/15/12 29.8	MW4-04 02/15/12 31.8	MW5-01 02/16/12 10.5	MW5-02 02/16/12 17.8	MW5-03 02/16/12 23.5
Percent Solids by Method SM 2540G (%)																
SOLIDS, PERCENT	NA	NA	**99**	**92**	**82**	**85**	**83**	**89**	**88**	**97**	**81**	**80**	**81**	**94**	**82**	**80**
VOCs by Method SW8260B (mg/kg)																
1,1,1,2-TETRACHLOROETHANE	NA	NA	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.12 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
1,1,1-TRICHLOROETHANE	0.68	100	0.00054 U	0.00072 U	0.00065 U	0.00081 U	0.00061 U	0.00061 U	0.00055 U	0.00064 U	0.00062 U	0.076 U	0.00061 U	0.00074 U	0.00072 U	0.00072 U
1,1,2,2-TETRACHLOROETHANE	NA	NA	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.27 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	NA	NA	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.17 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
1,1,2-TRICHLOROETHANE	NA	NA	0.00065 U	0.00087 U	0.00078 U	0.00097 U	0.00073 U	0.00073 U	0.00066 U	0.00077 U	0.00075 U	0.12 U	0.00073 U	0.00089 U	0.00087 U	0.00086 U
1,1-DICHLOROETHANE	0.27	26	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.14 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
1,1-DICHLOROETHENE	0.33	100	0.00059 U	0.0008 U	0.00071 U	0.00089 U	0.00067 U	0.00067 U	0.00061 U	0.00071 U	0.00069 U	0.15 U	0.00067 U	0.00081 U	0.00079 U	0.00079 U
1,1-DICHLOROPROPENE	NA	NA	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.15 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
1,2,3-TRICHLOROBENZENE	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.33 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
1,2,3-TRICHLOROPROPANE	NA	NA	0.00059 U	0.0008 U	0.00071 U	0.00089 U	0.00067 U	0.00067 U	0.00061 U	0.00071 U	0.00069 U	0.32 U	0.00067 U	0.00081 U	0.00079 U	0.00079 U
1,2,4-TRICHLOROBENZENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.17 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
1,2,4-TRIMETHYLBENZENE	3.6	52	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	***120***	**0.071**	0.00059 U	0.00058 U	0.00057 U
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	0.00059 U	0.0008 U	0.00071 U	0.00089 U	0.00067 U	0.00067 U	0.00061 U	0.00071 U	0.00069 U	0.73 UJ	0.00067 U	0.00081 U	0.00079 U	0.00079 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	NA	NA	0.00054 U	0.00072 U	0.00065 U	0.00081 U	0.00061 U	0.00061 U	0.00055 U	0.00064 U	0.00062 U	0.21 U	0.00061 U	0.00074 U	0.00072 U	0.00072 U
1,2-DICHLOROBENZENE	1.1	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.091 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
1,2-DICHLOROETHANE	0.02	3.1	0.0007 U	0.00094 U	0.00084 U	0.001 U	0.00079 U	0.0008 U	0.00072 U	0.00084 U	0.00081 U	0.14 U	0.00079 U	0.00096 U	0.00094 U	0.00093 U
1,2-DICHLOROPROPANE	NA	NA	0.0007 U	0.00094 U	0.00084 U	0.001 U	0.00079 U	0.0008 U	0.00072 U	0.00084 U	0.00081 U	0.3 U	0.00079 U	0.00096 U	0.00094 U	0.00093 U
1,3,5-TRICHLOROBENZENE	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.61 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	8.4	52	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	***60***	**0.028**	0.00044 UJ	0.00043 UJ	0.00043 UJ
1,3-DICHLOROBENZENE	2.4	49	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.091 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
1,3-DICHLOROPROPANE	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.12 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
1,4-DICHLOROBENZENE	1.8	13	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.17 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
1,4-DIOXANE (P-DIOXANE)	0.1	13	0.031 U	0.042 U	0.037 U	0.046 U	0.035 U	0.035 U	0.032 U	0.037 U	0.036 U	5.3 U	0.035 U	0.043 U	0.042 U	0.041 U
2,2-DICHLOROPROPANE	NA	NA	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.2 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
2-CHLOROTOLUENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.076 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
2-HEXANONE	NA	NA	0.0059 U	0.0079 U	0.007 U	0.0088 U	0.0066 U	0.0067 U	0.006 U	0.007 U	0.0068 U	1 UJ	0.0067 U	0.0081 U	0.0079 U	0.0078 U
4-CHLOROTOLUENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.076 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
ACETONE	0.05	100	0.013 U	0.017 U	0.015 UJ	0.019 UJ	0.014 UJ	0.014 UJ	0.013 UJ	0.015 UJ	0.015 UJ	0.82 UJ	0.014 UJ	0.017 UJ	0.017 UJ	0.017 UJ
