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Submitted Via Email

Mr. Brian Sadowski
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Subject: Former Carborundum Facility
2040 Cory Drive, Sanborn, NY
NYSDEC Site No. 932102
PW-3 Injection Pilot Study Summary Report

Dear Mr. Sadowski,

On behalf of Elm Holdings Inc., AECOM Technical Services, Inc. (AECOM) is pleased to provide this PW-3 Injection Pilot Study Summary Report (Summary Report) detailing the completed pilot study to evaluate enhancements to the groundwater control and extraction and treatment program at the former Carborundum Facility located at 2040 Cory Drive in the Village of Sanborn, Town of Wheatfield, New York (Site), New York State Department of Environmental Conservation (NYSDEC) Site No. 932102.

The purpose of the pilot study was to determine to what extent injectate (sodium permanganate) could reduce remnant volatile organic compound (VOC) concentrations at select areas of the Site. In addition, the data from the pilot study were to be evaluated to determine estimated parameters required to apply this enhancement approach as part of ongoing remedial efforts at the Site. The pilot injections took place from July 18 to July 25, 2018. Performance monitoring was performed 30, 60, 90, 120, and 180 days post-injection (i.e., through January 2019). The pilot study was conducted in accordance with the PW-3 Injection Pilot Study Work Plan submitted to the New York State Department of Environmental Conservation (NYSDEC) on January 11, 2018.

I. Site Background

The following summary presents a brief description of Site history, previous investigation and remediation activities, Site Remedial Action Objectives (RAOs), and Site geology and hydrogeology.

Figure 1 shows the Project Location Plan and Figure 2 shows the Site Plan. The Site property is comprised of four parcels totaling approximately 40 acres. Currently, there are two manufacturing buildings (Pyrotek, Inc. doing business as Pyrotek and a subsidiary business Metaullics, Inc.) and associated administrative buildings on the property. Construction of the most recent addition to the manufacturing facilities on the northernmost parcel was completed in November 2011. The majority of land immediately adjacent to the north and south of the property is used for agricultural purposes. Light commercial development and vacant lands border to the east. Private residences border the property along the west. Surface topography generally slopes gently to the south toward the Niagara River. Surface water from the paved areas of the Site is collected by Metaullics' sewer system.

VOCs, including primarily trichloroethene (TCE), were previously released to the environment during operations at the manufacturing facility, are being addressed under the direction of NYSDEC under a 1991 Order on Consent and associated modifications. TCE and its primary breakdown constituents, cis-1,2 dichloroethene (DCE) and vinyl chloride (VC), are present at select locations in the groundwater.

The 1991 Record of Decision (ROD) selected soil vapor extraction for overburden soil and permitted groundwater recovery and treatment for bedrock groundwater. The recovery and treatment systems are operated with the goal of preventing offsite migration of dissolved VOCs.

The groundwater recovery system (GRS) began operation in mid-1993 and treats groundwater using air stripping technology and an activated carbon polish. The GRS is operated with goals to provide onsite hydraulic containment and to prevent offsite migration of groundwater containing dissolved VOCs. Post-treatment water is discharged via a NYSDEC permitted State Pollutant Discharge Elimination System (SPDES) outfall to Cayuga Creek. Weekly discharge compliance samples are collected and analyzed in compliance with the SPDES permit.

A soil vapor extraction system was operated in conjunction with the GRS until 2001 and was subsequently decommissioned by 2007. In 2001, per discussions with NYSDEC, the bedrock groundwater recovery wells were reconfigured to extract groundwater from a shallower depth, focusing on the zones immediately at the top of bedrock and below the top of bedrock (Zone 1). Additional deeper bedrock Zones 2, 3, 4, and 5 were found to be less impacted and suitable for monitored natural attenuation (MNA). This reconfiguration reduced the volume of bedrock groundwater extracted, reduced flow through the GRS, and focused capture of groundwater in the source area(s) and allowed deeper, less contaminated zones to be monitored for natural attenuation.

Sumps contained within three below-grade vaults in the Metaullics facility were connected to the GRS in 2012. The vault water collection and conveyance (VWCC) system was brought online on June 12, 2012.

Figure 2 shows the location of Site purge wells (P- and PW-series wells) and monitoring wells (B-series wells). Attachment 1 presents the location of the purge wells and the three vaults in the Metaullics facility.

Quarterly groundwater sampling began in 1988. In October 2005, NYSDEC agreed to revise the groundwater sampling program and reduce the number of groundwater samples collected on an annual basis. In February 2016, NYSDEC requested that an updated groundwater monitoring program be developed. In October 2016, an updated groundwater monitoring program including transition to a semi-annual program was presented to NYSDEC. The proposed program was conditionally approved in November 2016 and was initiated in December 2016. Vault 2 was decommissioned in September 2017.

Site Geology/Hydrogeology

Overburden

The native soils underlying the Site generally consist of unconsolidated glacial lake sediment and till, including interbedded silts and clays with discontinuous sporadic fine sand lenses (shallow overburden). A thin coarse-grained layer is located above the bedrock (deep overburden). Based on information presented in the Remedial Investigation (June 1990), the average thickness of the overburden is approximately 21 feet bgs; ranging from seven feet in the northern portion of the site to 26 feet in the southern portion. More recent investigations have confirmed this description.

Overburden groundwater is first encountered as a discontinuous perched zone approximately three to five feet below grade. A more continuous water-bearing zone is encountered at the overburden bedrock interface (known as the “top of rock” zone). The natural flow of groundwater at the bedrock interface is to the south-southeast.

VOCs in deep overburden soils may be introduced to the bedrock aquifer from fluctuations of bedrock groundwater which periodically penetrate the soil on a seasonal basis. South and southwest of the Site, groundwater is restricted to the bedrock throughout the year. While the overburden on Site is occasionally affected by higher levels of bedrock groundwater, its hydraulic conductivity is so low that it does not transmit significant amounts of groundwater laterally and is classified as an aquitard. The zone at the overburden-bedrock interface is considered “top of rock” and is considered bedrock groundwater.

Bedrock

Overburden at the site is underlain by the Lockport Dolomite. The Lockport Group has been described as a massive- to medium-bedded, argillaceous dolomite with minor amounts of dolomite and shale. The upper 10 to 25 feet of this unit can be heavily weathered and often contains abundant bedding planes and vertical fractures enlarged by dissolution and glacial scour.

As noted above, a number of laterally definable fracture zones have been identified at the Site, including top of rock (at the overburden interface), and zones 1, 2, 3, 4, and 5. The top of rock zone and zone 1 are the bedrock groundwater recovery zones on which the GRS is focused. The deeper bedrock zones 2, 3, 4, and 5 show limited VOC impact. Bedrock groundwater flow is primarily to the south, with a southwesterly component toward a rock quarry located west-southwest of the Site

Attachment 2 presents top of rock and zone 1 groundwater elevation contour figures developed using data collected June 21, 2018, September 25, 2018, and December 5, 2018, figures presenting VOC concentrations in the top of rock zone and zone 1 for Spring 2018 and Fall 2018, and time-series plots for PW-3, B-8M, and B-18M (located within the PW-3 pilot study area).

II. Fall 2017 MIP/HPT Study

A Membrane Interface Probe / Hydraulic Profiling Tool (MIP/HPT) study was completed to provide additional data to support evaluation of enhancement of groundwater control and treatment. A letter work plan was submitted to NYSDEC on August 31, 2017 and was approved by NYSDEC on September 18, 2017.

The MIP/HPT study was performed during the week of September 18, 2017 in accordance with the approved work plan. The study focused on the area of PW-3 and PW-1. A total of 13 investigation points were completed in the area of PW-1 and 17 investigation points were completed in the area of PW-3. Investigation points for the PW-3 area are shown on **Figure 3**. Table 1 presents a summary of MIP/HPT boring details for the PW-3 area.

The MIP/HPT study confirmed prior site investigation summaries indicating the shallow overburden up to approximately five feet below grade is not impacted by bedrock groundwater-related VOCs. The MIP logs showed that VOC impacts related to bedrock groundwater increases with depth and peaks at the overburden-top of rock interface. The HPT logs show limited hydraulic conductivity in the glacial overburden soils with a sharp increase in hydraulic conductivity at the overburden-bedrock interface. The results of the MIP/HPT were used in the design of the PW-3 pilot injection locations.

III. Pilot Study Objectives

The objective of the pilot study was to determine the effectiveness of using an injectate (sodium permanganate) for VOC mass reduction within the treatment zone. This report evaluates the reduction of VOC concentrations after the injections, assesses the distribution and persistence of VOCs post-injections; and, evaluates the longer-term response of Site geochemistry following the injections. The PW-3 pilot study was focused in the immediate area and east of PW-3, north of the Metaullics manufacturing building. The planned PW-3 pilot study area is shown on Figure 4

A direct-push technology (DPT) drill rig operated by AECOM's subcontractor Matrix Environmental Services, Inc., Orchard Park, NY, (Matrix) was used to advance injection points through the overburden to the top of rock interface. The injection points were spaced approximately 15 feet center-to-center and advanced to the top of bedrock. A total of 25 injection points were advanced in the PW-3 pilot study area. The treatment area was approximately 6,000 square feet. A total of 15,000 pounds of 40 percent solution of sodium permanganate was further diluted with potable water to create 10,850 gallons of 6 percent sodium permanganate by weight solution for injection. Each injection point was planned to receive approximately 450 gallons of injectate solution, targeting the overburden / top of rock interface and up to two feet above the top of rock. Injections were performed in six-inch intervals from the top of rock interface to two feet above the top of rock interface. Actual injection amounts for each injection point are shown in Table 2. Figure 5 shows the location of the actual injection points.

IV. Pilot Study Injections

Pilot study injection activities were performed from July 18 to 25, 2018.

Mobilization

Prior to beginning any intrusive activities, Matrix contacted the Underground Facilities Protection Organization (UFPO) to mark out utilities in proposed investigation areas. The intended drilling locations marked with spray paint or flagging and an independent utility mark out subcontractor called out to locate onsite utilities in drilling areas not covered by the UFPO. The independent utility markout was performed on July 10, 2018, by AECOM subcontractor, Applus RTD, Inc., Buffalo, NY (Applus). Applus performed ground-penetrating radar (GPR) surveys to obtain information on subsurface conditions and features, including utilities or obstructions. In addition, Pyrotek Inc. was contacted to provide available utility information to assist in locating on-site underground utilities. As necessary based on utility locations, drilling locations were moved to avoid potential utilities.

In addition, individual injection point borings were hand cleared using an air knife and hand auger to advance each boring from the ground surface to approximately five feet below ground surface to further prevent disruption of any potential underground utilities.

Pre-Injection Activities

Two new temporary observation wells screened in the top of rock were installed (PS-01 and PS-02) to monitor conditions outside and downgradient of the pilot study area (see Figure 4). The observation well borings were advanced to the top of rock, by Matrix subcontractor SJB Services Inc., Hamburg, NY, using a hollow-stem auger drill rig (see Attachment 3). The temporary observation wells were constructed of 2-inch inside diameter PVC and five-foot long, 0.010-inch slotted screen installed at the top of rock. The annular space from top of rock to approximately five feet below grade was backfilled with a No. 0 sand pack. A one-foot thick layer of bentonite chips

was placed on top of the sand pack and the remainder of the annular space was filled with bentonite slurry. Temporary flush mount covers were installed to protect the casing.

Injectate and Injection Procedures

The pilot study consisted of 24 injection locations determined based on review of historical data and the results of the MIP/HPT study. Twenty-four injection locations were planned; one additional location was attempted during the fieldwork but was unsuccessful (see Figure 5 for locations). The injectate selected for application at the Site was sodium permanganate. The injectate solution was prepared on site as described below.

Due to the proximity of the injection locations to PW-3, PW-3 was turned off immediately prior to the performance of the injections and throughout the performance monitoring period. In August, approximately one month post-injection, P-2 was also turned off, in order to minimize the amount of injectate being pulled toward P-2. Hydraulic control for the Site continued via PW-1, P-3, and P-4 during this period.

The injectate solution was applied to the subsurface via DPT injections, targeting the bottom two feet of overburden and top of rock interface. Injection of the solution was performed at discrete intervals within the bottom 2 feet of the borehole. Injection points were advanced using a Geoprobe® 7822DT DPT drill rig, using 1.5-inch diameter drill rods. Injectate solution was applied to the subsurface at a target volume of approximately 450 gallons per injection point however this volume was adjusted based on conditions encountered during field activities. Injection flow rates for the injections ranged from 6.8 to 14 gallons per minute at injection pressures ranging from 30 to 75 psi. When the injectate delivery to the desired depth interval was not successful, the injectate volume not delivered to that interval was added to an adjacent boring, as practicable.

After the injections were completed, injection boreholes were filled with bentonite chips and hydrated in order to minimize the potential for short circuiting of injection fluids from adjacent injection points.

The following data, associated with injectate delivery was collected during the injection process.

- Injection location;
- Injection interval;
- Injection solution flow rate;
- Injection pressure; and,
- Cumulative volume of injection solution delivered to the injection point.

Table 2 presents the field data log sheet recorded during injection activities.

V. Pilot Study Groundwater Monitoring

Groundwater to establish baseline conditions and monitor post-injection performance was conducted. The groundwater monitoring program established for the field test consists of three components:

- Baseline groundwater monitoring;
- Injection monitoring; and,
- Post-injection monitoring at 30-, 60-, 90-, and 180-days (process and performance).

Each component of the monitoring program is described in further detail below. Table 3 summarizes the monitoring program for the pilot study.

Baseline Groundwater Monitoring

Baseline groundwater monitoring was conducted prior to the initiation of injection activities. Baseline samples were collected on July 16, 2018 from well locations B-8M and PW-3 in the top of rock and zone 1 intervals, and B-18M in the zone 3 interval due to its location within the pilot study area.

Each baseline monitoring well was sampled using low-flow ground water sampling procedures except for deviations described below. The following parameters were collected during monitoring:

- Static water level elevations;
- Field parameters including temperature, pH, specific conductance, oxidation-reduction potential (ORP), and dissolved oxygen (DO); and,
- Site-specific VOCs (EPA 8260C).

Baseline groundwater samples were collected from PS-01 and PS-02 on July 18, 2018, as grab samples due to limited water volume in the wells. Field parameters were not able to be obtained for these two locations during the baseline event.

Following collection, groundwater samples were placed in laboratory supplied containers, packaged on ice, and shipped to the laboratories for analysis of the parameters specified above. Baseline monitoring water level elevations and parameters are presented in Table 4. Baseline Post-injection groundwater sampling results are presented in Table 5. The laboratory reports from groundwater sampling events are presented as Attachment 4. Isopleths of contaminant concentrations are presented in Figures 6 through 10.

Injection-period Monitoring

Water levels were measured periodically at PW-3, B-8M, PS-01, and PS-02 using an electronic water level indicator accurate to 0.01foot. Vertically discrete down-hole water quality field parameters (temperature, pH, specific conductance, dissolved oxygen (DO), and oxidation-reduction potential (ORP)) were monitored during the injection event in B-8M, PW-3, PS-01, and PS-02.

Positive values of ORP and increases in DO concentrations reflect oxidizing conditions and generally coincide with the oxidant movement. Increases in groundwater temperature are often detected immediately after injection of oxidizing compounds. Slight increases in specific conductance may be observed following oxidant injections and may be useful tracking of oxidant dispersion.

A down-hole water quality meter (YSI Model 556) was lowered into the well to the screened interval four times per day (at the start of work, late morning, early afternoon, and at the conclusion of work) to determine if injection solution was influencing water quality criteria at that location. Readings are presented in Table 6.

Post-Injection Monitoring

Post-Injection monitoring was conducted to evaluate the performance of the applied treatment with regards to shifts in conditions and response to injectate (i.e., contaminant reduction). Post-injection

monitoring events were conducted at intervals corresponding to approximately 30, 90, and 180 days after the completion of injections. Post-injection Monitoring took place as follows:

- 30 Day – August 22, 2018
- 60 Day – September 27, 2018
- 90 Day – October 30, 2018
- 180 Day – January 29, 2019

Locations B-8M, B-18M, PW-3 and PS-01 were sampled during each post-injection monitoring event; PS-02 was not sampled in August 2018 as it was dry. Groundwater samples were collected using low-flow groundwater sampling procedures. Post-Injection monitoring will include the following parameters:

- Static water level elevations;
- Field parameters including temperature, pH, specific conductance, ORP, and DO; and
- VOCs (EPA 8260C).

Following collection, groundwater samples were placed in laboratory supplied containers, packaged on ice, and shipped to the laboratories for analysis of the parameters specified above. Post-injection monitoring water level elevations and parameters are presented in Table 4. Post-injection groundwater sampling results are presented in Table 5. The laboratory reports from groundwater sampling events are presented as Attachment 4.

VI. Results and Data Interpretation

Data obtained during the pilot study has been evaluated to assess the performance of the injection program and evaluate the need for follow-up injections, if appropriate. The data have been interpreted to evaluate the effectiveness of the pilot study injections in terms of distribution, trending of aquifer geochemical conditions (i.e., field parameter data), and contaminant reduction.

Field Parameters

Within the pilot study area (PW-3 and B-8M) measured field parameters, including positive ORP and increased DO, indicate oxidizing conditions present through 60 days post-injection, but not observed at 90 or 180 days post-injection. Additionally PS-02, located outside of the pilot study area, had a measured positive ORP and increase in DO at 60 days post-injection, indicating oxidizing conditions.

These results indicate sustained oxidizing conditions immediately after injection, sustained for 60 days post-injection, and a return to baseline within approximately 90 days post-injection.

Analytical Results – VOCs

Within the top of rock zone in the pilot study area (PW-3 and B-8M), analytical results indicate an initial immediate reduction in concentrations (Table 5). At PW-3, total VOC concentrations dropped below detectable levels at 30 days, followed by a return to baseline and long-term total VOC trend concentrations 60 days through 180 days post-injection. At B-8M, total VOC concentrations exhibited an immediate reduction which carried through 60 days post-injection; total VOC concentrations at 90 and 180 days post-injection showed an increasing trend, however, 180 day post-injection results remained approximately 55 percent below baseline as well as below long-term trend for total VOCs at this location (see Attachment 2).

Within the pilot study area and in bedrock zone 2, B-18M exhibited decreasing concentrations of DCE and VC 30 days post-injection as compared to baseline, with an increasing trend to long-term concentrations 60 to 180 days post-injection.

Downgradient of the pilot study area, PS-01 showed a significant decrease in concentrations immediately following injections, with sustained decreased concentrations through the 180 day post-injection monitoring period. PS-02 exhibited a slight decrease in concentrations through 60 days, with an increase to pre-injection concentrations at 90 days, followed by reduced concentrations at 180 days (approximately 80 percent of baseline). Although higher than anticipated total VOC concentrations were observed at PS-02, downgradient monitoring wells B-7M, B-52M, and B-6M indicate that the extent of downgradient influence has been previously delineated and is being monitored (see Attachment 2).

VII. Conclusions and Recommendations

In accordance with the approved work plan, a pilot study was performed in the area of PW-3 to evaluate the performance of an injectate (sodium permanganate) to determine the effectiveness of VOC mass reduction within the treatment zone.

Utilizing DPT injection, 10,800 gallons of six percent by weight sodium permanganate solution was delivered through 24 injection locations, targeting approximately 450 gallons per point, to the area directly above and including the top of rock. For locations unable to receive the full 450 gallons, a proximal point was used to deliver the remaining injectate. Low-flow groundwater monitoring for VOCs was performed before initiation of injection activities and at 30-, 60-, 90- and 180-days post-injection to assess the performance of the injectate. This monitoring occurred at three existing wells (B-8M, B18M, and PW-3) and two temporary observation wells (PS-01, PS-02) installed as part of this pilot study.

Pilot study results, determined through VOC analytical results and field parameters, indicate a measurable contaminant reduction within the pilot study area. Post-injection monitoring of aquifer geochemical conditions displayed oxidizing conditions in the 30 to 60 day period following injections, combined with a decrease in the concentration of contaminants. Downgradient (PS-01 and PS-02) and lower bedrock zone wells (B-18M) showed a clear decrease in contaminant flux during the pilot study.