ACRYLONITRILE	NA	NA	0.0013 U	0.0018 U	0.0016 U	0.002 U	0.0015 U	0.0015 U	0.0014 U	0.0016 U	0.0016 U	0.77 U	0.0015 U	0.0018 UJ	0.0018 UJ	0.0018 UJ
BENZENE	0.06	4.8	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.076 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
BROMOBENZENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.15 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
BROMODICHLOROMETHANE	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.12 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
BROMOFORM	NA	NA	0.00075 U	0.001 U	0.0009 U	0.0011 U	0.00085 U	0.00086 U	0.00077 U	0.0009 U	0.00087 U	0.38 U	0.00086 U	0.001 U	0.001 U	0.001 U
BROMOMETHANE	NA	NA	0.00091 U	0.0012 U	0.0011 U	0.0014 U	0.001 U	0.001 U	0.00094 U	0.0011 U	0.0011 U	0.58 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
BUTANE, 2-METHOXY-2-METHYL	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.17 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
CARBON DISULFIDE	NA	NA	0.0018 U	0.0024 U	0.0021 U	0.0027 U	0.002 U	0.002 U	0.0018 U	0.0021 U	0.0021 U	0.076 U	0.002 U	0.0024 U	0.0024 U	0.0024 U
CARBON TETRACHLORIDE	0.76	2.4	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.14 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
CHLOROBENZENE	1.1	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.076 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
CHLOROETHANE	NA	NA	0.00081 U	0.0011 U	0.00097 U	0.0012 U	0.00091 U	0.00092 U	0.00083 U	0.00096 U	0.00094 U	0.5 U	0.00092 U	0.0011 U	0.0011 U	0.0011 U
CHLOROFORM	0.37	49	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.061 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
CHLOROMETHANE	NA	NA	0.00048 UJ	0.00065 UJ	0.00058 UJ	0.00073 UJ	0.00054 UJ	0.00055 UJ	0.0005 UJ	0.00058 UJ	0.00056 UJ	0.2 UJ	0.00055 UJ	0.00067 UJ	0.00065 UJ	0.00064 UJ
CIS-1,2-DICHLOROETHYLENE	0.25	100	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.076 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
CIS-1,3-DICHLOROPROPENE	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.11 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
CYMENE	NA	NA	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	**10**	**0.0023**	0.00059 U	0.00058 U	0.00057 U
DIBROMOCHLOROMETHANE	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.18 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
DIBROMOMETHANE	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.12 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
DICHLORODIFLUOROMETHANE	NA	NA	0.0007 UJ	0.00094 UJ	0.00084 UJ	0.001 UJ	0.00079 UJ	0.0008 UJ	0.00072 UJ	0.00084 UJ	0.00081 UJ	0.061 UJ	0.00079 UJ	0.00096 UJ	0.00094 UJ	0.00093 UJ
DIETHYL ETHER (ETHYL ETHER)	NA	NA	0.00097 U	0.0013 U	0.0012 U	0.0015 U	0.0011 U	0.0011 U	0.00099 U	0.0012 U	0.0011 U	0.15 U	0.0011 U	0.0013 U	0.0013 U	0.0013 U
ETHYL TERT-BUTYL ETHER	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.11 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
ETHYLBENZENE	1	41	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	***43***	**0.067**	0.00059 U	0.00058 U	0.00057 U
HEXACHLOROBUTADIENE	NA	NA	0.00054 U	0.00072 U	0.00065 U	0.00081 U	0.00061 U	0.00061 U	0.00055 U	0.00064 U	0.00062 U	0.39 U	0.00061 U	0.00074 U	0.00072 U	0.00072 U
ISOPROPYL ETHER	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.045 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
ISOPROPYLBENZENE (CUMENE)	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**50**	**0.023 J**	0.00052 U	0.00051 U	0.0005 U
M AND P XYLENES [4]	0.26	100	0.00091 U	0.0012 U	0.0011 U	0.0014 U	0.001 U	0.001 U	0.00094 U	0.0011 U	0.0011 U	***130***	**3.1**	0.0013 U	0.0012 U	0.0012 U
METHYL ETHYL KETONE (2-BUTANONE)	0.12	100	0.0094 U	0.013 U	0.011 U	0.014 U	0.011 U	0.011 U	0.0097 U	0.011 U	0.011 U	0.62 U	0.011 U	0.013 U	0.013 U	0.013 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	NA	NA	0.0041 U	0.0055 U	0.0049 U	0.0061 U	0.0046 U	0.0047 U	0.0042 U	0.0049 U	0.0047 U	0.33 U	0.0046 U	0.0056 U	0.0055 U	0.0054 U
METHYLENE CHLORIDE	0.05	100	0.0038 UJ	0.0051 UJ	0.0046 U	0.0057 U	0.0043 U	0.0043 U	0.0039 U	0.0046 U	0.0044 U	3.4 U	0.0043 U	0.0052 UJ	0.0051 UJ	0.0051 UJ
NAPHTHALENE	NA	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.32 U	**0.0031**	0.00052 U	0.00051 U	0.0005 U
N-BUTYLBENZENE	12	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**6.3**	**0.0017**	0.00052 U	0.00051 U	0.0005 U

Table E-1 Bridge Cleaners Soil Analytical Results, February 2012

Analyte[1]	Unrestricted SCO[2]	Restricted-Residential SCO [3]	Sample ID: MW1-01 Date: 02/13/12 Depth (feet bgs): 14.5	MW1-02 02/13/12 23.0	MW2-01 02/14/12 18.8	MW2-02 02/14/12 23.8	MW2-02/D 02/14/12 23.8	MW3-01 02/14/12 19.9	MW3-02 02/14/12 23.8	MW4-01 02/15/12 7.8	MW4-03 02/15/12 27.3	MW4-02 02/15/12 29.8	MW4-04 02/15/12 31.8	MW5-01 02/16/12 10.5	MW5-02 02/16/12 17.8	MW5-03 02/16/12 23.5
N-PROPYLBENZENE	3.9	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	**55**	**0.02**	0.00052 UJ	0.00051 UJ	0.0005 UJ
O-XYLENE (1,2-DIMETHYLBENZENE)[4]	0.26	100	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	***41***	**0.07**	0.00052 U	0.00051 U	0.0005 U
SEC-BUTYLBENZENE	11	100	0.00054 U	0.00072 U	0.00065 U	0.00081 U	0.00061 U	0.00061 U	0.00055 U	0.00064 U	0.00062 U	**11**	**0.0021**	0.00074 U	0.00072 U	0.00072 U
STYRENE	NA	NA	0.00032 U	0.00043 U	0.00039 U	0.00048 U	0.00036 U	0.00037 U	0.00033 U	0.00039 U	0.00037 U	0.091 U	0.00037 U	0.00044 U	0.00043 U	0.00043 U
T-BUTYLBENZENE	5.9	100	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	**2.5**	0.00055 U	0.00067 U	0.00065 U	0.00064 U
TERT-BUTYL ALCOHOL	NA	NA	0.011 U	0.015 U	0.014 U	0.017 U	0.013 U	0.013 U	0.012 U	0.013 U	0.013 U	5.3 UJ	0.013 U	0.015 U	0.015 U	0.015 U
TERT-BUTYL METHYL ETHER	0.93	100	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.076 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
TETRACHLOROETHYLENE (PCE)	1.3	19	**0.0018**	0.00094 U	**0.0018**	**0.0024**	**0.002**	**0.014**	**0.076**	0.00084 U	**0.0061**	**3.3**	0.00079 U	0.00096 U	**0.0044**	**0.0048**
TETRAHYDROFURAN	NA	NA	0.0012 U	0.0016 U	0.0014 U	0.0018 U	0.0013 U	0.0013 U	0.0012 U	0.0014 U	0.0014 U	1.5 UJ	0.0013 U	0.0016 U	0.0016 U	0.0016 U
TOLUENE	0.7	100	0.00043 U	0.00058 U	0.00052 U	0.00065 U	0.00048 U	0.00049 U	0.00044 U	0.00051 U	0.0005 U	0.061 U	0.00049 U	0.00059 U	0.00058 U	0.00057 U
TRANS-1,2-DICHLOROETHENE	0.19	100	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	0.00055 U	0.0005 U	0.00058 U	0.00056 U	0.11 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
TRANS-1,3-DICHLOROPROPENE	NA	NA	0.00038 U	0.00051 U	0.00045 U	0.00056 U	0.00042 U	0.00043 U	0.00039 U	0.00045 U	0.00044 U	0.18 U	0.00043 U	0.00052 U	0.00051 U	0.0005 U
TRANS-1,4-DICHLORO-2-BUTENE	NA	NA	0.00065 U	0.00087 U	0.00078 U	0.00097 U	0.00073 U	0.00073 U	0.00066 U	0.00077 U	0.00075 U	1.2 UJ	0.00073 U	0.00089 U	0.00087 U	0.00086 U
TRICHLOROETHYLENE (TCE)	0.47	21	0.00048 U	0.00065 U	0.00058 U	0.00073 U	0.00054 U	**0.0028**	**0.005**	0.00058 U	0.00056 U	0.18 U	0.00055 U	0.00067 U	0.00065 U	0.00064 U
TRICHLOROFLUOROMETHANE	NA	NA	0.00059 U	0.0008 U	0.00071 U	0.00089 U	0.00067 U	0.00067 U	0.00061 U	0.00071 U	0.00069 U	0.11 U	0.00067 U	0.00081 U	0.00079 U	0.00079 U
VINYL CHLORIDE	0.02	0.9	0.00059 U	0.0008 U	0.00071 U	0.00089 U	0.00067 U	0.00067 U	0.00061 U	0.00071 U	0.00069 U	0.24 U	0.00067 U	0.00081 U	0.00079 U	0.00079 U
SVOCs by Method SW8270D (mg/kg)																
1,2,4,5-TETRACHLOROBENZENE	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
1,2,4-TRICHLOROBENZENE	NA	NA	--	--	--	--	--	--	--	0.062 U	0.074 U	0.15 U	0.074 U	--	--	--
1,2-DICHLOROBENZENE	NA	100	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