Based on the results of the pilot study, it is recommended that additional studies be performed to optimize the potential application of the in-situ treatment technology to reduce contaminant mass and downgradient flux. The results of this study will serve to assist in the formulation of a modified work plan for additional injections. Additional delineation will be performed in the area of PS-02 using membrane interface probe/hydraulic profiling tool prior to proposing subsequent injection parameters and area.

If you have any questions regarding this submission, please do not hesitate to contact me at (716) 923-1300 or via email at james.kaczor@aecom.com.

Sincerely yours,

James L. Kaczor, PG
Sanborn Site Task Manager
James.kaczor@aecom.com

Attachments

cc: Glenn May, NYSDEC
Project File 60481767.18

Tables

Table 1

MIP/HPT Summary
Former Carborundum Facility
2040 Cory Drive, Sanborn, NY
NYSDEC Site No. 932102

Boring ID	Date Completed	Time Started	Time Finished	Depth to Refusal (ft)	Notes
B-1A	9/19/2017	3:30 PM	4:00 PM	9.5	
B-2A	9/21/2017	9:30 AM	9:39 AM	9	
B-3A	9/21/2017	10:15 AM	10:30 AM	11	
B-4A	9/21/2017	11:05 AM	11:19 AM	11	
B -5A	9/19/2017	2:10 PM	2:45 PM	9.5	
B-6A	9/20/2017	8:51 AM	9:10 AM	9.5	
B-7A	9/20/2017	10:47 AM	11:17 AM	9	
B-8A2	9/21/2017	2:30 PM	2:42 PM	10	
B-9A	9/19/2017	1:00 PM	1:30 PM	9.7	Elevated response
B-10 A	9/20/2017	8:10 AM	8:28 AM	8.75	Elevated response
B-11A	9/20/2017	9:22 AM	10:12 AM	11	
B-12A	9/21/2017	3:30 PM	3:40 PM	10.5	
B-13A	9/22/2017	9:15 AM	9:30 AM	11	
B-14A	9/22/2017	8:20 AM	8:38 AM	13	
B-15A	9/22/2017	7:30 AM	7:50 AM	10	
B-16A	9/21/2017	4:45 PM	4:59 PM	11	
B-17A	9/22/2017	12:30 PM	12:43 PM	12.6	Elevated response; PID spike

Table 2

PW-3 Pilot Study Injection Summary
Former Carborundum Facility
2040 Cory Drive, Sanborn NY
NYSDEC Site No. 932102

Boring ID Number	Date	Start Time	End Time	Injection Interval (ft to ft)	Maximum PSI	Average PSI	Average Flow Rate (gpm)	Volume Per Interval (gal)	Volume per Boring Running Total (gal)	Check if Reagent Surfaced	Notes
IP-1	7/25/2018	12:15	13:20	9	100	75	11.9	925	775	Yes	Minor daylighting around the rig and trailer
IP-2	7/20/2018	11:44	12:30	10.5-11	100	50	10	450	450	None	No daylighting
IP-3	7/25/2018	10:44	11:50	11.5	75	40	6.8	450	450	No	No daylighting
IP-4	7/23/2018	11:00	11:42	10.5	40	40	10.7	450	450	No	No daylighting
IP-5	7/23/2018	11:52	12:30	9.5	40	40	11.8	450	450	No	No daylighting
IP-6	7/19/2018	12:20	13:15	11.5	50	35	11.8	650	650	No	No daylighting at surface. Found some injectate in PW-3 at conclusion.
IP-7	7/20/2018	10:50	11:30	11.5-12	100	50	11.25	450	450	Yes	Some daylighting about 15 feet away at the surface after 400 gallons were pumped in.
IP-8	7/18/2018	13:10	13:30	13	70	45	11.25	450	450	Yes	During injection, at about 4 feet west there was daylighting then injectate was found in B-08M.
IP-9	7/19/2018	11:35	12:03	12	100	50	9.26	250	250	Yes	Daylighting from the start from IP-8
IP-10	7/18/2018	11:55	12:37	12.5-13	100	40-50	10.7	450	450	Slight	Fluctuation of back pressure between 40 and 50 psi. Slight daylighting about 5 feet away from hole at the surface.
IP-11	7/24/2018	11:40	12:37	9.5	150	50	9.6	550	550	No	No daylighting
IP-12	7/25/2018	8:40	9:41	12	50	50	8.6	525	525	Yes	Daylighted through old MIP point or cavern in the ground. Tried filling with bentonite however this failed and the ground began to raise. Ceased pumping.
IP-13	7/24/2018	10:55	11:20	11.9	50	50	14	350	350	Yes	Minor daylighting at IP-14 after 300 gallons. Product visible/ rising in PS-01. Turned off pump and began moving to IP-11.
IP-14	7/23/2018	8:40	9:55	12	100	50	11.6	870	870	No	No daylighting
IP-15	7/23/2018	8:20	8:23	10.5-11	100	30	10	30	30	Yes	IP-15 is a previous MIP point. Initial injection surfaced back up the hole. Can't keep sealed, moving off this location to IP-14.
IP-16	7/20/2018	8:30	9:30	11	100	50	12.5	750	750	Yes	Daylighting in previous MIP boring and in IP-17, packed both with more bentonite. Slight daylighting West of hole about 5 feet.
IP-17	7/20/2018	8:10	8:15	11	100	45	10	50	50	Yes	Instantly began bubbling up the injection hole, therefore cut pump. Moved West to IP-16.
IP-18	7/19/2018	8:26	9:00	14.5	75	50	13.2	450	450	Yes	Daylighting out of IP-8, out of the southeast corner of the pavement and out of IP-17.
IP-19	7/25/2018	8:20	8:25	9.5	100	75	10	50	50	Yes	Injectate coming up IP. Turned off pump, filled IP and moved to IP-12.
IP-20	7/24/2018	8:10	8:25	14	30	30	13.3	200	200	Yes	Injectate found in PS-01 at 200 gallons, ceased injections. Injectate breached top of well.
IP-21	7/19/2018	9:27	10:20	11.5	100	30	8.4	450	450	Yes	Daylighting at end of injection in PS-01. Injectate rose to top of riser however dropped back down instantly after pump was turned off.
IP-22	07/18/18	9:55	10:30	14	100	40-50	12.8	450	450	Slight	PSI dipped to 40 over first 5 minutes. Slight daylighting in IP-24.
IP-23	7/24/2018	8:43	9:45	12.5	75	50	11.3	700	700	No	No daylighting
IP-24	7/18/2018	8:50	9:34	14-14.5	75	50	10.23	450	450	Slight	Slight daylighting about 8 feet southeast of IP-24.
IP-25 (new)	7/25/2018	12:00	NA	9	NA	NA	NA	NA	NA	Yes	Handcleared and created new IP in an attempt to spread out injectate from failure from IP-19 injections. Injectate came straight up the handcleared part of the IP. Attempt failed.

Table 3

PW-3 Injection Pilot Study Monitoring Program
Former Carborundum Facility
2040 Cory Drive, Sanborn, NY
NYSDEC Site No. 932102

Location	Matrix	Field Paramaters [1]	Analytical Testing: VOCs [3]	No. of Locations	No. of Events
Baseline Monitoring					
Observation Wells: PS-1 and PS-2	Water	1[1]	1	2	1
Monitor Wells: B-8M and PW-3	Water	1[1]	1	2	1
Injection Monitoring					
Observation Wells: PS-1 and PS-2	Water	1[2]	--	2	Daily during injections
Monitor Wells: B-8M and PW-3	Water	1[2]	--	2	Daily during injections
Post-Injection Performance Monitoring					
Observation Wells: PS-1 and PS-2	Water	1[1]	1	2	3
Monitor Wells: B-8M, B-18M, and PW-3	Water	1[1]	1	3	3
Total Number of Analyses for Pilot Study		**NA**	**19**	**NA**	**NA**

NA - Not Applicable

Notes:

(1) Temperature, pH, specific conductivity, ORP, DO, water level

(2) Temperature, specific conductivity, ORP, DO, water level

(3) Site-Specific VOCs - Method 8260B

Table 4

Post-injection Field Parameters
Former Carborundum Facility
2040 Cory Drive, Sanborn, NY
NYSDEC Site No. 932102

Date	# Days Post Injection	Injectate Observed In Well	Well	Water Level (ft)	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)
7/18/2018	Baseline	N/A	PS-01	12.72	7.19	8.7	3.993	6.55	-	140.2
		N/A	PS-02	11.75	7.03	9.22	3.34	5.45	-	-100.4
		N/A	B-8M	13.12	7.15	10.24	1.364	1.24	-	56.6
		N/A	PW-3	11.7	7.05	8.25	2.552	0.49	-	64.9
		N/A	B-18M *	-	7.14	-	1.29	0.63	-	-94.8
8/22/2018	30	**Yes**	PS-01							
		Dry	PS-02							
		Yes	B-8M	Parameters Not Collected at PS-01, PS-02, and B-8M Due To High High Quantity of Injectate Solution In Wells						
		Yes	PW-3							
		No	B-18M							
9/28/2018	60	**Yes**	PS-01	9.7			Parameters Not Collected (Well Purged Dry)			
		No	PS-02	12.1	6.8	18.48	8.546	3.12	-	78.5
		No	B-8M	10.07	7.7	16.73	1.166	9.32	3.68	191.8
		Yes	PW-3	8.8	8.36	17.55	2.914	3.48	35.4	86.6
		No	B-18M	16.78	6.99	14.09	1.198	1.39	4.27	-13.3
10/30/2018	90	**Yes**	PS-01	8.79	6.92	16.2	2.95	0.71	1.88	75.5
		No	PS-02	11.8	7.25	14.4	6.48	1.42	20.3	131
		No	B-8M	10.6	7.04	14.9	1.40	0.44	25.9	11.5
		No	PW-3	8.7	8.49	15.7	1.56	0.92	3.73	-29.0
		No	B-18M	16.69	6.83	13.3	1.16	0.35	9.41	12.6
1/29/2019	180	No	PS-01	7.23	7.01	10.1	2.89	0.44	2.60	70.4
		No	PS-02	9.23	7.11	10.1	4.12	0.23	5.4	84.2
		No	B-8M	9.14	7.07	11.2	1.57	0.23	10.4	12.4
		No	PW-3	7.14	7.52	13.1	1.62	0.64	4.15	-23.5
		No	B-18M	15.82	7.04	12.4	1.34	0.17	3.51	14.2

Note: B-18M Baseline parameters from April 2018 sampling event. B-18M is a bedrock zone 2 well.

Table 5

Post-injection Analytical Results
Former Carborundum Facility
2040 Cory Drive, Sanborn, NY
NYSDEC Site No. 932102

Well	# Days Post-injection	Date	Analyte			Total VOCs
			Trichloroethene	1,2-Dichloroethene (cis)	Vinyl chloride	
B-8M	Baseline	7/18/2018	14,000	1,000	ND	15,000
	30 Day	8/22/2018	2,800	160	ND	2,960
	60 Day	9/27/2018	1,500	230	ND	1,730
	90 Day	10/30/2018	3,100	1,700	ND	4,800
	180 Day	1/29/2019	4,100	2,800	ND	6,900
PW-3	Baseline	7/18/2018	950	620	13	1,583
	30 Day	8/22/2018	ND	ND	ND	0
	60 Day	9/27/2018	1,300	1,400	80	2,780
	90 Day	10/30/2018	1,400	1,200	27	2,627
	180 Day	1/29/2019	410	1,400	96	1,906
PS-01	Baseline	7/18/2018	2,000	200	ND	2,200
	30 Day	8/22/2018	ND	ND	ND	0
	60 Day	9/27/2018	ND	ND	ND	0
	90 Day	10/30/2018	15	3	ND	18
	180 Day	1/29/2019	71	43	ND	114
PS-02	Baseline	7/18/2018	170,000	3,400	ND	173,400
	30 Day	8/22/2018		Well Dry		0
	60 Day	9/27/2018	110,000	2,700	ND	112,700
	90 Day	10/30/2018	160,000	7,400	ND	167,400
	180 Day	1/29/2019	130,000	9,200	ND	139,200
B-18M	Baseline	7/18/2018	ND	25	17	42
	30 Day	8/22/2018	0.14	6.9	8	15
	60 Day	9/27/2018	0.18	65	29	94
	90 Day	10/30/2018	ND	77	29	106
	180 Day	1/29/2019	ND	59	40	99

Notes: B-18M is a bedrock zone 2 well.
Concentrations are micrograms per liter.

Table 6

Injection Monitoring Parameters
Former Carborundum Facility
2040 Drive, Sanborn NY
NYSDEC Site No. 932102

Date	Well ID:	Time:	Well Depth (ft):	Water Level (ft):	Sp. Cond (mS/cm):	Temp (◦C):	pH (dim):	ORP (mV):	Dissolved Oxygen (mg/L):	Injection Product:
7/18/2018	B-8M	9:00	17.70	13.12	1.364	10.24	7.15	56.6	1.24	No
		10:00	17.70	13.00	1.870	11.37	7.66	78.6	1.37	No
		11:46	17.70	12.61	2.065	7.06	7.09	408.7	0.96	No
		13:37	17.70	6.10	5.348	7.72	6.67	603.9	1.75	Yes
7/19/2018		4:33	17.70	12.70	2.429	11.81	7.96	478.2	3.05	Yes
		9:27	17.70	12.70	2.787	11.24	7.31	525.2	3.32	Yes
		12:58	17.70	11.92	4.852	10.62	6.92	617.3	3.73	Yes
		14:04	17.70	12.20	4.144	8.57	6.91	608.7	4.30	Yes
7/20/2018		8:24	17.70	12.40	2.378	4.79	7.60	584.2	5.70	Yes
		10:51	17.70	10.65	10.63	8.64	6.68	671.6	2.94	Yes
		11:56	17.70	8.89	11.50	9.44	6.99	653.1	3.24	Yes
		13:04	17.70	10.51	8.957	13.76	7.24	630.8	2.62	Yes
7/23/2018		8:36	17.70	10.80	2.344	12.83	7.86	607.1	4.12	Yes
		10:17	17.70	8.12	30.77	20.89	7.36	661.0	4.33	Yes
		12:10	17.70	8.90	21.26	19.22	7.39	653.6	2.48	Yes
		12:56	17.70	8.98	16.99	18.68	7.41	659.0	2.15	Yes
7/24/2018		8:04	17.70	8.55	1.003	16.42	7.63	566.4	1.39	Yes
		8:45	17.70	7.21	1.092	15.52	7.50	582.9	1.34	Yes
		10:17	17.70	6.53	8.487	14.44	7.45	648.0	1.57	Yes
		13:08	17.70	7.92	10.38	15.52	7.56	656.0	1.54	Yes
7/25/2018		8:11	17.70	7.14	4.204	15.87	7.62	617.4	0.67	Yes
		11:33	17.70	6.86	11.25	17.04	7.55	651.8	0.95	Yes
		13:48	17.70	7.01	6.062	16.65	7.54	653.3	0.64	Yes
7/18/2018	PW-3	9:08	18.20	11.70	2.552	8.25	7.05	64.9	0.49	No
		10:11	18.20	11.70	3.539	10.52	7.35	86.5	0.45	No
		12:00	18.20	11.72	3.875	7.12	7.12	171.6	0.41	No
		14:08	18.20	11.72	3.555	10.57	7.32	181.4	0.32	No
7/19/2018		8:34	18.20	11.75	3.639	9.96	7.38	333.6	0.31	No
		9:15	18.20	11.69	3.490	11.83	7.57	246.8	0.47	No
		12:30	18.20	11.98	2.895	9.56	6.72	282.5	0.33	No
		13:44	18.20	10.05	4.759	12.58	6.83	637.2	0.90	Yes
7/20/2018		8:20	18.20	10.34	6.068	4.80	6.77	636.6	2.00	Yes
		10:57	18.20	10.57	6.178	9.23	6.97	659.6	1.02	Yes
		12:04	18.20	10.25	6.222	8.72	7.19	634.9	1.07	Yes
		13:06	18.20	10.25	8.203	12.85	7.26	623.3	0.94	Yes
7/23/2018		8:45	18.20	8.25	4.534	13.24	7.91	570.4	1.83	Yes
		10:25	18.20	8.05	4.520	13.13	7.70	619.5	1.99	Yes
		12:18	18.20	7.72	6.033	12.71	7.79	623.3	1.66	Yes
		13:03	18.20	7.73	6.619	12.32	7.76	630.6	1.57	Yes
7/24/2018		8:09	18.20	6.29	14.62	12.81	7.55	628.4	1.41	Yes
		8:51	18.20	7.01	14.62	12.33	7.56	645.0	1.41	Yes
		10:24	18.20	7.23	14.55	12.60	7.67	657.2	1.16	Yes
		13:03	18.20	7.92	15.15	13.28	7.57	659.0	1.12	Yes
7/25/2018		8:15	18.20	4.64	19.11	13.76	7.58	655.0	0.68	Yes
		11:36	18.20	4.52	19.96	13.91	7.57	663.2	0.70	Yes
		13:51	18.20	4.54	21.34	13.53	7.48	674.4	0.74	Yes

Table 6

Injection Monitoring Parameters
Former Carborundum Facility
2040 Drive, Sanborn NY
NYSDEC Site No. 932102