1,2-DIPHENYLHYDRAZINE	NA	NA	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
1,3-DICHLOROBENZENE	NA	49	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
1,4-DICHLOROBENZENE	NA	13	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
1-METHYLNAPHTHALENE	NA	NA	--	--	--	--	--	--	--	0.1 UJ	0.12 UJ	0.25 UJ	0.12 UJ	--	--	--
2,2-OXYBIS(2-CHLOROPROPANE)	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
2,4,5-TRICHLOROPHENOL	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
2,4,6-TRICHLOROPHENOL	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
2,4-DICHLOROPHENOL	NA	NA	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
2,4-DIMETHYLPHENOL	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
2,4-DINITROPHENOL	NA	NA	--	--	--	--	--	--	--	0.041 UJ	0.05 UJ	0.098 UJ	0.049 UJ	--	--	--
2,4-DINITROTOLUENE	NA	NA	--	--	--	--	--	--	--	0.11 UJ	0.14 U	0.27 U	0.14 UJ	--	--	--
2,6-DINITROTOLUENE	NA	NA	--	--	--	--	--	--	--	0.11 U	0.14 U	0.27 U	0.14 U	--	--	--
2-CHLORONAPHTHALENE	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
2-CHLOROPHENOL	NA	NA	--	--	--	--	--	--	--	0.093 U	0.11 U	0.22 U	0.11 U	--	--	--
2-METHYLNAPHTHALENE	NA	NA	--	--	--	--	--	--	--	0.1 UJ	0.12 UJ	0.25 UJ	0.12 UJ	--	--	--
2-METHYLPHENOL (O-CRESOL)	0.33	100	--	--	--	--	--	--	--	0.13 UJ	0.16 UJ	0.32 UJ	0.16 UJ	--	--	--
2-NITROANILINE	NA	NA	--	--	--	--	--	--	--	0.1 UJ	0.12 U	0.25 U	0.12 UJ	--	--	--
2-NITROPHENOL	NA	NA	--	--	--	--	--	--	--	0.051 U	0.062 U	0.12 U	0.062 U	--	--	--
3- AND 4- METHYLPHENOL (TOTAL)	0.33	NA	--	--	--	--	--	--	--	0.16 UJ	0.2 UJ	0.39 UJ	0.2 UJ	--	--	--
3,3'-DICHLOROBENZIDINE	NA	NA	--	--	--	--	--	--	--	0.062 U	0.074 U	0.15 U	0.074 U	--	--	--
3-NITROANILINE	NA	NA	--	--	--	--	--	--	--	0.1 UJ	0.12 UJ	0.25 UJ	0.12 UJ	--	--	--
4,6-DINITRO-2-METHYLPHENOL	NA	NA	--	--	--	--	--	--	--	0.041 UJ	0.05 UJ	0.098 UJ	0.049 UJ	--	--	--
4-BROMOPHENYL PHENYL ETHER	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
4-CHLORO-3-METHYLPHENOL	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
4-CHLOROANILINE	NA	NA	--	--	--	--	--	--	--	0.093 UJ	0.11 UJ	0.22 UJ	0.11 UJ	--	--	--
4-CHLOROPHENYL PHENYL ETHER	NA	NA	--	--	--	--	--	--	--	0.12 UJ	0.15 UJ	0.3 UJ	0.15 UJ	--	--	--
4-NITROANILINE	NA	NA	--	--	--	--	--	--	--	0.12 U	0.15 U	0.3 U	0.15 U	--	--	--
4-NITROPHENOL	NA	NA	--	--	--	--	--	--	--	0.041 U	0.05 U	0.098 U	0.049 U	--	--	--
ACENAPHTHENE	20	100	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
ACENAPHTHYLENE	100	100	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
ACETOPHENONE	NA	NA	--	--	--	--	--	--	--	0.12 U	0.15 U	0.3 U	0.15 U	--	--	--
ANILINE (PHENYLAMINE, AMINOBENZENE)	NA	NA	--	--	--	--	--	--	--	0.11 U	0.14 U	0.27 U	0.14 U	--	--	--
ANTHRACENE	100	100	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
BENZIDINE	NA	NA	--	--	--	--	--	--	--	0.082 UJ	0.099 UJ	0.2 UJ	0.099 UJ	--	--	--
BENZO(A)ANTHRACENE	1	1	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
BENZO(A)PYRENE	1	1	--	--	--	--	--	--	--	0.093 U	0.11 U	0.22 U	0.11 U	--	--	--
BENZO(B)FLUORANTHENE	1	1	--	--	--	--	--	--	--	0.093 U	0.11 U	0.22 U	0.11 U	--	--	--
BENZO(G,H,I)PERYLENE	100	100	--	--	--	--	--	--	--	0.072 UJ	0.087 UJ	0.17 UJ	0.086 UJ	--	--	--
BENZO(K)FLUORANTHENE	0.8	3.9	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
BENZOIC ACID	NA	NA	--	--	--	--	--	--	--	0.15 UJ	0.19 UJ	0.37 UJ	0.18 UJ	--	--	--