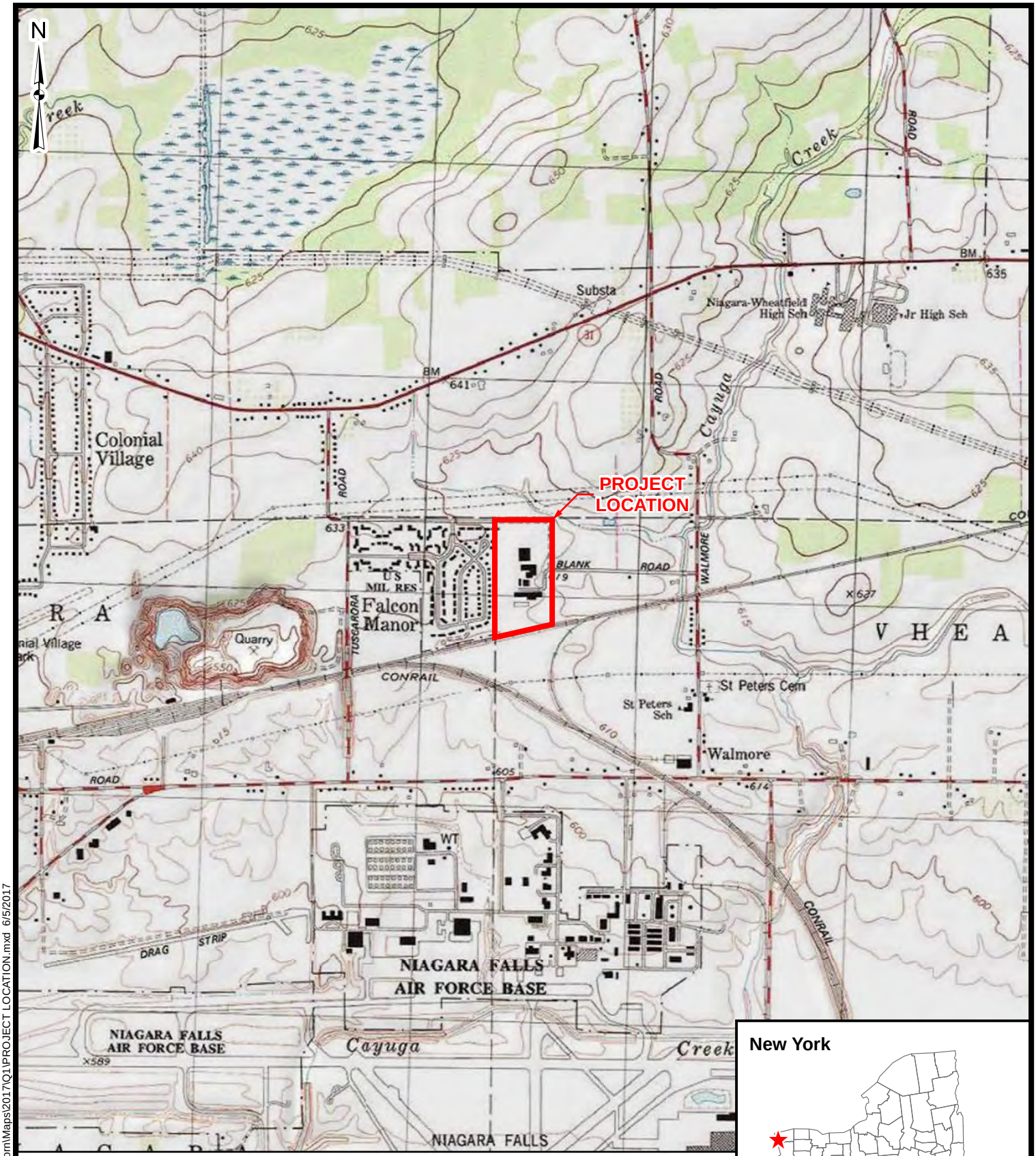
Date	Well ID:	Time:	Well Depth (ft):	Water Level (ft):	Sp. Cond (mS/cm):	Temp (◦C):	pH (dim):	ORP (mV):	Dissolved Oxygen (mg/L):	Injection Product:
7/18/2018	PS-01	9:12	13.68	13.60	X	X	X	X	X	No
		10:15	13.68	13.25	X	X	X	X	X	No
		11:50	13.68	12.72	3.993	8.70	7.19	140.2	6.55	No
		13:58	13.68	12.45	3.654	12.07	7.71	122.3	4.62	No
7/19/2018		8:23	13.68	12.80	3.565	12.50	7.43	394.7	3.60	No
		9:20	13.68	12.80	3.478	13.37	7.21	392.0	2.98	No
		12:44	13.68	12.82	5.414	10.98	6.51	677.6	3.53	Yes
		13:57	13.68	12.05	4.214	12.39	6.53	671.9	3.36	Yes
7/20/2018		8:13	13.68	11.75	6.273	4.74	6.62	607.9	6.78	Yes
		10:39	13.68	11.10	5.354	9.05	6.95	607.5	4.50	Yes
		11:48	13.68	10.67	11.41	10.44	6.65	648.8	3.18	Yes
		12:59	13.68	10.55	7.359	10.62	6.72	650.2	3.02	Yes
7/23/2018		8:30	13.68	10.98	8.889	14.36	7.15	575.7	1.97	Yes
		10:11	13.68	9.30	11.75	14.93	7.36	636.4	1.26	Yes
		12:02	13.68	9.29	6.801	15.30	7.28	629.2	1.77	Yes
		12:53	13.68	9.35	7.368	14.84	7.17	643.3	1.77	Yes
7/24/2018		8:00	13.68	8.80	6.758	14.38	7.16	595.1	1.38	Yes
		No measurement. Product daylighted from IP-20 injections.								
		10:12	13.68	6.90	14.30	14.10	7.25	659.9	1.26	Yes
		15:57	13.68	7.50	19.21	14.56	7.23	668.4	2.28	Yes
7/25/2018		8:06	13.68	6.69	15.26	14.24	7.13	638.7	1.40	Yes
		11:27	13.68	6.54	14.76	15.44	7.12	649.9	1.41	Yes
		13:43	13.68	6.73	16.07	15.02	7.11	665.3	1.30	Yes
7/18/2018	PS-02	9:17	12.15	12.05	X	X	X	X	X	No
		10:17	12.15	11.90	X	X	X	X	X	No
		11:35	12.15	11.75	3.340	9.22	7.03	-100.4	5.45	No
		13:30	12.15	11.70	5.005	13.30	6.79	-118.2	5.66	No
7/19/2018		8:16	12.15	11.38	4.351	14.51	8.04	-147.9	3.74	No
		9:31	12.15	11.40	4.438	13.10	6.49	305.9	3.51	No
		12:39	12.15	11.30	3.961	10.94	6.41	210.5	4.48	No
		13:52	12.15	10.39	5.497	11.41	6.09	539.4	4.54	No
7/20/2018		8:05	12.15	11.13	4.295	6.13	6.23	314.1	7.63	No
		10:45	12.15	11.20	4.148	10.19	5.99	590.1	5.34	No
		11:40	12.15	11.21	4.582	10.27	6.00	541.2	6.21	No
		12:54	12.15	11.20	4.462	10.41	6.27	563.4	6.36	No
7/23/2018		8:22	12.15	11.85	5.217	13.32	6.94	225.8	4.95	No
		10:05	12.15	10.95	5.219	14.34	6.98	587.9	5.18	No
		11:58	12.15	10.90	5.247	14.22	6.82	593.9	5.27	No
		12:47	12.15	10.95	5.224	14.08	6.68	589.2	5.10	No
7/24/2018		7:56	12.15	10.63	5.156	13.26	6.95	443.2	4.09	No
		8:40	12.15	10.83	4.953	12.99	6.80	600.6	4.54	No
		10:08	12.15	10.69	4.934	13.37	6.67	610.9	4.08	No
		12:52	12.15	10.56	4.911	14.05	6.74	623.4	3.60	No
7/25/2018		8:02	12.15	10.59	4.658	13.33	6.63	458.2	2.63	No
		11:24	12.15	10.35	4.508	15.05	6.56	577.7	2.49	No
		13:39	12.15	10.37	4.470	14.82	6.65	616.7	2.18	No

Notes:

-- No Data

X missed readings - YSI malfunction

Figures



Source: USA Topo Maps, ESRI Map Service;
1:24,000-scale USGS Topographic Map,
Ransomville, 1996
Tonawanda West, 1996

2,000 0 2,000 Feet

AECOM

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
PROJECT LOCATION PLAN

FIGURE 1

J:\Projects\60481767_BPIP\MISC\GIS\Sanborn\Maps\2017\Q1\PROJECT LOCATION.mxd 6/5/2017

Legend

- Monitoring Well
- Monitoring Well (Abandoned)
- Recovery Well
- Recovery Well (Abandoned)

Source: ESRI World Imagery

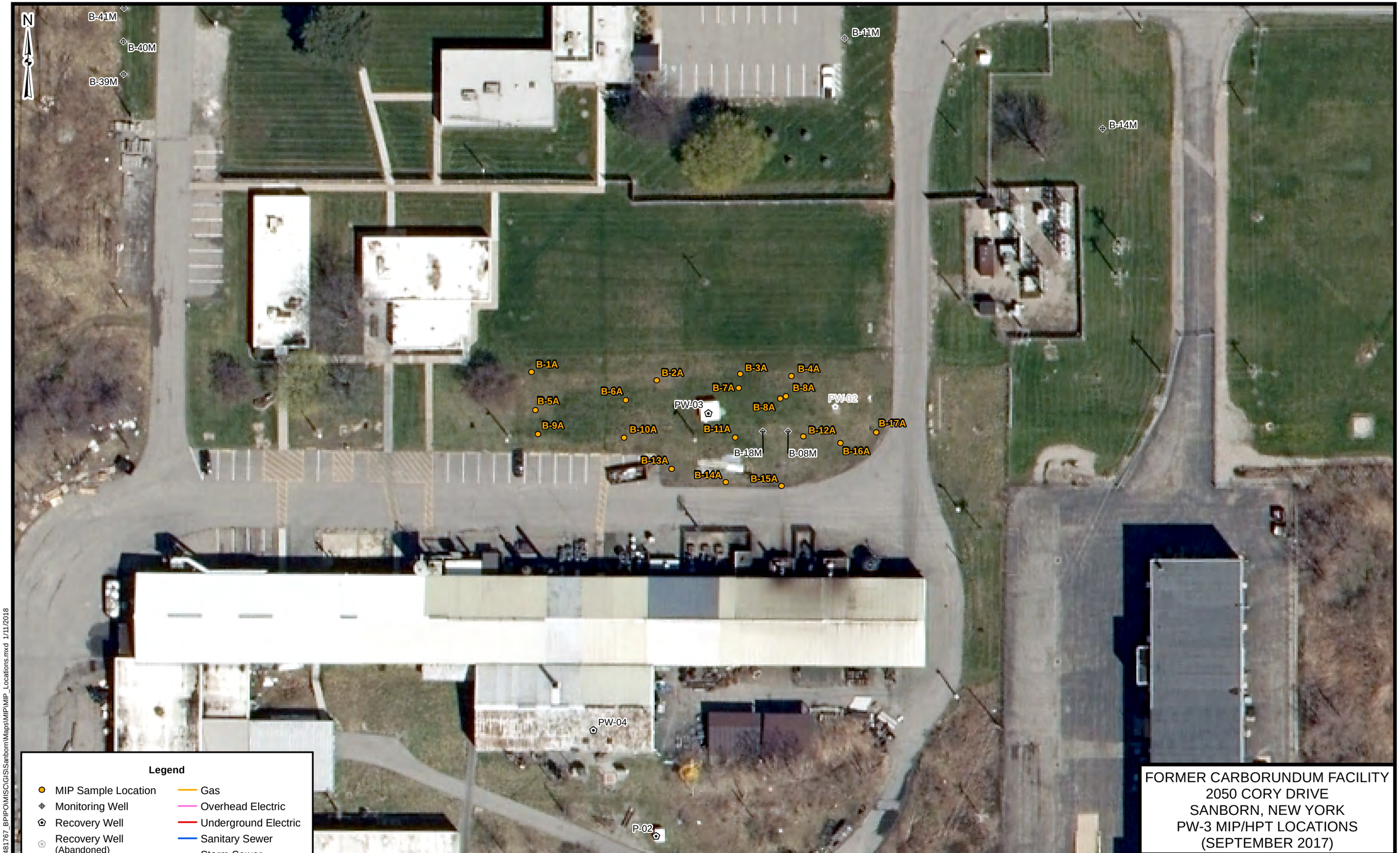
500 0 500 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
SITE PLAN

AECOM

FIGURE 2

J:\Projects\60481767_BPIPO\MSC\GIS\Sanborn\Maps\2017\Q1\SITE PLAN.mxd 6/5/2017



FORMER CARBORUNDUM FACILITY
2050 CORY DRIVE
SANBORN, NEW YORK
PW-3 MIP/HPT LOCATIONS
(SEPTEMBER 2017)

AECOM

FIGURE 3

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\MIP\MIP_Locations.mxd 1/11/2018

N

F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10

B-2A
B-3A
B-4A
B-6A
B-7A
B-8A
B-8A
B-10A
B-11A
B-12A
B-13A
B-14A
B-15A
B-16A
B-17A
B-18M
B-08M
PW-02
PW-03
PS-01
PS-02

11 12 13 14 15 16 17 18
19 20 21 22 23 24

Legend

- MIP Sample Location
- Monitoring Well
- Recovery Well
- Recovery Well (Abandoned)
- Proposed Injection Location
- Proposed Temporary Well
- Gas
- Overhead Electric
- Underground Electric
- Sanitary Sewer
- Storm Sewer
- Water Line

Source: ESRI World Imagery

20 0 20 Feet

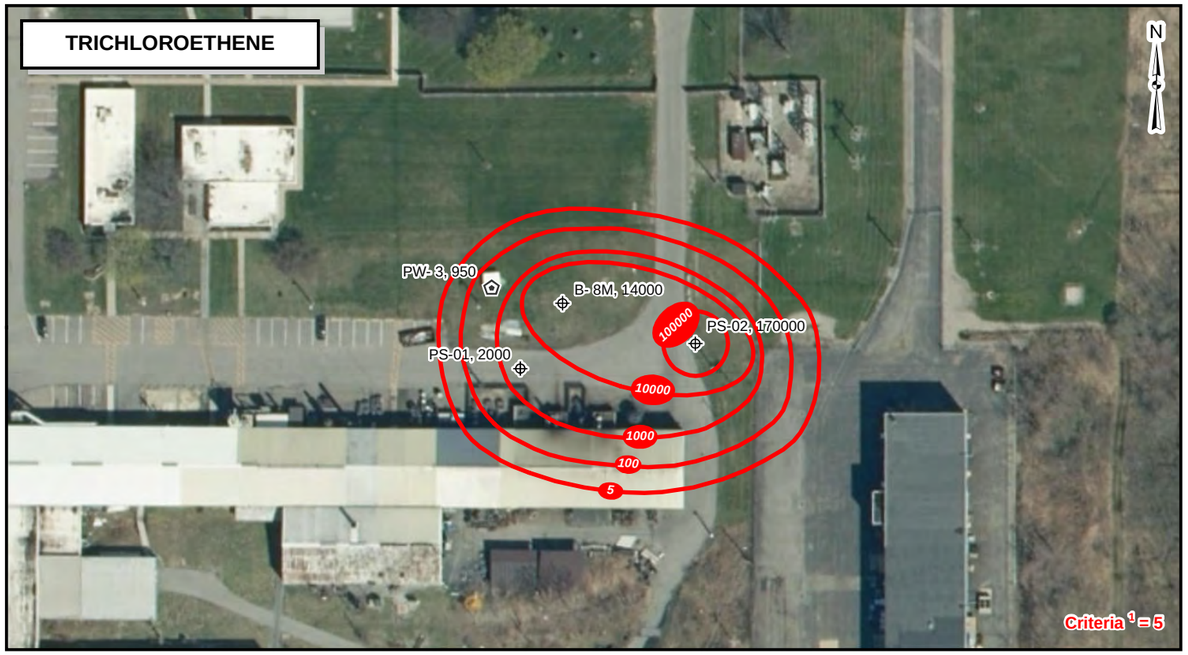
FORMER CARBORUNDUM FACILITY
2040 CORY DRIVE
SANBORN, NEW YORK
PW-3 PILOT STUDY
PLANNED INJECTION POINTS

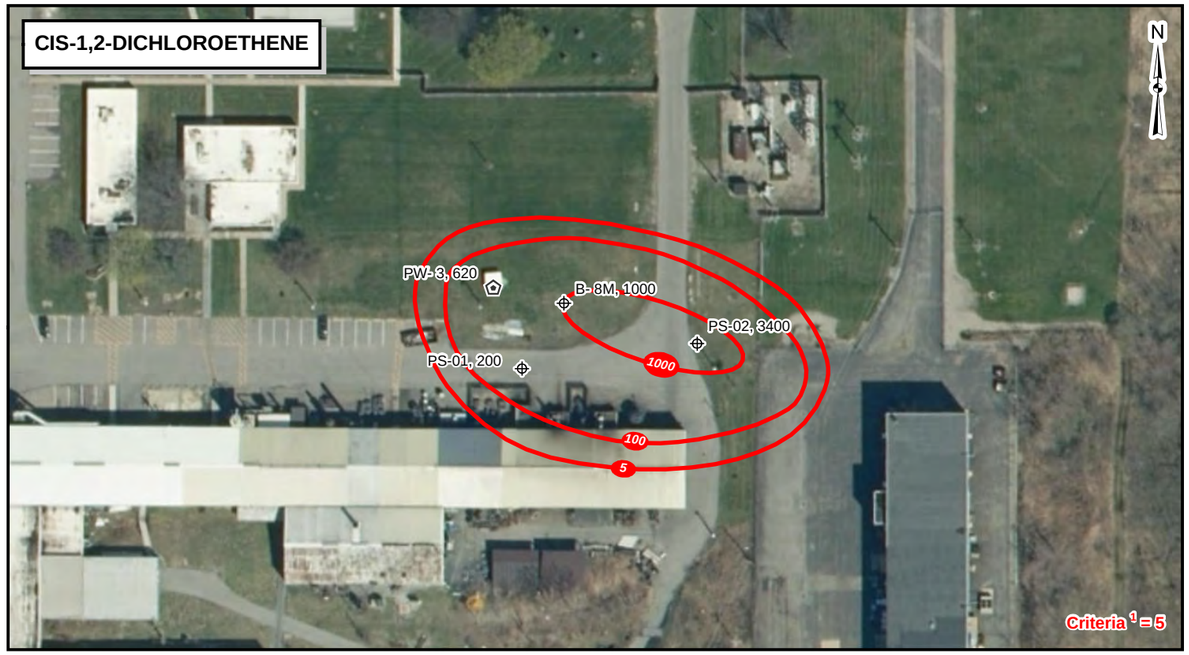
AECOM

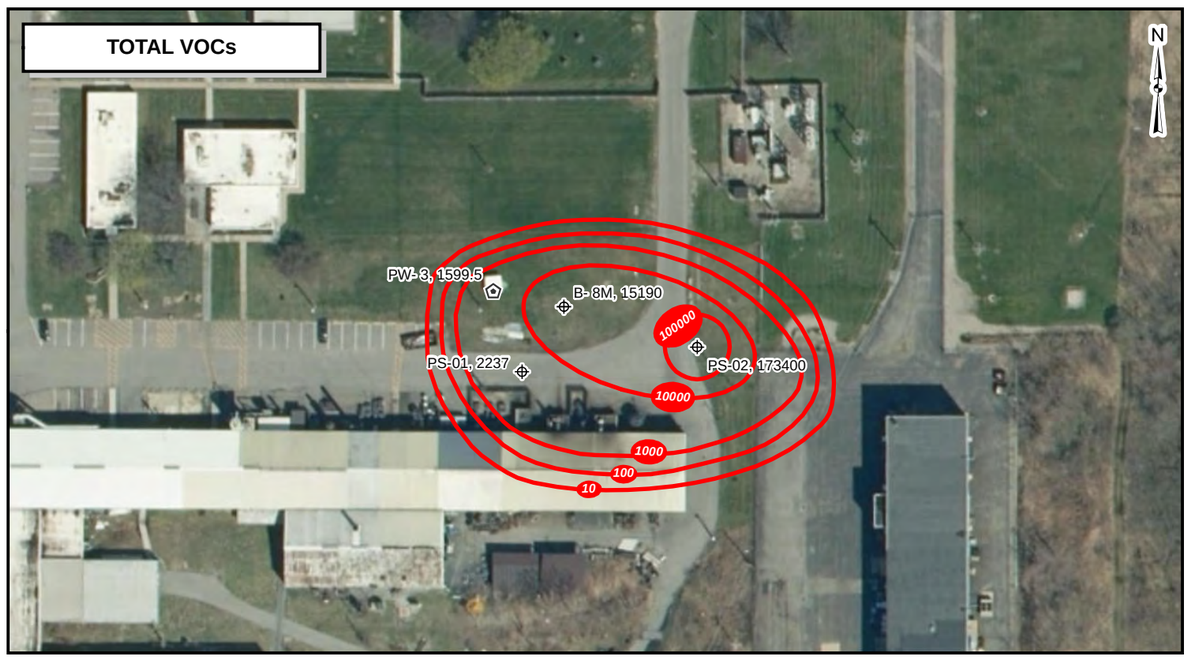
FIGURE 4

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\MIP\MIP_Sample_Grid.mxd 1/11/2018


N
IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
IP-11
IP-12
IP-13
IP-14
IP-15
IP-16
IP-17
IP-18
IP-19
IP-20
IP-21
IP-22
IP-23
IP-24
PS-01
PS-02
Legend
Injection Point
Source: ESRI World Imagery
20 0 20 Feet
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
INJECTION POINTS
AECOM
FIGURE 5
J:\Projects\60481767_BP\PO\MISC\GIS\Sanborn\Maps\INJECTION PTS.mxd 2/7/2019







Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

100 0 100 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS - JULY 2018

AECOM

FIGURE 6

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\PW03 IP Pilot Study\ISOPLETHS - JULY 2018.mxd 2/14/2019

Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

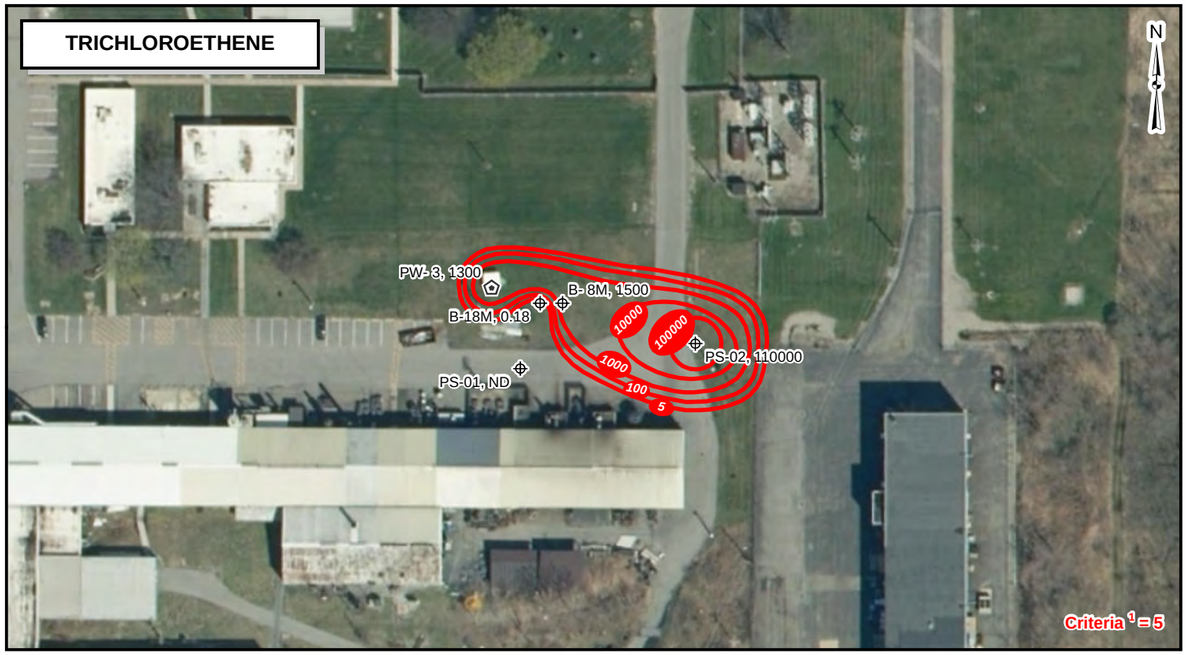
100 0 100 Feet

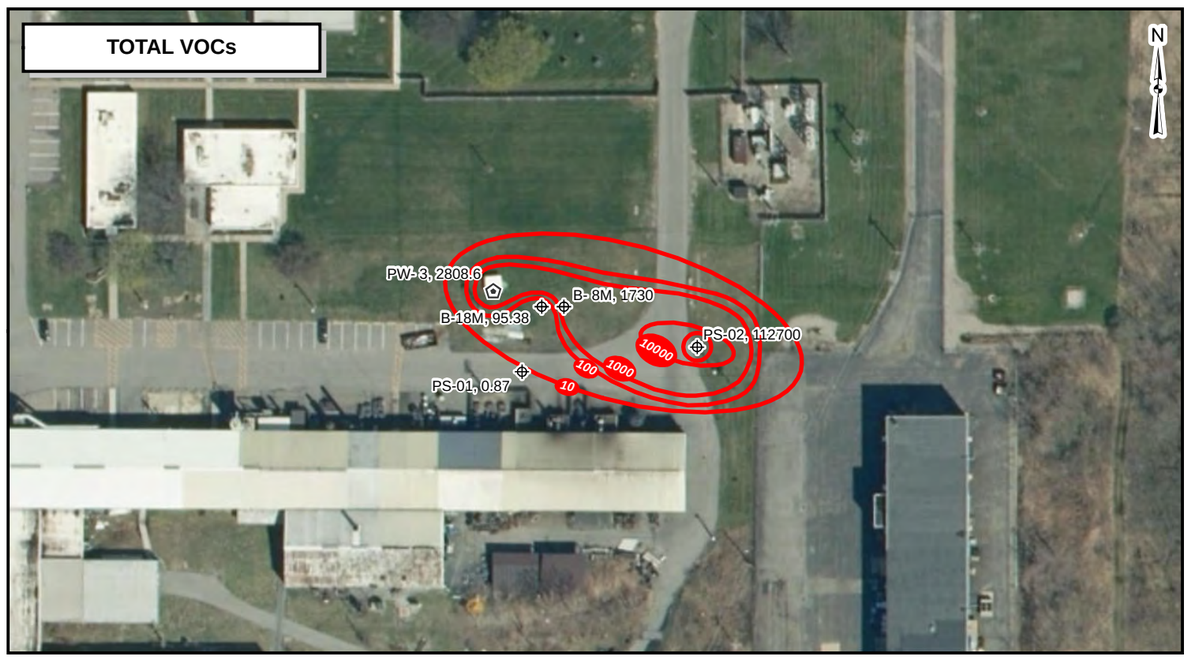
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS - AUGUST 2018

AECOM

FIGURE 7

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\PW03 IP Pilot Study\ISOPLETHS - AUGUST 2018.mxd 2/15/2019





Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

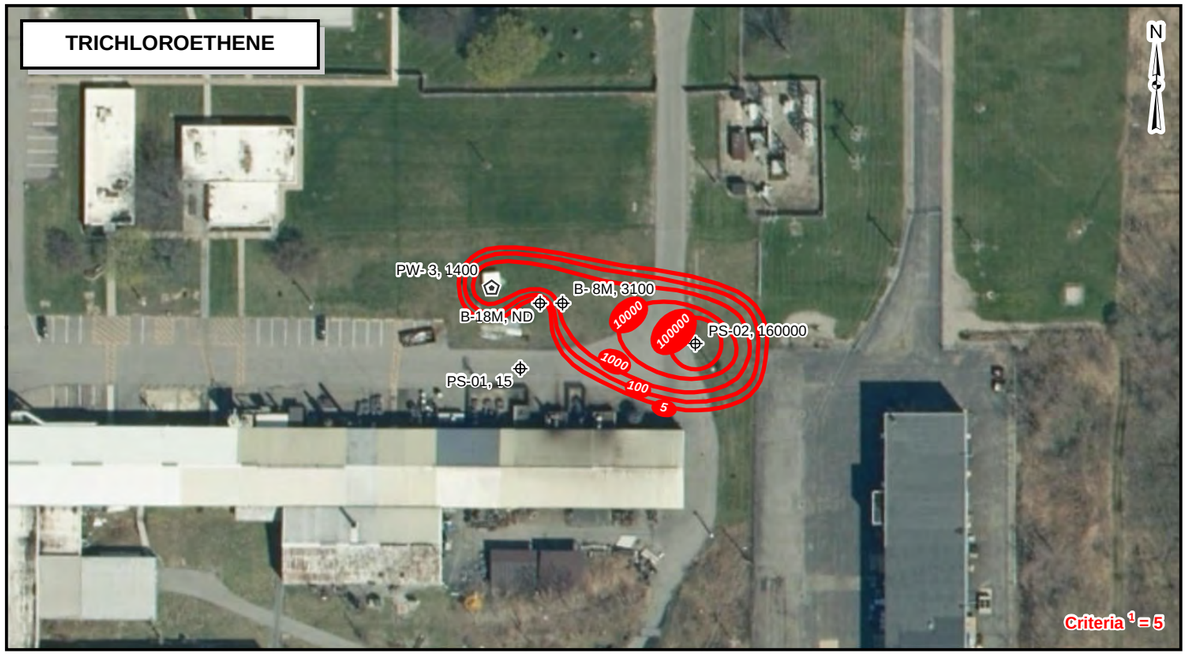
100 0 100 Feet

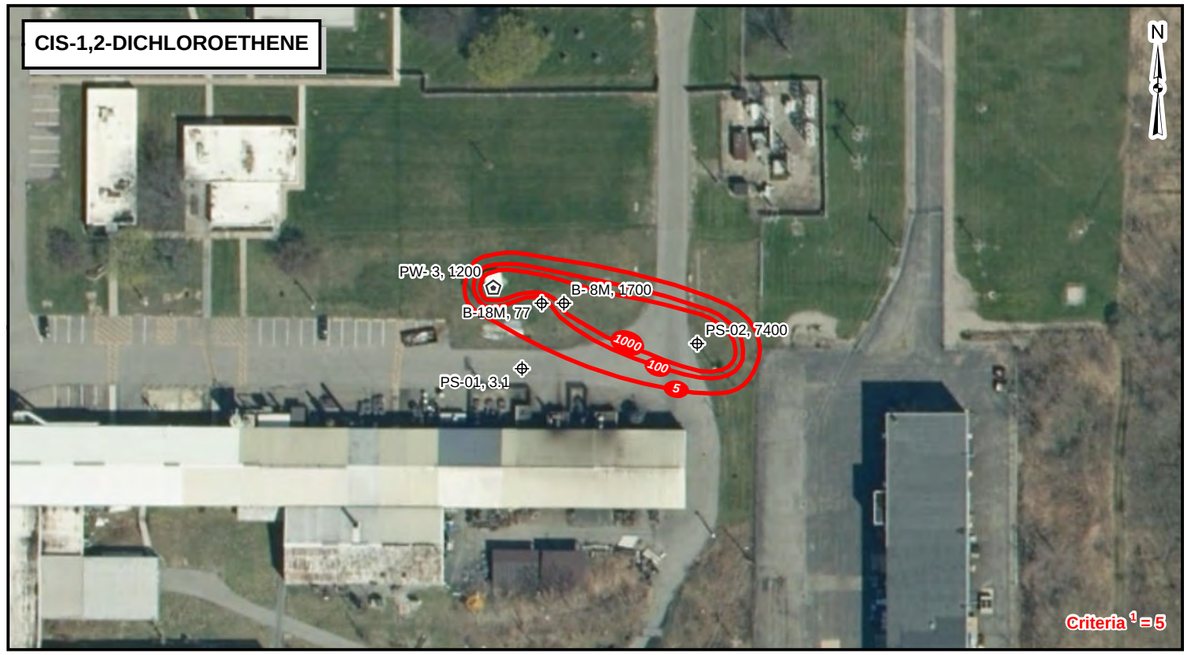
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS - SEPTEMBER 2018

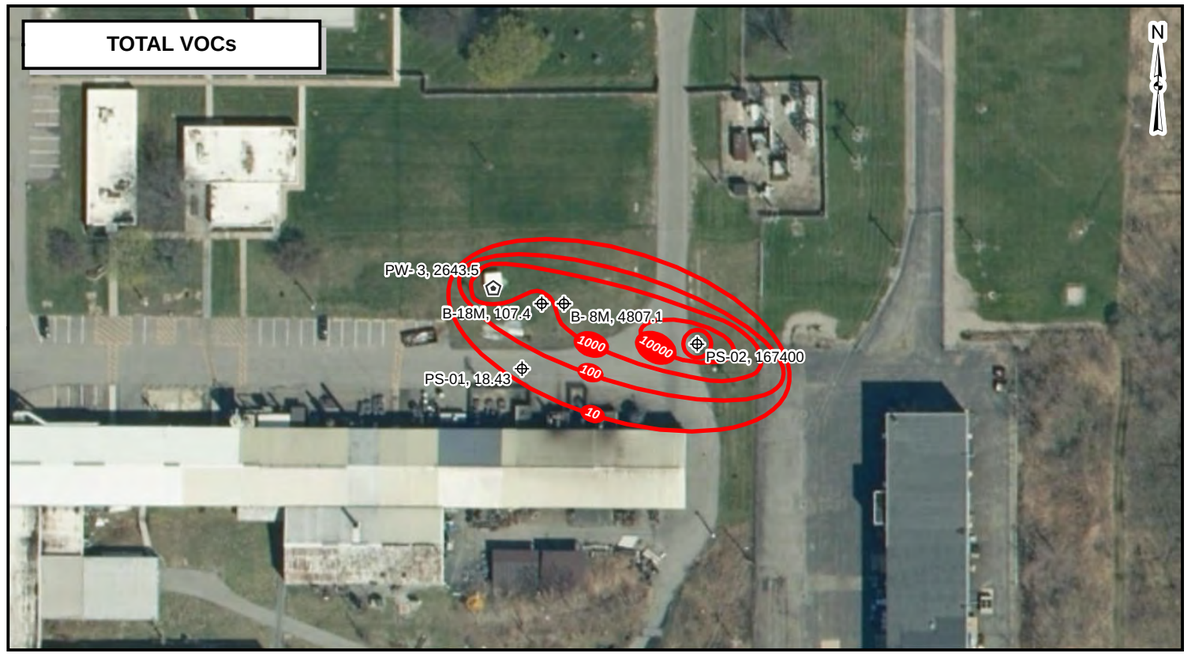
AECOM

FIGURE 8

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\PW03 IP Pilot Study\ISOPLETHS - SEPTEMBER 2018.mxd 2/15/2019







Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

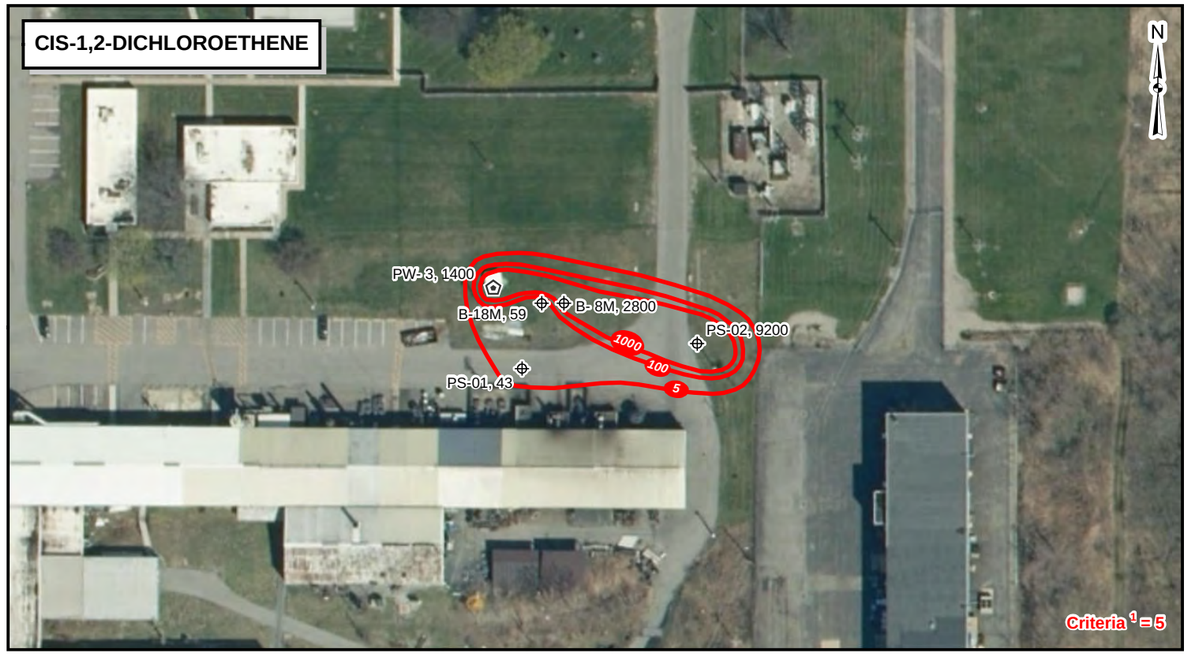
100 0 100 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS - OCTOBER 2018

AECOM

FIGURE 9

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\PW03 IP Pilot Study\ISOPLETHS - OCTOBER 2018.mxd 2/15/2019



Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

100 0 100 Feet

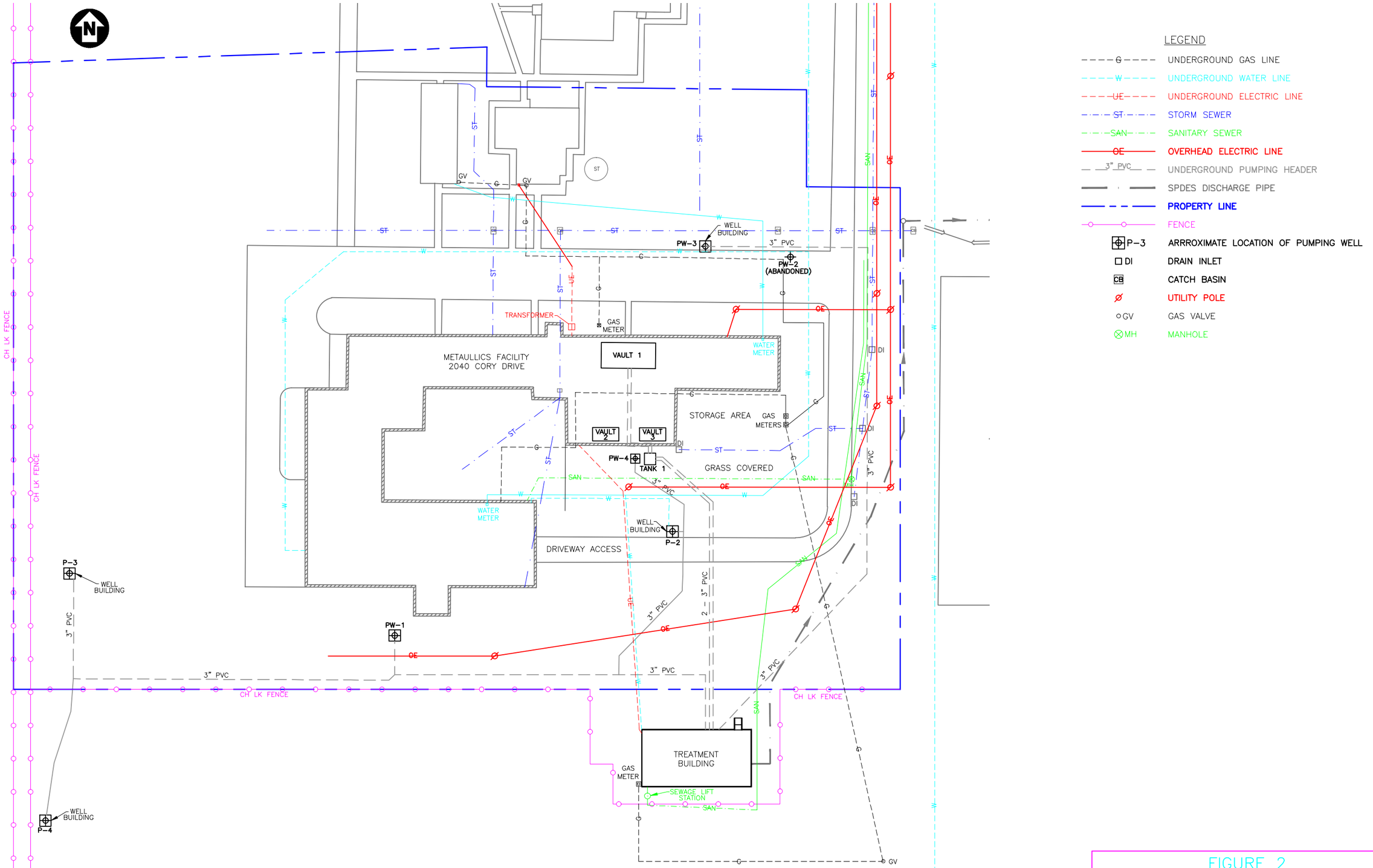
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS - JANUARY 2019

AECOM

FIGURE 10

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\PW03 IP Pilot Study\ISOPLETHS - JANUARY 2019.mxd 2/15/2019

Attachment 1



PARSONS
40 LA RIVIERE DRIVE, SUITE 350
BUFFALO, NEW YORK 14202
716-541-0730

FIGURE 2

ATLANTIC RICHFIELD COMPANY
FORMER CARBORUNDUM FACILITY

SITE PLAN – UTILITIES

P:\Sanborn\\447601\Record Drawings\SK-442156-c17_Fig2.dwg
No XREFs

Attachment 2

N

BLANK RD

TINDALE LN

TUSCARORA RD

CORY DR

B-15M, 612.23

B-16M, 608.62

B-10M, 612.14

B-14M, 608.46

B- 7M, 606.76

B- 9M, 610.98

PW- 3, 609.21

B- 8M, 607.59

B-21M, 608.67

PW- 4, 607.95

B- 3M, 605.69

B-27M, 608.19

B-37M, 597.00

B-17M, 601.75

B-12M, 605.92

B-52M, 606.35

B- 6M, 606.72

B-13M, 602.15

P- 4, 594.20

B- 5M, 608.21

B-22M, 595.54

B- 4M, 600.49

B-23M, 593.24

B-25M, 605.39

B-26M, 606.60

B-24M, 603.76

612
610
608
606
604
602
600
598
596

Legend

- Monitoring Well
- Recovery Well
- Groundwater Flow Direction
- Groundwater Elevation Contour