Table E-1 Bridge Cleaners Soil Analytical Results, February 2012

Analyte[1]	Unrestricted SCO[2]	Restricted-Residential SCO [3]	Sample ID: MW1-01 / Date: 02/13/12 / Depth (feet bgs): 14.5	MW1-02 02/13/12 23.0	MW2-01 02/14/12 18.8	MW2-02 02/14/12 23.8	MW2-02/D 02/14/12 23.8	MW3-01 02/14/12 19.9	MW3-02 02/14/12 23.8	MW4-01 02/15/12 7.8	MW4-03 02/15/12 27.3	MW4-02 02/15/12 29.8	MW4-04 02/15/12 31.8	MW5-01 02/16/12 10.5	MW5-02 02/16/12 17.8	MW5-03 02/16/12 23.5
BENZYL BUTYL PHTHALATE	NA	NA	--	--	--	--	--	--	--	0.11 UJ	0.14 U	0.27 U	0.14 UJ	--	--	--
BIS(2-CHLOROETHOXY) METHANE	NA	NA	--	--	--	--	--	--	--	0.093 U	0.11 U	0.22 U	0.11 U	--	--	--
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
BIS(2-ETHYLHEXYL) PHTHALATE	NA	NA	--	--	--	--	--	--	--	0.1 UJ	0.12 UJ	0.25 UJ	0.12 UJ	--	--	--
CARBAZOLE	NA	NA	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
CHRYSENE	1	3.9	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
DIBENZ(A,H)ANTHRACENE	0.33	0.33	--	--	--	--	--	--	--	0.072 U	0.087 UJ	0.17 UJ	0.086 U	--	--	--
DIBENZOFURAN	NA	59	--	--	--	--	--	--	--	0.082 UJ	0.099 UJ	0.2 UJ	0.099 UJ	--	--	--
DIETHYL PHTHALATE	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
DIMETHYL PHTHALATE	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
DI-N-BUTYL PHTHALATE	NA	NA	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
DI-N-OCTYLPHTHALATE	NA	NA	--	--	--	--	--	--	--	0.13 U	0.16 U	0.32 U	0.16 U	--	--	--
FLUORANTHENE	100	100	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
FLUORENE	30	100	--	--	--	--	--	--	--	0.093 UJ	0.11 UJ	0.22 UJ	0.11 UJ	--	--	--
HEXACHLOROBENZENE	NA	1.2	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
HEXACHLOROBUTADIENE	NA	NA	--	--	--	--	--	--	--	0.062 U	0.074 U	0.15 U	0.074 U	--	--	--
HEXACHLOROCYCLOPENTADIENE	NA	NA	--	--	--	--	--	--	--	0.062 UJ	0.074 U	0.15 U	0.074 UJ	--	--	--
HEXACHLOROETHANE	NA	NA	--	--	--	--	--	--	--	0.082 UJ	0.099 UJ	0.2 UJ	0.099 UJ	--	--	--
INDENO(1,2,3-C,D)PYRENE	0.5	0.5	--	--	--	--	--	--	--	0.072 U	0.087 UJ	0.17 UJ	0.086 U	--	--	--
ISOPHORONE	NA	NA	--	--	--	--	--	--	--	0.1 U	0.12 U	0.25 U	0.12 U	--	--	--
NAPHTHALENE	NA	100	--	--	--	--	--	--	--	0.072 UJ	0.087 UJ	0.17 UJ	0.086 UJ	--	--	--
NITROBENZENE	NA	NA	--	--	--	--	--	--	--	0.072 U	0.087 U	0.17 U	0.086 U	--	--	--
N-NITROSODIMETHYLAMINE	NA	NA	--	--	--	--	--	--	--	0.062 U	0.074 U	0.15 U	0.074 U	--	--	--
N-NITROSODI-N-PROPYLAMINE	NA	NA	--	--	--	--	--	--	--	0.13 UJ	0.16 UJ	0.32 UJ	0.16 UJ	--	--	--
N-NITROSODIPHENYLAMINE	NA	NA	--	--	--	--	--	--	--	0.11 U	0.14 U	0.27 U	0.14 U	--	--	--
PENTACHLORONITROBENZENE	NA	NA	--	--	--	--	--	--	--	0.11 U	0.14 U	0.27 U	0.14 U	--	--	--
PENTACHLOROPHENOL	0.8	6.7	--	--	--	--	--	--	--	0.062 U	0.074 U	0.15 U	0.074 U	--	--	--
PHENANTHRENE	100	100	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--
PHENOL	0.33	100	--	--	--	--	--	--	--	0.093 U	0.11 U	0.22 U	0.11 U	--	--	--
PYRENE	100	100	--	--	--	--	--	--	--	0.1 UJ	0.12 U	0.25 U	0.12 UJ	--	--	--
PYRIDINE	NA	NA	--	--	--	--	--	--	--	0.082 U	0.099 U	0.2 U	0.099 U	--	--	--