Source: ESRI World Imagery

300 0 300 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
TOP OF ROCK
(JUNE 21, 2018)

AECOM

FIGURE 5

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q2\GROUNDWATER CONTOURS - TOR.mxd 6/28/2018


N
B-15M, 612.23
B-67M, 609.71
B-63M, 609.09
B-16M, 608.62
B-10M, 612.14
B-11M, 609.06
B- 8M, 607.59
B-21M, 608.67
PW-4, 607.95
P- 2, 597.17
B-27M, 608.19
P- 3, 598.10
PW- 1, 597.88
B-17M, 601.75
B- 6M, 606.72
B-52M, 606.35
P- 4, 594.20
B-13M, 602.15
B-28M, 596.87
B-22M, 595.54
B-23M, 593.24
B-29M, 589.49
B-26M, 606.60
B-24M, 603.76
B-38M, 581.63
B-32M, 586.57
B-33M, 589.81
B-45M, 590.87
610
605
600
595
590
580
585
Legend
Monitoring Well
Recovery Well
Groundwater Flow Direction
Groundwater Elevation Contour
Source: ESRI World Imagery
300
0
300 Feet
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
ZONE 1
(JUNE 21, 2018)
AECOM
FIGURE 6
J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q2\GROUNDWATER CONTOURS - Z1.mxd 6/28/2018

N

BLANK RD

TINDALE LN

TUSCARORA RD

CORY DR

B-15M, 608.01

B-16M, 601.75

B-10M, 610.36

B-14M, 602.96

B- 7M, 601.66

B- 9M, 604.29

PW- 3, 608.92

B- 8M, 606.24

B-21M, 596.05

PW- 4, 601.24

B- 3M, 602.84

B-27M, 601.58

B-37M, 595.76

B-17M, 601.77

B-52M, 602.09

B- 6M, 601.65

B-13M, 599.56

B-12M, NM

P- 4, 594.98

B-22M, 592.50

B- 5M, 601.43

B- 4M, 598.83

B-23M, 590.10

B-25M, 600.60

B-26M, 601.63

B-24M, 598.22

608

606

604

602

600

598

596

594

592

610

Legend

- Monitoring Well
- Recovery Well
- Groundwater Flow Direction
- Groundwater Elevation Contour

Source: ESRI World Imagery

300 0 300 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
TOP OF ROCK
(SEPTEMBER 25, 2018)

AECOM

FIGURE 7

J:\Projects\60481767_BPIPO\MISC\GIS\SanbornMaps\2018\Q3\GROUNDWATER CONTOURS - TOR.mxd 12/10/2018

N

BLANK RD

TINDALE LN

TUSCARORA RD

CORY DR

B-15M, 608.01
B-67M, 607.10
B-63M, 602.04
B-16M, 601.75
B-10M, 610.36
B-11M, 608.30
B- 8M, 606.24
B-21M, 596.05
PW- 4, 601.24
P- 2, 606.21
B-27M, 601.58
P- 3, 600.29
PW- 1, 591.83
B-17M, 601.77
B-52M, 602.09
B- 6M, 601.65
P- 4, 594.98
B-13M, 599.56
B-28M, 595.59
B-22M, 592.50
B-23M, 590.10
B-29M, 586.96
B-26M, 601.63
B-24M, 598.22
B-38M, 580.61
B-32M, NM
B-33M, 588.16
B-45M, 589.74

605
600
610
595
590
585

Legend

- Monitoring Well
- Recovery Well
- Groundwater Flow Direction
- Groundwater Elevation Contour

Source: ESRI World Imagery

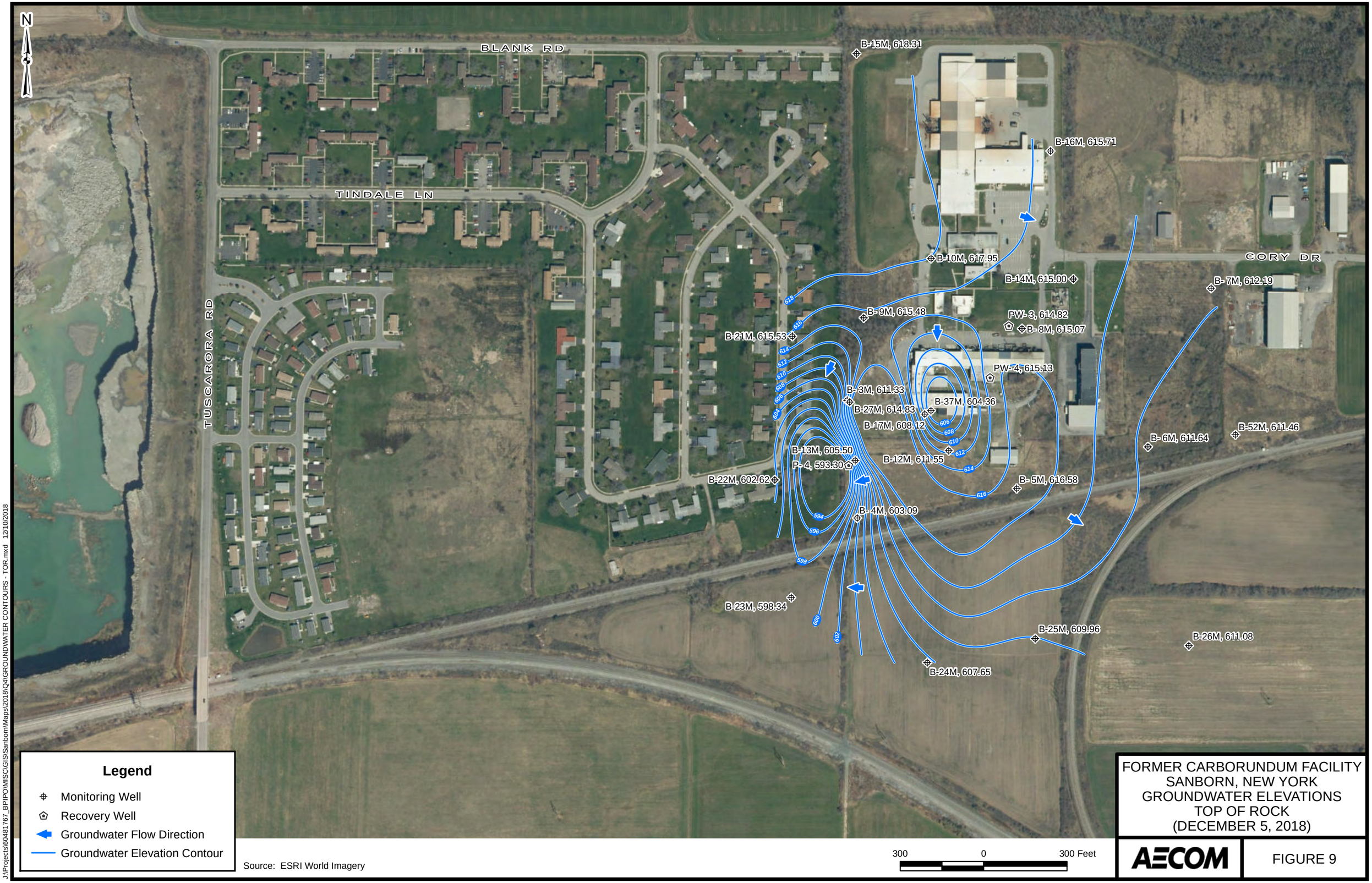
300 0 300 Feet

FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
ZONE 1
(SEPTEMBER 25, 2018)

AECOM

FIGURE 8

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q3\GROUNDWATER CONTOURS - Z1.mxd 12/10/2018



FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
TOP OF ROCK
(DECEMBER 5, 2018)

AECOM

FIGURE 9

J:\Projects\60481767_BPIPO\MISC\GIS\SanbornMaps\2018\Q4\GROUNDWATER CONTOURS - TOR.mxd 12/10/2018

N

BLANK RD

TINDALE LN

TUSCARORA RD

CORY DR

B-15M, 618.31
B-67M, 616.58
B-63M, 616.09
B-16M, 615.71
B-10M, 617.95
B-11M, 615.37
B- 8M, 615.07
B-21M, 615.53
PW- 4, 615.13
P- 2, 616.31
B-27M, 614.83
P- 3, 600.89
PW- 1, 604.39
B-17M, 608.12
B-52M, 611.46
B- 6M, 611.64
P- 4, 593.30
B-13M, 605.50
B-28M, 601.20
B-22M, 602.62
B-23M, 598.34
B-29M, 594.95
B-26M, 611.08
B-24M, 607.65
B-38M, 582.91
B-32M, NM
B-33M, 594.63
B-45M, 596.07

615
610
605
600
595
590
595
595

Legend

- Monitoring Well
- Recovery Well
- Groundwater Flow Direction
- Groundwater Elevation Contour

Source: ESRI World Imagery

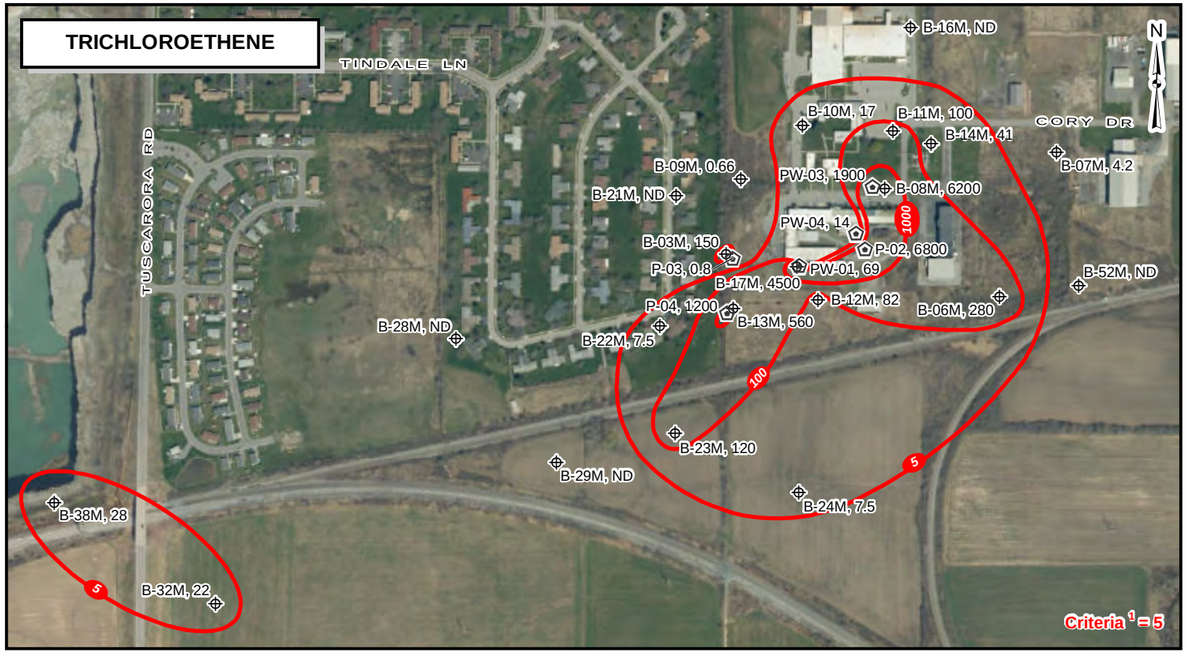
300 0 300 Feet

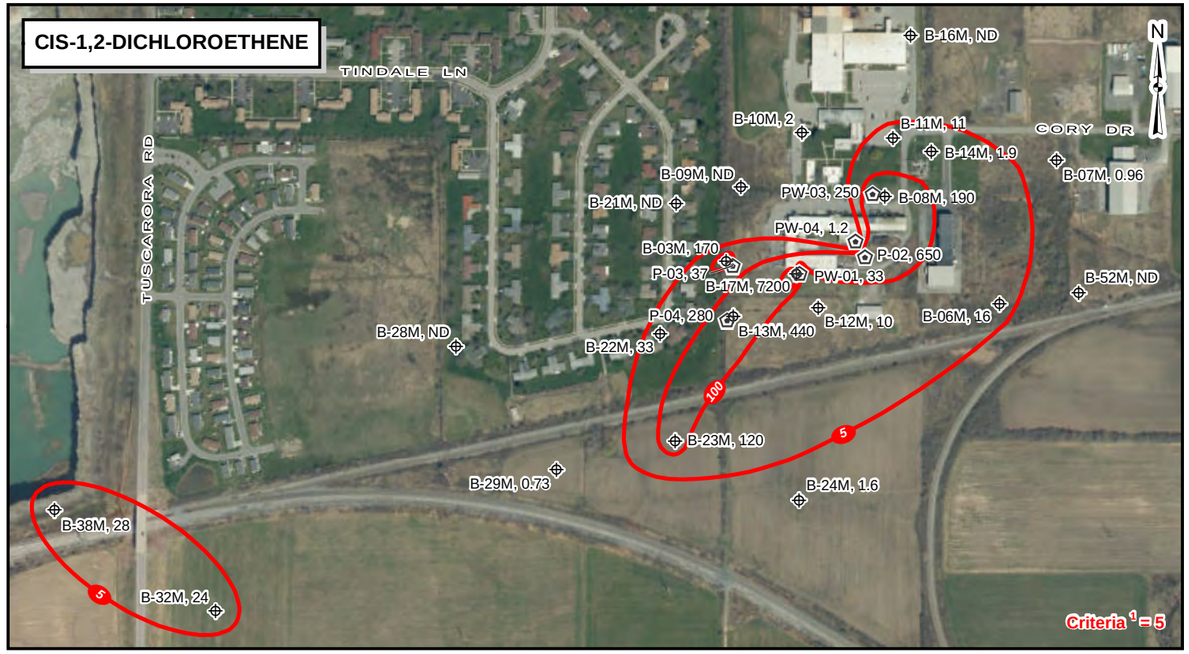
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
GROUNDWATER ELEVATIONS
ZONE 1
(DECEMBER 5, 2018)

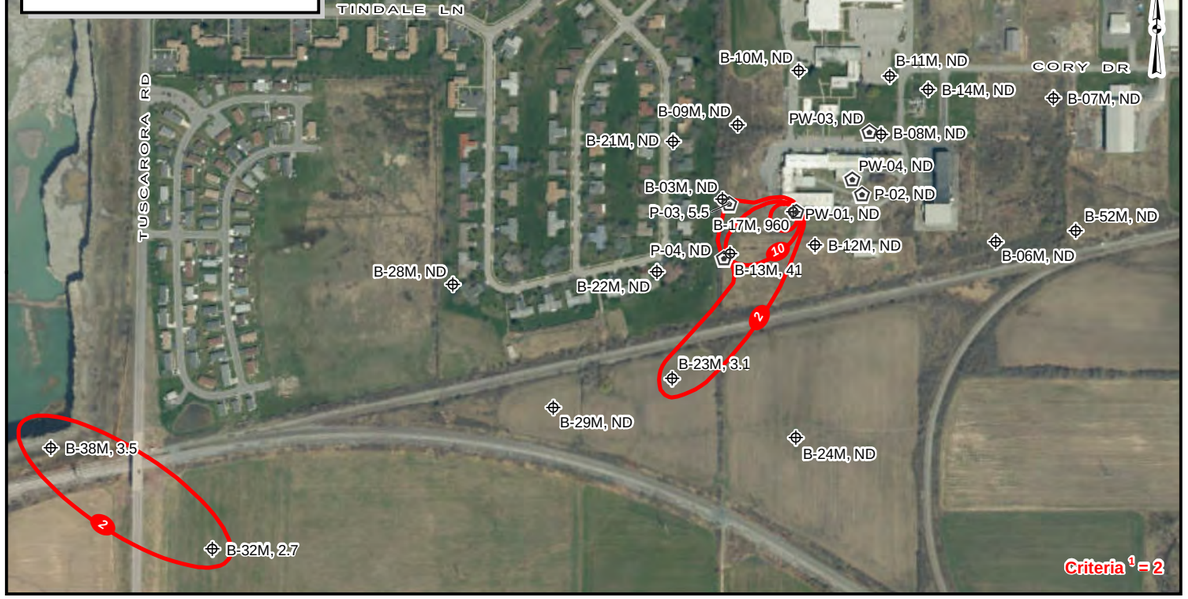
AECOM

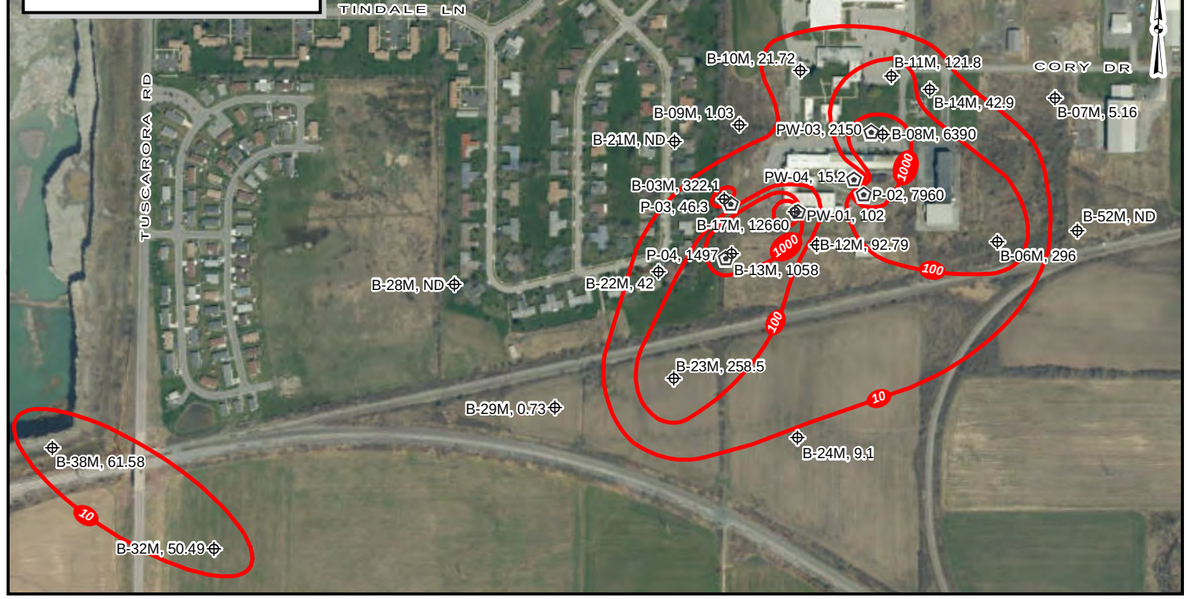
FIGURE 10

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q4\GROUNDWATER CONTOURS - Z1.mxd 12/10/2018









Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

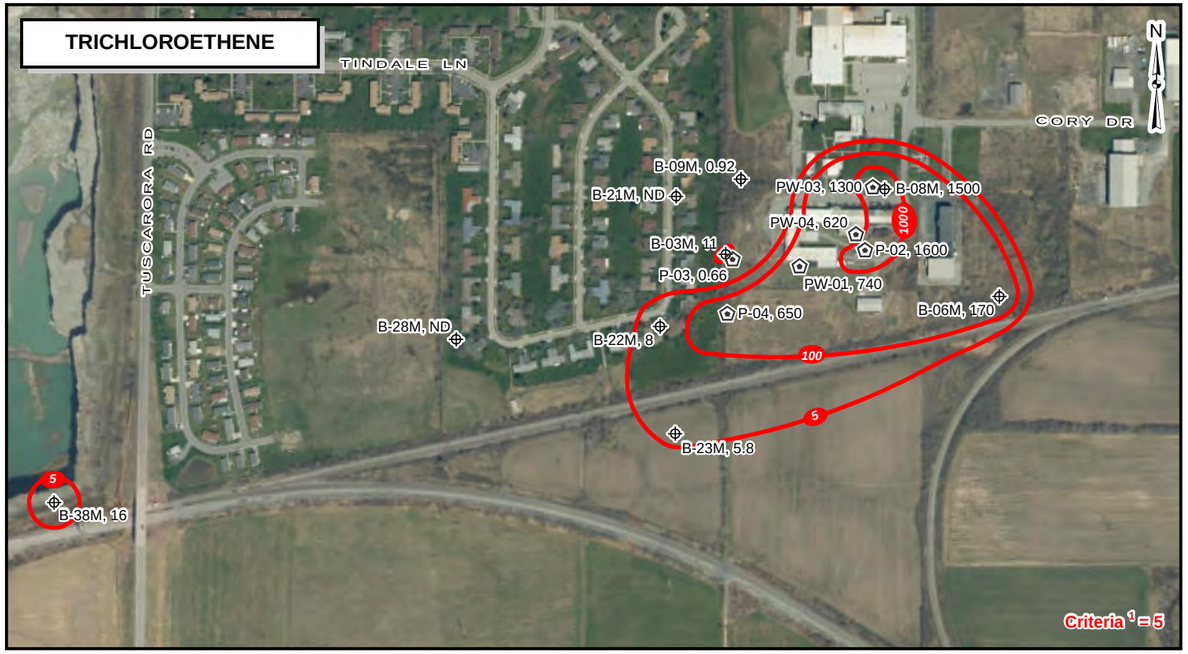
600 0 600 Feet

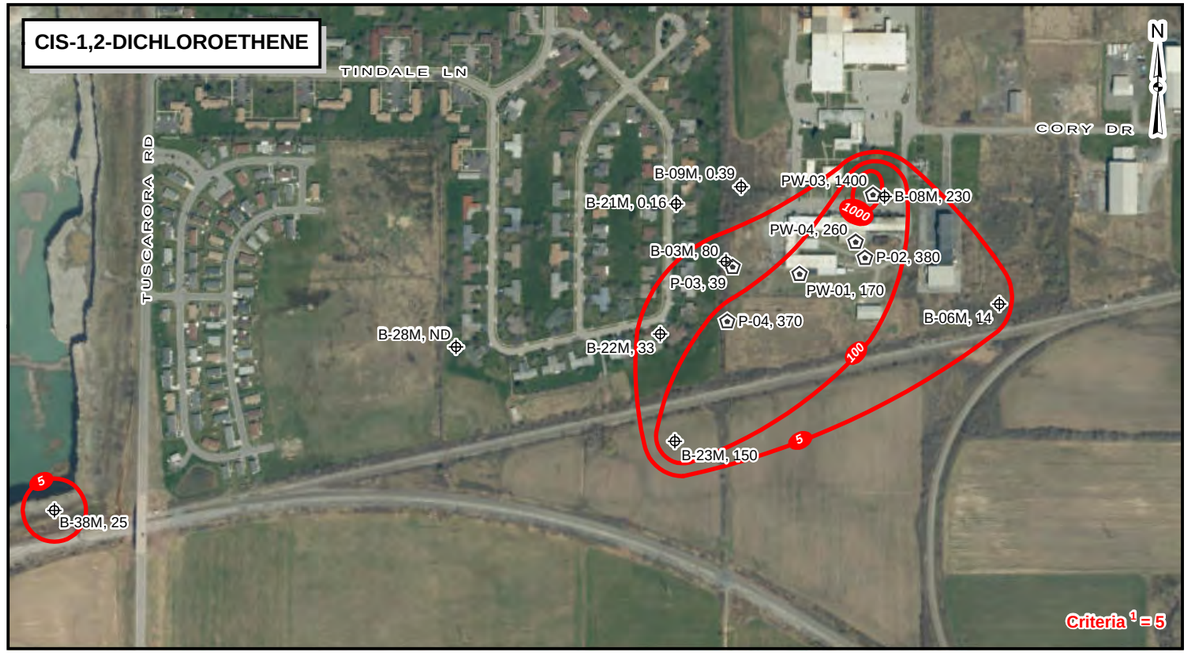
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS IN TOP OF ROCK AND ZONE 1
(ANNUAL SAMPLING - SPRING 2018)

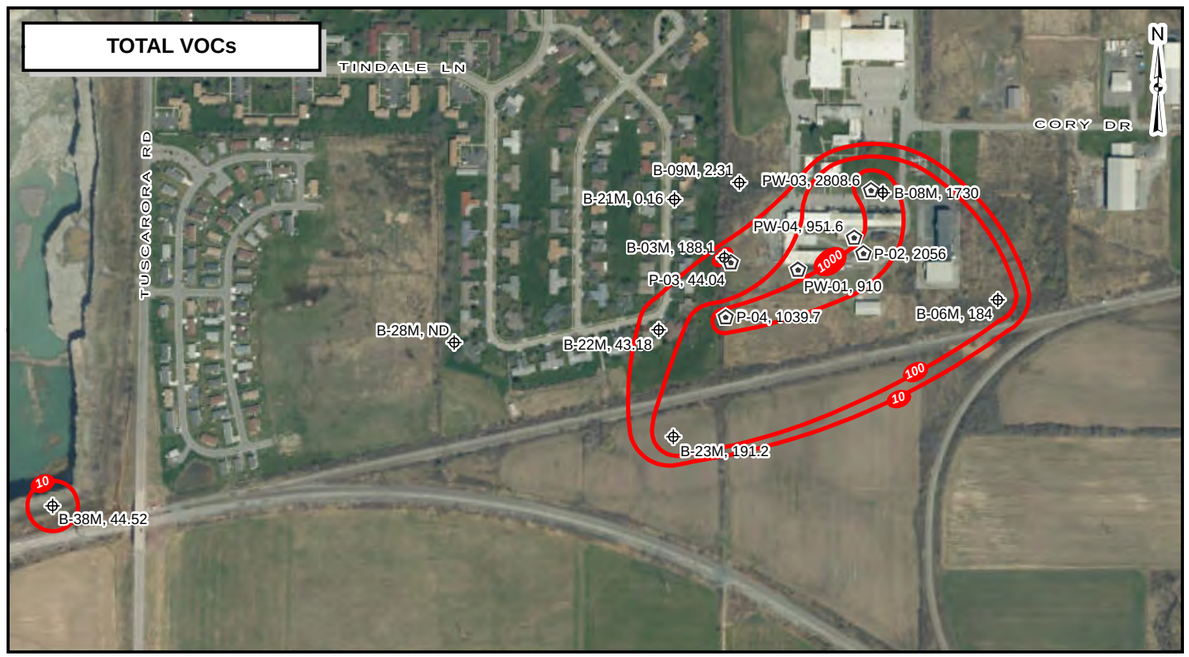
AECOM

FIGURE 11

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q1\ISOPLETHS - TOR & Z1.mxd 5/17/2018







Legend

- Monitoring Well
- Recovery Well
- Isoconcentration Contour

Notes:
1. Criteria = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA
2. Units are shown in µg/L
3. ND = Not Detected

Source:
ESRI World Imagery

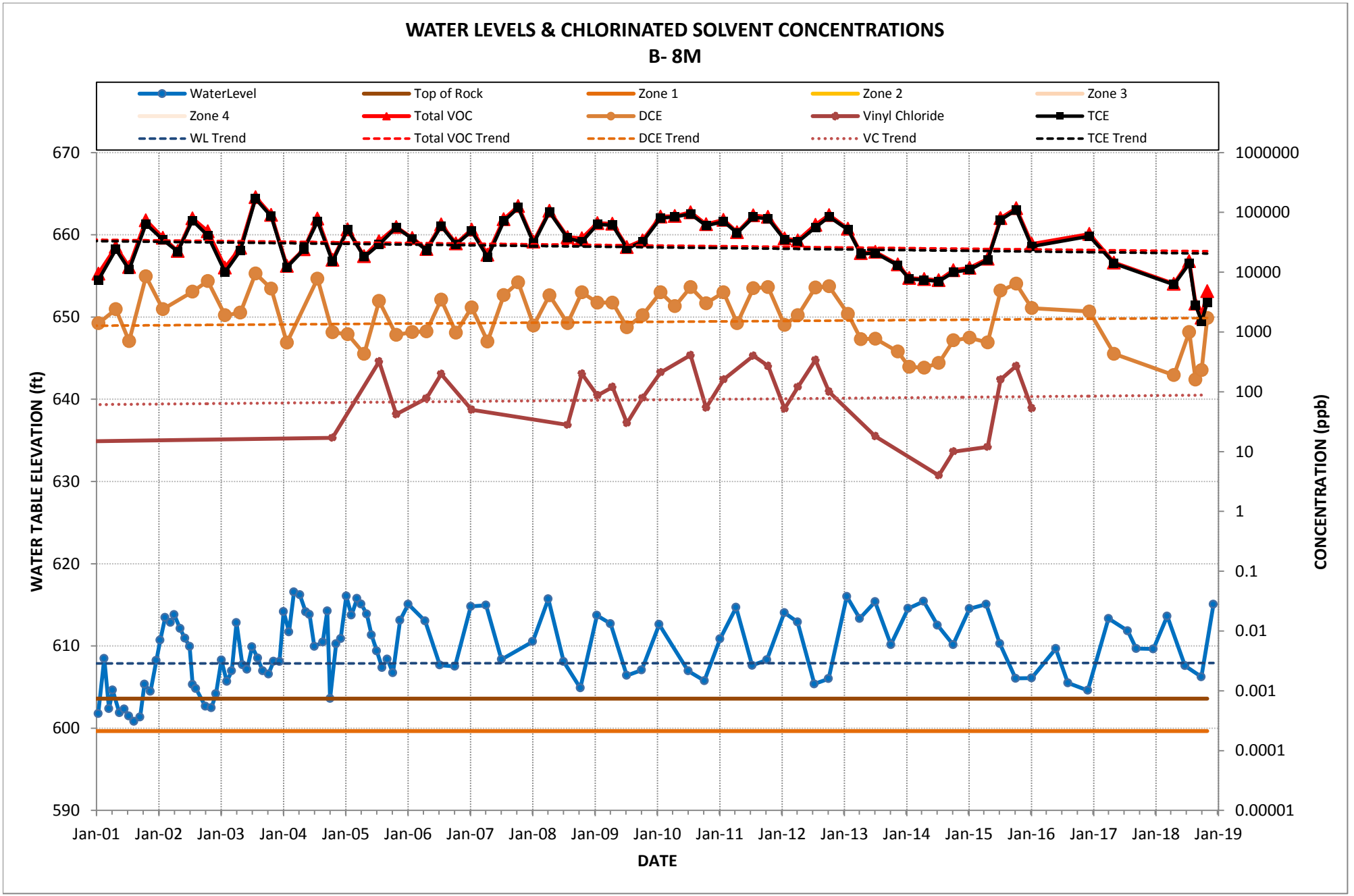
600 0 600 Feet

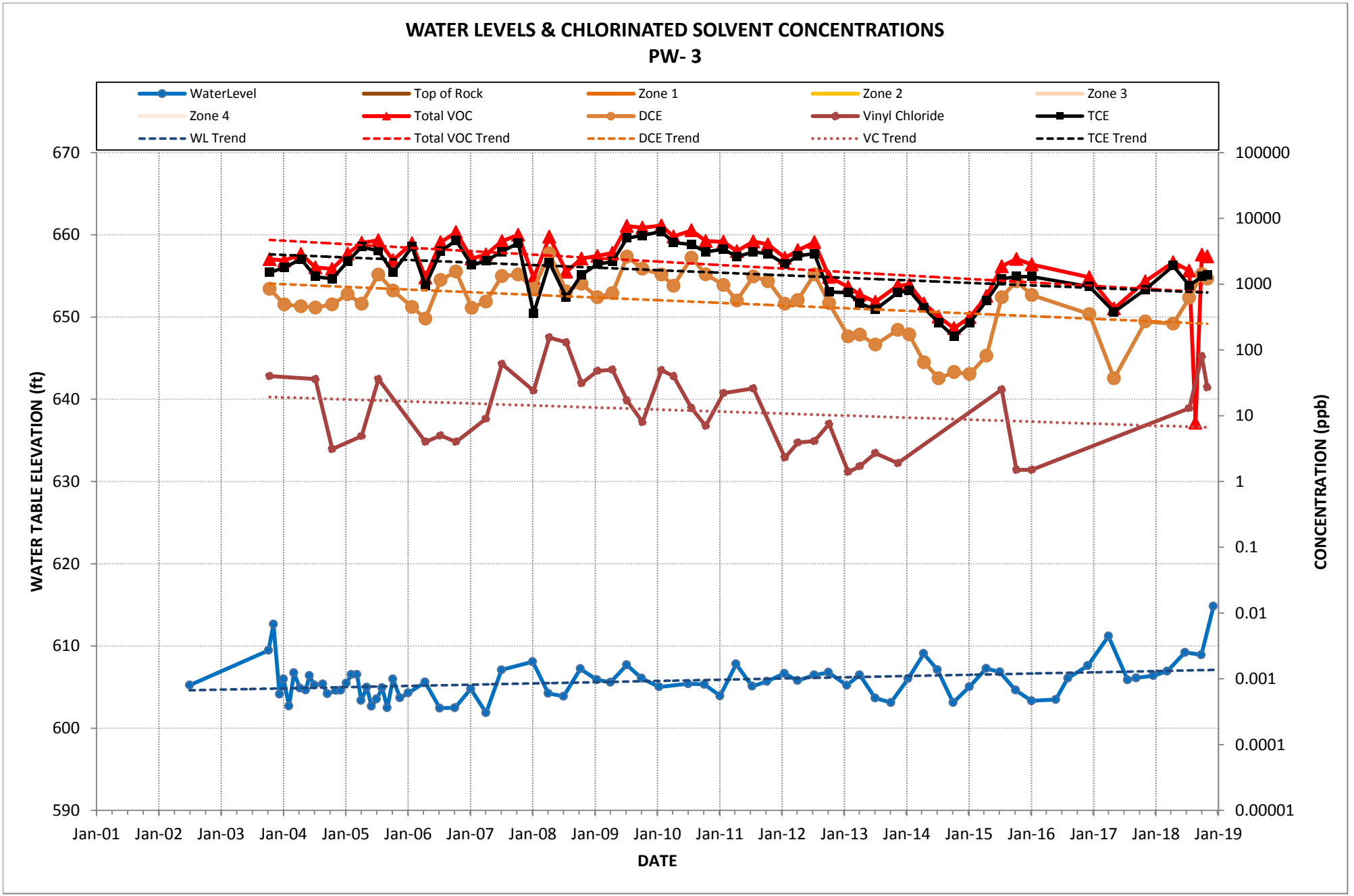
FORMER CARBORUNDUM FACILITY
SANBORN, NEW YORK
ISOCONTOURS IN TOP OF ROCK AND ZONE 1
(SEPTEMBER 2018)

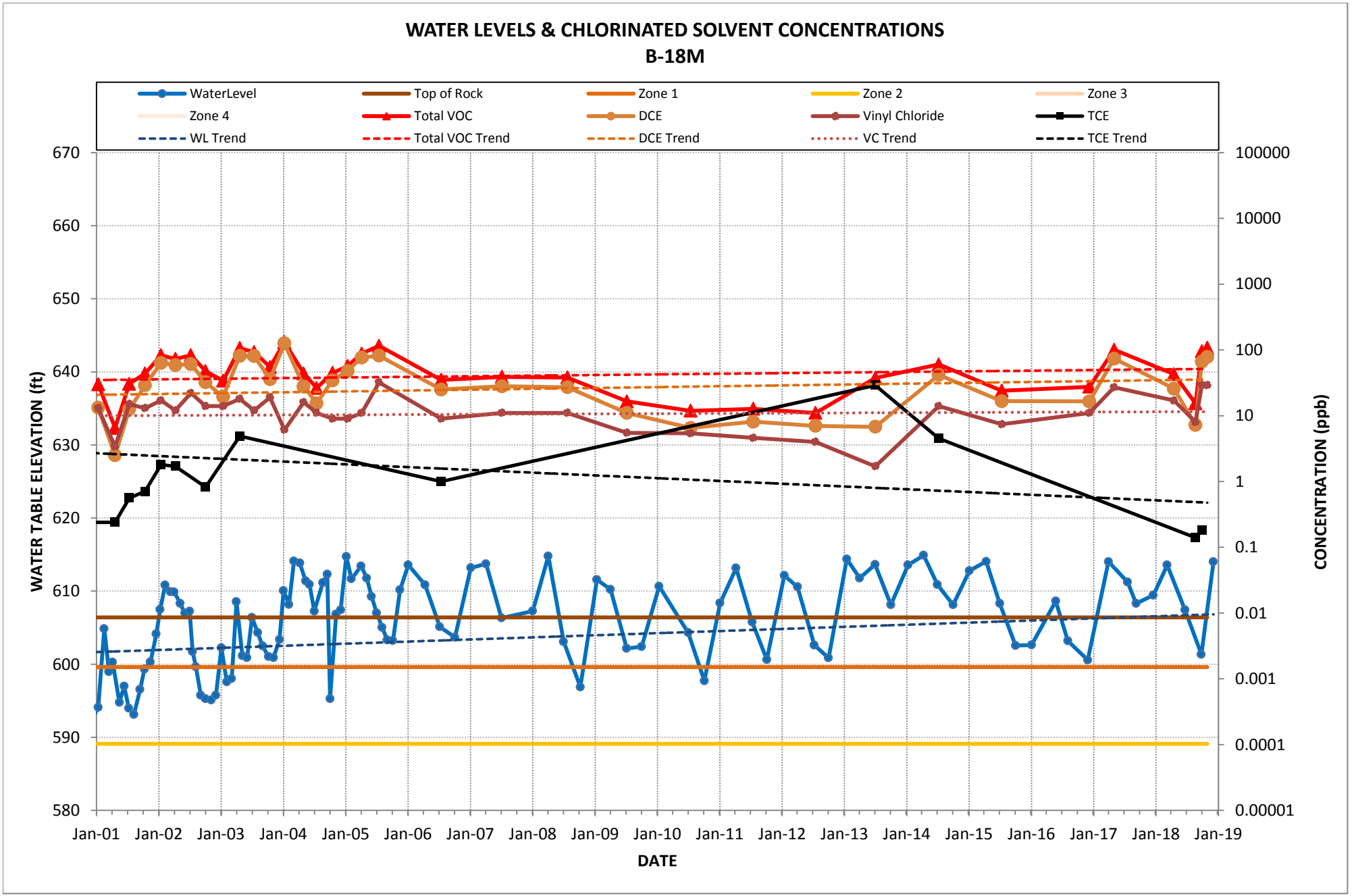
AECOM

FIGURE 13

J:\Projects\60481767_BPIPO\MISC\GIS\Sanborn\Maps\2018\Q3\ISOPLETHS - TOR & Z1.mxd 2/6/2019


WATER LEVELS & CHLORINATED SOLVENT CONCENTRATIONS
B- 8M
WaterLevel
Top of Rock
Zone 1
Zone 2
Zone 3
Zone 4
Total VOC
DCE
Vinyl Chloride
TCE
WL Trend
Total VOC Trend
DCE Trend
VC Trend
TCE Trend
WATER TABLE ELEVATION (ft)
CONCENTRATION (ppb)
DATE
670
660
650
640
630
620
610
600
590
1000000
100000
10000
1000
100
10
1
0.1
0.01
0.001
0.0001
0.00001
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19


WATER LEVELS & CHLORINATED SOLVENT CONCENTRATIONS
PW- 3
WaterLevel
Top of Rock
Zone 1
Zone 2
Zone 3
Zone 4
Total VOC
DCE
Vinyl Chloride
TCE
WL Trend
Total VOC Trend
DCE Trend
VC Trend
TCE Trend
WATER TABLE ELEVATION (ft)
CONCENTRATION (ppb)
DATE
670
660
650
640
630
620
610
600
590
100000
10000
1000
100
10
1
0.1
0.01
0.001
0.0001
0.00001
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19


WATER LEVELS & CHLORINATED SOLVENT CONCENTRATIONS
B-18M
WaterLevel
Top of Rock
Zone 1
Zone 2
Zone 3
Zone 4
Total VOC
DCE
Vinyl Chloride
TCE
WL Trend
Total VOC Trend
DCE Trend
VC Trend
TCE Trend
WATER TABLE ELEVATION (ft)
CONCENTRATION (ppb)
DATE
670
660
650
640
630
620
610
600
590
580
100000
10000
1000
100
10
1
0.1
0.01
0.001
0.0001
0.00001
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19

Attachment 3

DRILLING SUMMARY

Geologist:
Ernest Thalhamer

Contractor:
SJB Services Inc.