Key:

-- = Analyte not analyzed for.

bgs = below ground surface

/D Designates field duplicate sample.

(g) = Guidance value (no applicable standard).

J = Estimated value.

mg/kg = Milligrams per kilogram.

SCO = Soil Clean-up Objectives (6 NYCRR Part 375-6)

SVOCs = Semi-Volatile organic compounds.

U = Not detected (lab reporting limit shown).

UJ = Not detected/Estimated Value.

VOCs = Volatile organic compounds.

Notes:

1) Bold values in unshaded cell denotes analytes reported above method detection limits.

2) Bold values in shaded cell denotes analytes reported to exceed Part 375 Unrestricted SCO.

3) Bold, italicized values in shaded cell dentoes analytes reported to exceed Part 375 Unrestricted and Restricted-Residential SCOs.

4) The Part 375 SCO for xylene (mixed), and the sum of the xylene detections was used for comparison.

Table E-2 Bridge Cleaners Groundwater Analytical Results, February 2012

Analyte[1]	Screening Criteria [2, 3]	Sample ID: MW1-01W Date: 02/22/12	MW1-01W/D 02/22/12	MW2-01W 02/21/12	MW3-01W 02/22/12	MW4-01W 02/22/12	MW5-01W 02/21/12	TB022112 02/21/12	TB022212 02/22/12
VOCs by Method SW8260B (µg/L)									
1,1,1,2-TETRACHLOROETHANE	5	0.08 U	0.08 U	0.08 U	0.8 U	0.4 U	0.08 U	0.08 U	0.08 U
1,1,1-TRICHLOROETHANE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
1,1,2,2-TETRACHLOROETHANE	5	0.18 U	0.18 U	0.18 U	1.8 U	0.9 U	0.18 U	0.18 U	0.18 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	0.11 U	0.11 U	0.11 U	1.1 U	0.55 U	0.11 U	0.11 U	0.11 U
1,1,2-TRICHLOROETHANE	1	0.08 U	0.08 U	0.08 U	0.8 U	0.4 U	0.08 U	0.08 U	0.08 U
1,1-DICHLOROETHANE	5	0.09 U	0.09 U	0.09 U	0.9 U	0.45 U	0.09 U	0.09 U	0.09 U
1,1-DICHLOROETHENE	5	0.1 U	0.1 U	0.1 U	1 U	0.5 U	0.1 U	0.1 U	0.1 U
1,1-DICHLOROPROPENE	5	0.1 U	0.1 U	0.1 U	1 U	0.5 U	0.1 U	0.1 U	0.1 U
1,2,3-TRICHLOROBENZENE	5	0.22 UJ	0.22 UJ	0.22 U	2.2 UJ	1.1 UJ	0.22 U	0.22 U	0.22 UJ
1,2,3-TRICHLOROPROPANE	0.04	0.21 U	0.21 U	0.21 U	2.1 U	1 U	0.21 U	0.21 U	0.21 U
1,2,4-TRICHLOROBENZENE	5	0.11 U	0.11 U	0.11 U	1.1 U	0.55 U	0.11 U	0.11 U	0.11 U
1,2,4-TRIMETHYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**220**	0.06 U	0.06 U	0.06 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	0.48 U	0.48 U	0.48 U	4.8 U	2.4 U	0.48 U	0.48 U	0.48 U
1,2-DIBROMOETHANE	0.0006	0.14 U	0.14 U	0.14 U	1.4 U	0.7 U	0.14 U	0.14 U	0.14 U
1,2-DICHLOROBENZENE	3	0.06 U	0.06 U	0.06 U	0.6 U	0.3 U	0.06 U	0.06 U	0.06 U
1,2-DICHLOROETHANE	0.6	0.09 U	0.09 U	0.09 U	0.9 U	0.45 U	0.09 U	0.09 U	0.09 U
1,2-DICHLOROPROPANE	1	0.2 U	0.2 U	0.2 U	2 U	1 U	0.2 U	0.2 U	0.2 U
1,3,5-TRICHLOROBENZENE	NA	0.4 U	0.4 U	0.4 U	4 U	2 U	0.4 U	0.4 U	0.4 U
1,3,5-TRIMETHYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**83**	0.06 U	0.06 U	0.06 U
1,3-DICHLOROBENZENE	3	0.06 U	0.06 U	0.06 U	0.6 U	0.3 U	0.06 U	0.06 U	0.06 U
1,3-DICHLOROPROPANE	5	0.08 U	0.08 U	0.08 U	0.8 U	0.4 U	0.08 U	0.08 U	0.08 U
1,4-DICHLOROBENZENE	3	0.11 U	0.11 U	0.11 U	1.1 U	0.55 U	0.11 U	0.11 U	0.11 U
1,4-DIOXANE	NA	3.5 U	3.5 U	3.5 U	35 U	18 U	3.5 U	3.5 U	3.5 U
2,2-DICHLOROPROPANE	NA	0.13 U	0.13 U	0.13 U	1.3 U	0.65 U	0.13 U	0.13 U	0.13 U
2-CHLOROTOLUENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
2-HEXANONE	50	0.66 U	0.66 U	0.66 UJ	6.6 U	3.3 U	0.66 UJ	0.66 UJ	0.66 U
4-CHLOROTOLUENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
ACETONE	50	0.54 U	0.54 U	0.54 U	5.4 U	2.7 U	0.54 U	0.54 U	0.54 U
ACRYLONITRILE	NA	0.51 U	0.51 U	0.51 U	5.1 U	2.6 U	0.51 U	0.51 U	0.51 U
BENZENE	1	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
BROMOBENZENE	5	0.1 U	0.1 U	0.1 U	1 U	0.5 U	0.1 U	0.1 U	0.1 U
BROMODICHLOROMETHANE	50	0.08 U	0.08 U	0.08 U	0.8 U	0.4 U	0.08 U	0.08 U	0.08 U
BROMOFORM	50	0.25 U	0.25 U	0.25 U	2.5 U	1.2 U	0.25 U	0.25 U	0.25 U
BROMOMETHANE	5	0.38 UJ	0.38 UJ	0.38 UJ	3.8 UJ	1.9 UJ	0.38 UJ	0.38 UJ	0.38 UJ
BUTANE, 2-METHOXY-2-METHYL	NA	0.11 U	0.11 U	0.11 U	1.1 U	0.55 U	0.11 U	0.11 U	0.11 U
CARBON DISULFIDE	60	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
CARBON TETRACHLORIDE	5	0.09 U	0.09 U	0.09 U	0.9 U	0.45 U	0.09 U	0.09 U	0.09 U
CHLOROBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
CHLOROETHANE	5	0.33 U	0.33 U	0.33 U	3.3 U	1.6 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	7	**9.9**	**9.7**	0.04 U	0.4 U	0.2 U	0.04 U	0.04 U	0.04 U
CHLOROMETHANE	5	0.13 U	0.13 U	0.13 U	1.3 U	0.65 U	0.13 U	0.13 U	0.13 U
CIS-1,2-DICHLOROETHYLENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
CIS-1,3-DICHLOROPROPENE	0.4	0.07 U	0.07 U	0.07 U	0.7 U	0.35 U	0.07 U	0.07 U	0.07 U
CYMENE	5	0.06 U	0.06 U	0.06 U	0.6 U	0.3 U	0.06 U	0.06 U	0.06 U
DIBROMOCHLOROMETHANE	50	0.12 U	0.12 U	0.12 U	1.2 U	0.6 U	0.12 U	0.12 U	0.12 U
DIBROMOMETHANE	5	0.08 U	0.08 U	0.08 U	0.8 U	0.4 U	0.08 U	0.08 U	0.08 U
DICHLORODIFLUOROMETHANE	5	0.04 U	0.04 U	0.04 U	0.4 UJ	0.2 U	0.04 U	0.04 U	0.04 U
DIETHYL ETHER	NA	0.1 U	0.1 U	0.1 U	1 U	0.5 U	0.1 U	0.1 U	0.1 U
ETHYL TERT-BUTYL ETHER	NA	0.07 U	0.07 U	0.07 U	0.7 U	0.35 U	0.07 U	0.07 U	0.07 U
ETHYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**290**	0.05 U	0.05 U	0.05 U
HEXACHLOROBUTADIENE	0.5	0.26 U	0.26 U	0.26 U	2.6 U	1.3 U	0.26 U	0.26 U	0.26 U
ISOPROPYL ETHER	NA	0.03 U	0.03 U	0.03 U	0.3 U	0.15 U	0.03 U	0.03 U	0.03 U
ISOPROPYLBENZENE	5	0.06 U	0.06 U	0.06 U	0.6 U	**80**	0.06 U	0.06 U	0.06 U
M AND P XYLENES [4]	5	0.07 U	0.07 U	0.07 U	0.7 U	**1300**	0.07 U	0.07 U	0.07 U
METHYL ETHYL KETONE	50	0.41 U	0.41 U	0.41 U	4.1 U	2 U	0.41 U	0.41 U	0.41 U
METHYL ISOBUTYL KETONE	NA	0.22 U	0.22 U	0.22 U	2.2 U	1.1 U	0.22 U	0.22 U	0.22 U
METHYLENE CHLORIDE	5	2.3 U	2.3 U	2.3 U	23 U	11 U	2.3 U	2.3 U	2.3 U
NAPHTHALENE	10	0.21 UJ	0.21 UJ	0.21 UJ	2.1 UJ	**18 J**	**3.2 J**	0.21 UJ	0.21 UJ