Operator:
SJB Services Inc.

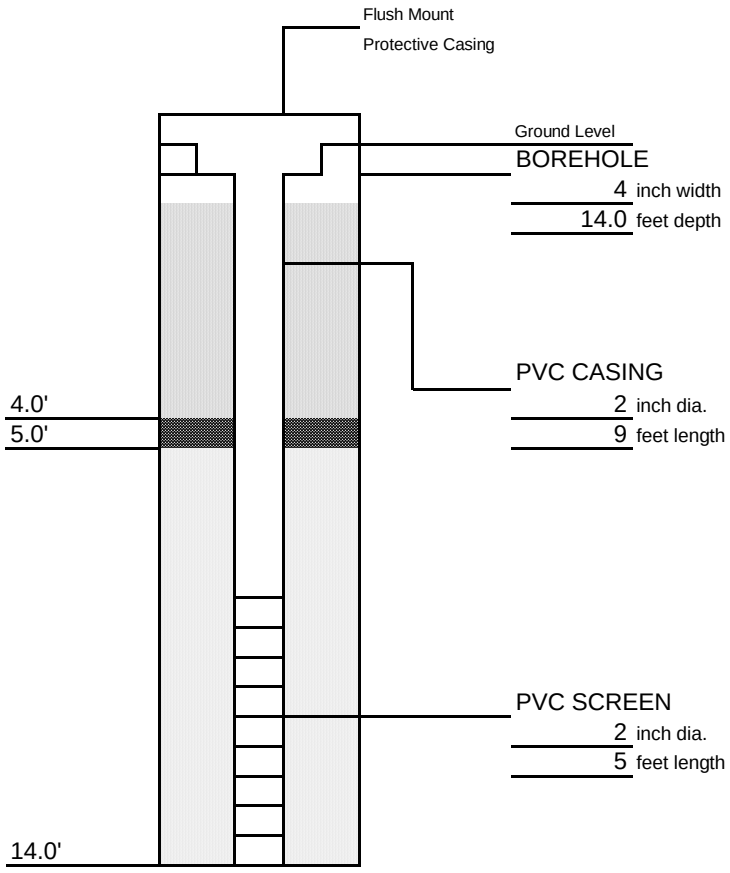
Model:
Hollow Stem Auger

Date:
7/17/2018

GEOLOGIC LOG

Depth(ft.)	Description
	Lithology not logged

DEPTH



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel grade box	Type: 2" PVC	No. 0 Sand Setting: 5'-14'
Monitor: 2" PVC	Slot Size: .010"	*SEAL MATERIAL*
		Bentonite Chip Setting: 4'-5'
		Bentonite Slurry Setting: 1'-4'

COMMENTS:

LEGEND

- Bentonite Slurry
- Bentonite Chips
- No. 0 Sand

Client: BP	**Location: BP-IPO Sanborn**	**Project No.: 60481767**
AECOM	**TEMPORARY OBSERVATION WELL CONSTRUCTION DETAILS**	**Well Number: PS-01**

::

DRILLING SUMMARY

Geologist:
Ernest Thalhamer

Contractor:
SJB Services Inc.

Operator:
SJB Services Inc.

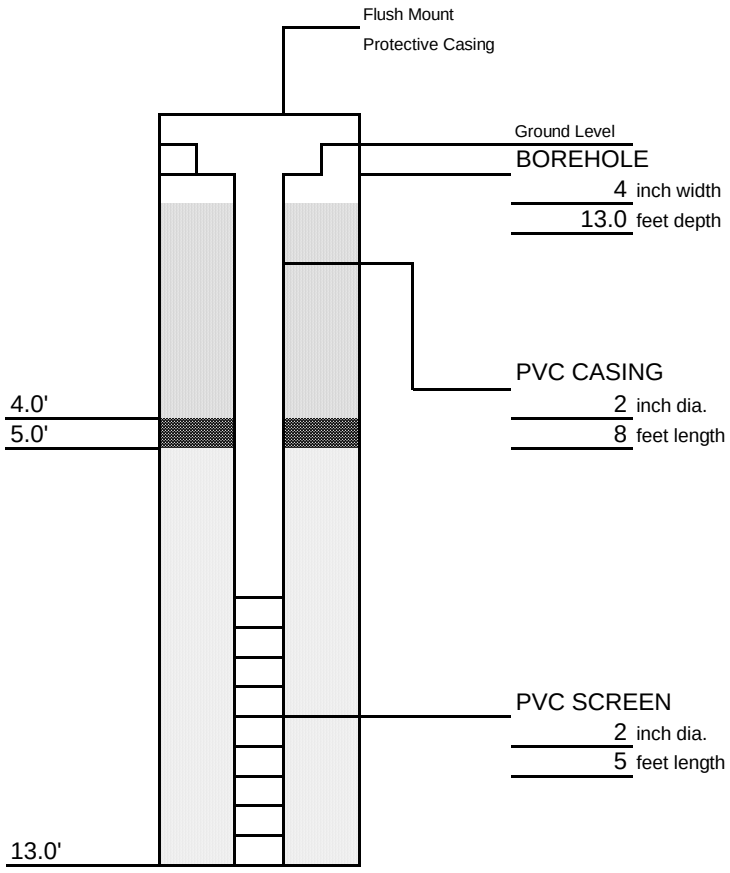
Model:
Hollow Stem Auger

Date:
7/17/2018

GEOLOGIC LOG

Depth(ft.)	Description
	Lithology not logged

DEPTH



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel grade box	Type: 2" PVC	No. 0 Sand Setting: 5'-13'
Monitor: 2" PVC	Slot Size: .010"	*SEAL MATERIAL*
		Bentonite Chip Setting: 4'-5'
		Bentonite Slurry Setting: 1'-4'

COMMENTS:

LEGEND

- Bentonite Slurry
- Bentonite Chips
- No. 0 Sand

Client: BP	**Location: BP-IPO Sanborn**	**Project No.: 60481767**
AECOM	**TEMPORARY OBSERVATION WELL CONSTRUCTION DETAILS**	**Well Number: PS-02**

::

Attachment 4

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-98766-1
Client Project/Site: BP Sanborn Pilot Study

For:
AECOM
257 West Genesee Street
Suite 400
Buffalo, New York 14202-2657

Attn: Tami Raby

Authorized for release by:
7/26/2018 11:41:38 AM

Amy McCormick, Project Manager II
(330)966-9787
amy.mccormick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

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

Job ID: 240-98766-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: AECOM

Project: BP Sanborn Pilot Study

Report Number: 240-98766-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 7/19/2018 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples B-08M (240-98766-1), PW-03 (240-98766-2), PS-02 (240-98766-3) and PS-01 (240-98766-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 07/24/2018.

Samples B-08M (240-98766-1)[500X], PW-03 (240-98766-2)[25X], PS-02 (240-98766-3)[5000X] and PS-01 (240-98766-4)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Dichlorobromomethane failed the recovery criteria low for the MSD of sample B-08MMSD (240-98766-1) in batch 240-337725. 1,1-Dichloroethane, Methyl acetate and Methylene Chloride exceeded the RPD limit.

The continuing calibration verification (CCV) associated with samples B-08M (240-98766-1), PW-03 (240-98766-2), PS-02 (240-98766-3), PS-01 (240-98766-4) and (CCVIS 240-337725/3).in batch 240-337725 recovered above the upper control limit for 1,1,2-Trichloro-1,2,2-trifluoroethane and Trichlorofluoromethane. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported.

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

Job ID: 240-98766-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Method Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

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

Protocol References:

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-98766-1	B-08M	Water	07/16/18 13:15	07/19/18 09:20
240-98766-2	PW-03	Water	07/16/18 13:20	07/19/18 09:20
240-98766-3	PS-02	Water	07/18/18 07:55	07/19/18 09:20
240-98766-4	PS-01	Water	07/18/18 08:10	07/19/18 09:20

Detection Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: B-08M — Lab Sample ID: 240-98766-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2,4-Trichlorobenzene	190	J	500	130	ug/L	500		8260C	Total/NA
cis-1,2-Dichloroethene	1000		500	80	ug/L	500		8260C	Total/NA
Trichloroethene	14000		500	50	ug/L	500		8260C	Total/NA

Client Sample ID: PW-03 — Lab Sample ID: 240-98766-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2,4-Trichlorobenzene	7.8	J	25	6.5	ug/L	25		8260C	Total/NA
cis-1,2-Dichloroethene	620		25	4.0	ug/L	25		8260C	Total/NA
Tetrachloroethene	8.7	J	25	3.8	ug/L	25		8260C	Total/NA
Trichloroethene	950		25	2.5	ug/L	25		8260C	Total/NA
Vinyl chloride	13	J	25	5.0	ug/L	25		8260C	Total/NA

Client Sample ID: PS-02 — Lab Sample ID: 240-98766-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3400	J	5000	800	ug/L	5000		8260C	Total/NA
Trichloroethene	170000		5000	500	ug/L	5000		8260C	Total/NA

Client Sample ID: PS-01 — Lab Sample ID: 240-98766-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	19	J	50	6.5	ug/L	50		8260C	Total/NA
cis-1,2-Dichloroethene	200		50	8.0	ug/L	50		8260C	Total/NA
Toluene	18	J	50	7.0	ug/L	50		8260C	Total/NA
Trichloroethene	2000		50	5.0	ug/L	50		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: B-08M
Date Collected: 07/16/18 13:15
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		500	120	ug/L			07/24/18 20:28	500
1,1,2,2-Tetrachloroethane	ND		500	65	ug/L			07/24/18 20:28	500
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		500	210	ug/L			07/24/18 20:28	500
1,1,2-Trichloroethane	ND		500	45	ug/L			07/24/18 20:28	500
1,1-Dichloroethane	ND	F2	500	85	ug/L			07/24/18 20:28	500
1,1-Dichloroethene	ND		500	95	ug/L			07/24/18 20:28	500
1,2,4-Trichlorobenzene	**190**	**J**	500	130	ug/L			07/24/18 20:28	500
1,2-Dibromo-3-Chloropropane	ND		1000	460	ug/L			07/24/18 20:28	500
Ethylene Dibromide	ND		500	60	ug/L			07/24/18 20:28	500
1,2-Dichlorobenzene	ND		500	75	ug/L			07/24/18 20:28	500
1,2-Dichloroethane	ND		500	110	ug/L			07/24/18 20:28	500
1,2-Dichloropropane	ND		500	75	ug/L			07/24/18 20:28	500
1,3-Dichlorobenzene	ND		500	75	ug/L			07/24/18 20:28	500
1,4-Dichlorobenzene	ND		500	80	ug/L			07/24/18 20:28	500
2-Butanone (MEK)	ND		5000	580	ug/L			07/24/18 20:28	500
2-Hexanone	ND		5000	270	ug/L			07/24/18 20:28	500
4-Methyl-2-pentanone (MIBK)	ND		5000	210	ug/L			07/24/18 20:28	500
Acetone	ND		5000	2700	ug/L			07/24/18 20:28	500
Benzene	ND		500	65	ug/L			07/24/18 20:28	500
Dichlorobromomethane	ND	F1	500	85	ug/L			07/24/18 20:28	500
Bromoform	ND		500	380	ug/L			07/24/18 20:28	500
Bromomethane	ND		500	210	ug/L			07/24/18 20:28	500
Carbon disulfide	ND		500	140	ug/L			07/24/18 20:28	500
Carbon tetrachloride	ND		500	130	ug/L			07/24/18 20:28	500
Chlorobenzene	ND		500	70	ug/L			07/24/18 20:28	500
Chloroethane	ND		500	420	ug/L			07/24/18 20:28	500
Chloroform	ND		500	65	ug/L			07/24/18 20:28	500
Chloromethane	ND		500	100	ug/L			07/24/18 20:28	500
cis-1,2-Dichloroethene	**1000**		500	80	ug/L			07/24/18 20:28	500
cis-1,3-Dichloropropene	ND		500	310	ug/L			07/24/18 20:28	500
Cyclohexane	ND		500	120	ug/L			07/24/18 20:28	500
Chlorodibromomethane	ND		500	200	ug/L			07/24/18 20:28	500
Dichlorodifluoromethane	ND		500	180	ug/L			07/24/18 20:28	500
Ethylbenzene	ND		500	55	ug/L			07/24/18 20:28	500
Isopropylbenzene	ND		500	45	ug/L			07/24/18 20:28	500
Methyl acetate	ND	F2	5000	860	ug/L			07/24/18 20:28	500
Methyl tert-butyl ether	ND		500	35	ug/L			07/24/18 20:28	500
Methylcyclohexane	ND		500	170	ug/L			07/24/18 20:28	500
Methylene Chloride	ND	F2	2500	1300	ug/L			07/24/18 20:28	500
Styrene	ND		500	50	ug/L			07/24/18 20:28	500
Tetrachloroethene	ND		500	75	ug/L			07/24/18 20:28	500
Toluene	ND		500	70	ug/L			07/24/18 20:28	500
trans-1,2-Dichloroethene	ND		500	95	ug/L			07/24/18 20:28	500
trans-1,3-Dichloropropene	ND		500	340	ug/L			07/24/18 20:28	500
Trichloroethene	**14000**		500	50	ug/L			07/24/18 20:28	500
Trichlorofluoromethane	ND		500	230	ug/L			07/24/18 20:28	500
Vinyl chloride	ND		500	100	ug/L			07/24/18 20:28	500
Xylenes, Total	ND		1000	75	ug/L			07/24/18 20:28	500

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: B-08M
Date Collected: 07/16/18 13:15
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-1
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	89		73 - 120		07/24/18 20:28	500
Dibromofluoromethane (Surr)	81		69 - 124		07/24/18 20:28	500
4-Bromofluorobenzene (Surr)	86		69 - 120		07/24/18 20:28	500
1,2-Dichloroethane-d4 (Surr)	76		61 - 138		07/24/18 20:28	500

Client Sample ID: PW-03
Date Collected: 07/16/18 13:20
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		25	6.0	ug/L			07/24/18 20:52	25
1,1,2,2-Tetrachloroethane	ND		25	3.3	ug/L			07/24/18 20:52	25
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25	10	ug/L			07/24/18 20:52	25
1,1,2-Trichloroethane	ND		25	2.3	ug/L			07/24/18 20:52	25
1,1-Dichloroethane	ND		25	4.3	ug/L			07/24/18 20:52	25
1,1-Dichloroethene	ND		25	4.8	ug/L			07/24/18 20:52	25
1,2,4-Trichlorobenzene	**7.8**	**J**	25	6.5	ug/L			07/24/18 20:52	25
1,2-Dibromo-3-Chloropropane	ND		50	23	ug/L			07/24/18 20:52	25
Ethylene Dibromide	ND		25	3.0	ug/L			07/24/18 20:52	25
1,2-Dichlorobenzene	ND		25	3.8	ug/L			07/24/18 20:52	25
1,2-Dichloroethane	ND		25	5.3	ug/L			07/24/18 20:52	25
1,2-Dichloropropane	ND		25	3.8	ug/L			07/24/18 20:52	25
1,3-Dichlorobenzene	ND		25	3.8	ug/L			07/24/18 20:52	25
1,4-Dichlorobenzene	ND		25	4.0	ug/L			07/24/18 20:52	25
2-Butanone (MEK)	ND		250	29	ug/L			07/24/18 20:52	25
2-Hexanone	ND		250	14	ug/L			07/24/18 20:52	25
4-Methyl-2-pentanone (MIBK)	ND		250	11	ug/L			07/24/18 20:52	25
Acetone	ND		250	140	ug/L			07/24/18 20:52	25
Benzene	ND		25	3.3	ug/L			07/24/18 20:52	25
Dichlorobromomethane	ND		25	4.3	ug/L			07/24/18 20:52	25
Bromoform	ND		25	19	ug/L			07/24/18 20:52	25
Bromomethane	ND		25	11	ug/L			07/24/18 20:52	25
Carbon disulfide	ND		25	7.0	ug/L			07/24/18 20:52	25
Carbon tetrachloride	ND		25	6.5	ug/L			07/24/18 20:52	25
Chlorobenzene	ND		25	3.5	ug/L			07/24/18 20:52	25
Chloroethane	ND		25	21	ug/L			07/24/18 20:52	25
Chloroform	ND		25	3.3	ug/L			07/24/18 20:52	25
Chloromethane	ND		25	5.0	ug/L			07/24/18 20:52	25
cis-1,2-Dichloroethene	**620**		25	4.0	ug/L			07/24/18 20:52	25
cis-1,3-Dichloropropene	ND		25	15	ug/L			07/24/18 20:52	25
Cyclohexane	ND		25	6.0	ug/L			07/24/18 20:52	25
Chlorodibromomethane	ND		25	9.8	ug/L			07/24/18 20:52	25
Dichlorodifluoromethane	ND		25	8.8	ug/L			07/24/18 20:52	25
Ethylbenzene	ND		25	2.8	ug/L			07/24/18 20:52	25
Isopropylbenzene	ND		25	2.3	ug/L			07/24/18 20:52	25
Methyl acetate	ND		250	43	ug/L			07/24/18 20:52	25
Methyl tert-butyl ether	ND		25	1.8	ug/L			07/24/18 20:52	25
Methylcyclohexane	ND		25	8.3	ug/L			07/24/18 20:52	25
Methylene Chloride	ND		130	66	ug/L			07/24/18 20:52	25
Styrene	ND		25	2.5	ug/L			07/24/18 20:52	25
Tetrachloroethene	**8.7**	**J**	25	3.8	ug/L			07/24/18 20:52	25
Toluene	ND		25	3.5	ug/L			07/24/18 20:52	25
trans-1,2-Dichloroethene	ND		25	4.8	ug/L			07/24/18 20:52	25
trans-1,3-Dichloropropene	ND		25	17	ug/L			07/24/18 20:52	25
Trichloroethene	**950**		25	2.5	ug/L			07/24/18 20:52	25
Trichlorofluoromethane	ND		25	11	ug/L			07/24/18 20:52	25
Vinyl chloride	**13**	**J**	25	5.0	ug/L			07/24/18 20:52	25
Xylenes, Total	ND		50	3.8	ug/L			07/24/18 20:52	25

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: PW-03
Date Collected: 07/16/18 13:20
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-2
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	82		73 - 120		07/24/18 20:52	25
Dibromofluoromethane (Surr)	81		69 - 124		07/24/18 20:52	25
4-Bromofluorobenzene (Surr)	78		69 - 120		07/24/18 20:52	25
1,2-Dichloroethane-d4 (Surr)	74		61 - 138		07/24/18 20:52	25