Table E-2 Bridge Cleaners Groundwater Analytical Results, February 2012

Analyte[1]	Sample ID: / Date: / Screening Criteria [2, 3]	MW1-01W 02/22/12	MW1-01W/D 02/22/12	MW2-01W 02/21/12	MW3-01W 02/22/12	MW4-01W 02/22/12	MW5-01W 02/21/12	TB022112 02/21/12	TB022212 02/22/12
N-BUTYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
N-PROPYLBENZENE	5	0.04 U	0.04 U	0.04 U	0.4 U	**60**	0.04 U	0.04 U	0.04 U
O-XYLENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**380**	0.05 U	0.05 U	0.05 U
SEC-BUTYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	**5.6**	0.05 U	0.05 U	0.05 U
STYRENE	5	0.06 U	0.06 U	0.06 U	0.6 U	0.3 U	0.06 U	0.06 U	0.06 U
T-BUTYLBENZENE	5	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
TERT-BUTYL ALCOHOL	NA	3.5 U	3.5 U	3.5 U	35 UJ	18 U	3.5 U	3.5 U	3.5 U
TERT-BUTYL METHYL ETHER	10	0.05 U	0.05 U	0.05 U	0.5 U	0.25 U	0.05 U	0.05 U	0.05 U
TETRACHLOROETHYLENE	5	**18**	**21**	**25**	**440**	**31**	**31**	0.14 U	0.14 U
TETRAHYDROFURAN	NA	1 U	1 U	1 U	10 U	5 U	1 U	1 U	1 U
TOLUENE	5	0.04 U	0.04 U	0.04 U	0.4 U	0.2 U	0.04 U	0.04 U	0.04 U
TRANS-1,2-DICHLOROETHENE	5	0.07 UJ	0.07 UJ	0.07 UJ	0.7 UJ	0.35 UJ	0.07 UJ	0.07 UJ	0.07 UJ
TRANS-1,3-DICHLOROPROPENE	0.4	0.12 U	0.12 U	0.12 U	1.2 U	0.6 U	0.12 U	0.12 U	0.12 U
TRANS-1,4-DICHLORO-2-BUTENE	NA	0.77 U	0.77 U	0.77 U	7.7 U	3.8 U	0.77 U	0.77 U	0.77 U
TRICHLOROETHYLENE	5	**1**	**1.1**	0.12 U	**32**	**5**	**2.1**	0.12 U	0.12 U
TRICHLOROFLUOROMETHANE	5	0.07 U	0.07 U	0.07 U	0.7 U	0.35 U	0.07 U	0.07 U	0.07 U
VINYL CHLORIDE	2	0.16 U	0.16 U	0.16 U	1.6 U	0.8 U	0.16 U	0.16 U	0.16 U

Key:

-- = Analyte not analyzed for.
/D Designates field duplicate sample.
(g) = Guidance value (no applicable standard).
J = Estimated value.
mg/L = Milligrams per liter.
U = Not detected (lab reporting limit shown).
UJ = Not detected/Estimated Value.
µg/L = Micrograms per liter.
VOCs = Volatile organic compounds.

Notes:

1) Bold values in unshaded cell denotes analyte reported above method detection limits.
2) Bold values in shaded cell denotes analyte reported above the screening criter
3) New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.
4) The groundwater standard is 5 ug/L for each isomer.