Client Sample ID: PS-02
Date Collected: 07/18/18 07:55
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5000	1200	ug/L			07/24/18 21:15	5000
1,1,2,2-Tetrachloroethane	ND		5000	650	ug/L			07/24/18 21:15	5000
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5000	2100	ug/L			07/24/18 21:15	5000
1,1,2-Trichloroethane	ND		5000	450	ug/L			07/24/18 21:15	5000
1,1-Dichloroethane	ND		5000	850	ug/L			07/24/18 21:15	5000
1,1-Dichloroethene	ND		5000	950	ug/L			07/24/18 21:15	5000
1,2,4-Trichlorobenzene	ND		5000	1300	ug/L			07/24/18 21:15	5000
1,2-Dibromo-3-Chloropropane	ND		10000	4600	ug/L			07/24/18 21:15	5000
Ethylene Dibromide	ND		5000	600	ug/L			07/24/18 21:15	5000
1,2-Dichlorobenzene	ND		5000	750	ug/L			07/24/18 21:15	5000
1,2-Dichloroethane	ND		5000	1100	ug/L			07/24/18 21:15	5000
1,2-Dichloropropane	ND		5000	750	ug/L			07/24/18 21:15	5000
1,3-Dichlorobenzene	ND		5000	750	ug/L			07/24/18 21:15	5000
1,4-Dichlorobenzene	ND		5000	800	ug/L			07/24/18 21:15	5000
2-Butanone (MEK)	ND		50000	5800	ug/L			07/24/18 21:15	5000
2-Hexanone	ND		50000	2700	ug/L			07/24/18 21:15	5000
4-Methyl-2-pentanone (MIBK)	ND		50000	2100	ug/L			07/24/18 21:15	5000
Acetone	ND		50000	27000	ug/L			07/24/18 21:15	5000
Benzene	ND		5000	650	ug/L			07/24/18 21:15	5000
Dichlorobromomethane	ND		5000	850	ug/L			07/24/18 21:15	5000
Bromoform	ND		5000	3800	ug/L			07/24/18 21:15	5000
Bromomethane	ND		5000	2100	ug/L			07/24/18 21:15	5000
Carbon disulfide	ND		5000	1400	ug/L			07/24/18 21:15	5000
Carbon tetrachloride	ND		5000	1300	ug/L			07/24/18 21:15	5000
Chlorobenzene	ND		5000	700	ug/L			07/24/18 21:15	5000
Chloroethane	ND		5000	4200	ug/L			07/24/18 21:15	5000
Chloroform	ND		5000	650	ug/L			07/24/18 21:15	5000
Chloromethane	ND		5000	1000	ug/L			07/24/18 21:15	5000
cis-1,2-Dichloroethene	**3400**	**J**	5000	800	ug/L			07/24/18 21:15	5000
cis-1,3-Dichloropropene	ND		5000	3100	ug/L			07/24/18 21:15	5000
Cyclohexane	ND		5000	1200	ug/L			07/24/18 21:15	5000
Chlorodibromomethane	ND		5000	2000	ug/L			07/24/18 21:15	5000
Dichlorodifluoromethane	ND		5000	1800	ug/L			07/24/18 21:15	5000
Ethylbenzene	ND		5000	550	ug/L			07/24/18 21:15	5000
Isopropylbenzene	ND		5000	450	ug/L			07/24/18 21:15	5000
Methyl acetate	ND		50000	8600	ug/L			07/24/18 21:15	5000
Methyl tert-butyl ether	ND		5000	350	ug/L			07/24/18 21:15	5000
Methylcyclohexane	ND		5000	1700	ug/L			07/24/18 21:15	5000
Methylene Chloride	ND		25000	13000	ug/L			07/24/18 21:15	5000
Styrene	ND		5000	500	ug/L			07/24/18 21:15	5000
Tetrachloroethene	ND		5000	750	ug/L			07/24/18 21:15	5000
Toluene	ND		5000	700	ug/L			07/24/18 21:15	5000
trans-1,2-Dichloroethene	ND		5000	950	ug/L			07/24/18 21:15	5000
trans-1,3-Dichloropropene	ND		5000	3400	ug/L			07/24/18 21:15	5000
Trichloroethene	**170000**		5000	500	ug/L			07/24/18 21:15	5000
Trichlorofluoromethane	ND		5000	2300	ug/L			07/24/18 21:15	5000
Vinyl chloride	ND		5000	1000	ug/L			07/24/18 21:15	5000
Xylenes, Total	ND		10000	750	ug/L			07/24/18 21:15	5000

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: PS-02
Date Collected: 07/18/18 07:55
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-3
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	87		73 - 120		07/24/18 21:15	5000
Dibromofluoromethane (Surr)	84		69 - 124		07/24/18 21:15	5000
4-Bromofluorobenzene (Surr)	81		69 - 120		07/24/18 21:15	5000
1,2-Dichloroethane-d4 (Surr)	83		61 - 138		07/24/18 21:15	5000

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: PS-01
Date Collected: 07/18/18 08:10
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	12	ug/L			07/24/18 21:38	50
1,1,2,2-Tetrachloroethane	ND		50	6.5	ug/L			07/24/18 21:38	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		50	21	ug/L			07/24/18 21:38	50
1,1,2-Trichloroethane	ND		50	4.5	ug/L			07/24/18 21:38	50
1,1-Dichloroethane	ND		50	8.5	ug/L			07/24/18 21:38	50
1,1-Dichloroethene	ND		50	9.5	ug/L			07/24/18 21:38	50
1,2,4-Trichlorobenzene	ND		50	13	ug/L			07/24/18 21:38	50
1,2-Dibromo-3-Chloropropane	ND		100	46	ug/L			07/24/18 21:38	50
Ethylene Dibromide	ND		50	6.0	ug/L			07/24/18 21:38	50
1,2-Dichlorobenzene	ND		50	7.5	ug/L			07/24/18 21:38	50
1,2-Dichloroethane	ND		50	11	ug/L			07/24/18 21:38	50
1,2-Dichloropropane	ND		50	7.5	ug/L			07/24/18 21:38	50
1,3-Dichlorobenzene	ND		50	7.5	ug/L			07/24/18 21:38	50
1,4-Dichlorobenzene	ND		50	8.0	ug/L			07/24/18 21:38	50
2-Butanone (MEK)	ND		500	58	ug/L			07/24/18 21:38	50
2-Hexanone	ND		500	27	ug/L			07/24/18 21:38	50
4-Methyl-2-pentanone (MIBK)	ND		500	21	ug/L			07/24/18 21:38	50
Acetone	ND		500	270	ug/L			07/24/18 21:38	50
Benzene	**19**	**J**	50	6.5	ug/L			07/24/18 21:38	50
Dichlorobromomethane	ND		50	8.5	ug/L			07/24/18 21:38	50
Bromoform	ND		50	38	ug/L			07/24/18 21:38	50
Bromomethane	ND		50	21	ug/L			07/24/18 21:38	50
Carbon disulfide	ND		50	14	ug/L			07/24/18 21:38	50
Carbon tetrachloride	ND		50	13	ug/L			07/24/18 21:38	50
Chlorobenzene	ND		50	7.0	ug/L			07/24/18 21:38	50
Chloroethane	ND		50	42	ug/L			07/24/18 21:38	50
Chloroform	ND		50	6.5	ug/L			07/24/18 21:38	50
Chloromethane	ND		50	10	ug/L			07/24/18 21:38	50
cis-1,2-Dichloroethene	**200**		50	8.0	ug/L			07/24/18 21:38	50
cis-1,3-Dichloropropene	ND		50	31	ug/L			07/24/18 21:38	50
Cyclohexane	ND		50	12	ug/L			07/24/18 21:38	50
Chlorodibromomethane	ND		50	20	ug/L			07/24/18 21:38	50
Dichlorodifluoromethane	ND		50	18	ug/L			07/24/18 21:38	50
Ethylbenzene	ND		50	5.5	ug/L			07/24/18 21:38	50
Isopropylbenzene	ND		50	4.5	ug/L			07/24/18 21:38	50
Methyl acetate	ND		500	86	ug/L			07/24/18 21:38	50
Methyl tert-butyl ether	ND		50	3.5	ug/L			07/24/18 21:38	50
Methylcyclohexane	ND		50	17	ug/L			07/24/18 21:38	50
Methylene Chloride	ND		250	130	ug/L			07/24/18 21:38	50
Styrene	ND		50	5.0	ug/L			07/24/18 21:38	50
Tetrachloroethene	ND		50	7.5	ug/L			07/24/18 21:38	50
Toluene	**18**	**J**	50	7.0	ug/L			07/24/18 21:38	50
trans-1,2-Dichloroethene	ND		50	9.5	ug/L			07/24/18 21:38	50
trans-1,3-Dichloropropene	ND		50	34	ug/L			07/24/18 21:38	50
Trichloroethene	**2000**		50	5.0	ug/L			07/24/18 21:38	50
Trichlorofluoromethane	ND		50	23	ug/L			07/24/18 21:38	50
Vinyl chloride	ND		50	10	ug/L			07/24/18 21:38	50
Xylenes, Total	ND		100	7.5	ug/L			07/24/18 21:38	50

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: PS-01
Date Collected: 07/18/18 08:10
Date Received: 07/19/18 09:20

Lab Sample ID: 240-98766-4
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	83		73 - 120		07/24/18 21:38	50
Dibromofluoromethane (Surr)	74		69 - 124		07/24/18 21:38	50
4-Bromofluorobenzene (Surr)	76		69 - 120		07/24/18 21:38	50
1,2-Dichloroethane-d4 (Surr)	71		61 - 138		07/24/18 21:38	50

Surrogate Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DBFM	BFB	DCA
Lab Sample ID	Client Sample ID	(73-120)	(69-124)	(69-120)	(61-138)
240-98766-1	B-08M	89	81	86	76
240-98766-1 MS	B-08M	89	84	88	75
240-98766-1 MSD	B-08M	81	78	85	71
240-98766-2	PW-03	82	81	78	74
240-98766-3	PS-02	87	84	81	83
240-98766-4	PS-01	83	74	76	71
LCS 240-337725/4	Lab Control Sample	92	89	91	79
MB 240-337725/7	Method Blank	82	76	79	74

Surrogate Legend

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

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

Lab Sample ID: MB 240-337725/7
Matrix: Water
Analysis Batch: 337725

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			07/24/18 15:54	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.13	ug/L			07/24/18 15:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.41	ug/L			07/24/18 15:54	1
1,1,2-Trichloroethane	ND		1.0	0.090	ug/L			07/24/18 15:54	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			07/24/18 15:54	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			07/24/18 15:54	1
1,2,4-Trichlorobenzene	ND		1.0	0.26	ug/L			07/24/18 15:54	1
1,2-Dibromo-3-Chloropropane	ND		2.0	0.91	ug/L			07/24/18 15:54	1
Ethylene Dibromide	ND		1.0	0.12	ug/L			07/24/18 15:54	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			07/24/18 15:54	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			07/24/18 15:54	1
1,2-Dichloropropane	ND		1.0	0.15	ug/L			07/24/18 15:54	1
1,3-Dichlorobenzene	ND		1.0	0.15	ug/L			07/24/18 15:54	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			07/24/18 15:54	1
2-Butanone (MEK)	ND		10	1.2	ug/L			07/24/18 15:54	1
2-Hexanone	ND		10	0.54	ug/L			07/24/18 15:54	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.42	ug/L			07/24/18 15:54	1
Acetone	ND		10	5.4	ug/L			07/24/18 15:54	1
Benzene	ND		1.0	0.13	ug/L			07/24/18 15:54	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			07/24/18 15:54	1
Bromoform	ND		1.0	0.76	ug/L			07/24/18 15:54	1
Bromomethane	ND		1.0	0.42	ug/L			07/24/18 15:54	1
Carbon disulfide	ND		1.0	0.28	ug/L			07/24/18 15:54	1
Carbon tetrachloride	ND		1.0	0.26	ug/L			07/24/18 15:54	1
Chlorobenzene	ND		1.0	0.14	ug/L			07/24/18 15:54	1
Chloroethane	ND		1.0	0.83	ug/L			07/24/18 15:54	1
Chloroform	ND		1.0	0.13	ug/L			07/24/18 15:54	1
Chloromethane	ND		1.0	0.20	ug/L			07/24/18 15:54	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			07/24/18 15:54	1
cis-1,3-Dichloropropene	ND		1.0	0.61	ug/L			07/24/18 15:54	1
Cyclohexane	ND		1.0	0.24	ug/L			07/24/18 15:54	1
Chlorodibromomethane	ND		1.0	0.39	ug/L			07/24/18 15:54	1
Dichlorodifluoromethane	ND		1.0	0.35	ug/L			07/24/18 15:54	1
Ethylbenzene	ND		1.0	0.11	ug/L			07/24/18 15:54	1
Isopropylbenzene	ND		1.0	0.090	ug/L			07/24/18 15:54	1
Methyl acetate	ND		10	1.7	ug/L			07/24/18 15:54	1
Methyl tert-butyl ether	ND		1.0	0.070	ug/L			07/24/18 15:54	1
Methylcyclohexane	ND		1.0	0.33	ug/L			07/24/18 15:54	1
Methylene Chloride	ND		5.0	2.6	ug/L			07/24/18 15:54	1
Styrene	ND		1.0	0.10	ug/L			07/24/18 15:54	1
Tetrachloroethene	ND		1.0	0.15	ug/L			07/24/18 15:54	1
Toluene	ND		1.0	0.14	ug/L			07/24/18 15:54	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			07/24/18 15:54	1
trans-1,3-Dichloropropene	ND		1.0	0.67	ug/L			07/24/18 15:54	1
Trichloroethene	ND		1.0	0.10	ug/L			07/24/18 15:54	1
Trichlorofluoromethane	ND		1.0	0.45	ug/L			07/24/18 15:54	1
Vinyl chloride	ND		1.0	0.20	ug/L			07/24/18 15:54	1
Xylenes, Total	ND		2.0	0.15	ug/L			07/24/18 15:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*82*		*73 - 120*		*07/24/18 15:54*	*1*
Dibromofluoromethane (Surr)	*76*		*69 - 124*		*07/24/18 15:54*	*1*
4-Bromofluorobenzene (Surr)	*79*		*69 - 120*		*07/24/18 15:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*74*		*61 - 138*		*07/24/18 15:54*	*1*

Lab Sample ID: LCS 240-337725/4
Matrix: Water
Analysis Batch: 337725

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	21.9		ug/L		110	64 - 147
1,1,2,2-Tetrachloroethane	20.0	17.3		ug/L		87	58 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	23.4		ug/L		117	65 - 144
1,1,2-Trichloroethane	20.0	20.4		ug/L		102	76 - 121
1,1-Dichloroethane	20.0	18.0		ug/L		90	74 - 120
1,1-Dichloroethene	20.0	22.1		ug/L		111	65 - 127
1,2,4-Trichlorobenzene	20.0	17.2		ug/L		86	34 - 141
1,2-Dibromo-3-Chloropropane	20.0	18.0		ug/L		90	50 - 130
Ethylene Dibromide	20.0	19.3		ug/L		97	80 - 120
1,2-Dichlorobenzene	20.0	19.9		ug/L		100	80 - 120
1,2-Dichloroethane	20.0	21.0		ug/L		105	68 - 133
1,2-Dichloropropane	20.0	19.2		ug/L		96	78 - 127
1,3-Dichlorobenzene	20.0	20.0		ug/L		100	80 - 120
1,4-Dichlorobenzene	20.0	20.3		ug/L		101	80 - 120
2-Butanone (MEK)	40.0	38.6		ug/L		97	43 - 149
2-Hexanone	40.0	36.8		ug/L		92	28 - 169
4-Methyl-2-pentanone (MIBK)	40.0	36.6		ug/L		91	53 - 144
Acetone	40.0	45.2		ug/L		113	35 - 131
Benzene	20.0	19.7		ug/L		99	79 - 120
Dichlorobromomethane	20.0	18.5		ug/L		92	79 - 125
Bromoform	20.0	15.8		ug/L		79	55 - 145
Bromomethane	20.0	20.4		ug/L		102	17 - 158
Carbon disulfide	20.0	20.5		ug/L		102	49 - 141
Carbon tetrachloride	20.0	20.0		ug/L		100	55 - 171
Chlorobenzene	20.0	20.6		ug/L		103	80 - 120
Chloroethane	20.0	19.7		ug/L		98	10 - 149
Chloroform	20.0	20.7		ug/L		103	80 - 120
Chloromethane	20.0	20.3		ug/L		102	59 - 124
cis-1,2-Dichloroethene	20.0	20.8		ug/L		104	77 - 120
cis-1,3-Dichloropropene	20.0	19.0		ug/L		95	75 - 120
Cyclohexane	20.0	18.9		ug/L		94	66 - 135
Chlorodibromomethane	20.0	20.3		ug/L		101	64 - 129
Dichlorodifluoromethane	20.0	16.6		ug/L		83	42 - 141
Ethylbenzene	20.0	19.5		ug/L		97	80 - 120
Isopropylbenzene	20.0	21.1		ug/L		106	80 - 128
Methyl acetate	40.0	40.3		ug/L		101	63 - 137
Methyl tert-butyl ether	20.0	19.4		ug/L		97	73 - 120
Methylcyclohexane	20.0	15.3		ug/L		77	63 - 141
Methylene Chloride	20.0	20.6		ug/L		103	64 - 140
Styrene	20.0	21.4		ug/L		107	80 - 121
Tetrachloroethene	20.0	20.0		ug/L		100	80 - 122
Toluene	20.0	20.6		ug/L		103	78 - 120
trans-1,2-Dichloroethene	20.0	21.5		ug/L		108	74 - 124

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

Lab Sample ID: LCS 240-337725/4
Matrix: Water
Analysis Batch: 337725

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
trans-1,3-Dichloropropene	20.0	17.2		ug/L		86	67 - 120
Trichloroethene	20.0	21.0		ug/L		105	76 - 124
Trichlorofluoromethane	20.0	25.5		ug/L		127	27 - 176
Vinyl chloride	20.0	22.3		ug/L		111	65 - 124
Xylenes, Total	40.0	40.5		ug/L		101	80 - 120
m-Xylene & p-Xylene	20.0	20.0		ug/L		100	80 - 120
o-Xylene	20.0	20.5		ug/L		103	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*92*		*73 - 120*
Dibromofluoromethane (Surr)	*89*		*69 - 124*
4-Bromofluorobenzene (Surr)	*91*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*79*		*61 - 138*

Lab Sample ID: 240-98766-1 MS
Matrix: Water
Analysis Batch: 337725

Client Sample ID: B-08M
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		10000	9780		ug/L		98	57 - 156
1,1,2,2-Tetrachloroethane	ND		10000	8050		ug/L		80	51 - 123
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	11500		ug/L		115	58 - 137
1,1,2-Trichloroethane	ND		10000	10200		ug/L		102	68 - 127
1,1-Dichloroethane	ND	F2	10000	9580		ug/L		96	69 - 122
1,1-Dichloroethene	ND		10000	9550		ug/L		95	62 - 127
1,2,4-Trichlorobenzene	190	J	10000	8370		ug/L		82	26 - 138
1,2-Dibromo-3-Chloropropane	ND		10000	7760		ug/L		78	48 - 130
Ethylene Dibromide	ND		10000	9430		ug/L		94	73 - 121
1,2-Dichlorobenzene	ND		10000	9890		ug/L		99	70 - 120
1,2-Dichloroethane	ND		10000	9690		ug/L		97	64 - 138
1,2-Dichloropropane	ND		10000	8860		ug/L		89	72 - 131
1,3-Dichlorobenzene	ND		10000	9680		ug/L		97	71 - 120
1,4-Dichlorobenzene	ND		10000	9950		ug/L		99	72 - 120
2-Butanone (MEK)	ND		20000	18000		ug/L		90	34 - 153
2-Hexanone	ND		20000	17300		ug/L		87	21 - 184
4-Methyl-2-pentanone (MIBK)	ND		20000	17900		ug/L		89	53 - 147
Acetone	ND		20000	19700		ug/L		99	19 - 133
Benzene	ND		10000	9420		ug/L		94	69 - 127
Dichlorobromomethane	ND	F1	10000	7880		ug/L		79	75 - 128
Bromoform	ND		10000	6810		ug/L		68	61 - 135
Bromomethane	ND		10000	10300		ug/L		103	10 - 148
Carbon disulfide	ND		10000	8550		ug/L		86	46 - 143
Carbon tetrachloride	ND		10000	8470		ug/L		85	53 - 175
Chlorobenzene	ND		10000	10200		ug/L		102	76 - 120
Chloroethane	ND		10000	9660		ug/L		97	10 - 141
Chloroform	ND		10000	9460		ug/L		95	74 - 125
Chloromethane	ND		10000	9670		ug/L		97	34 - 127

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

Lab Sample ID: 240-98766-1 MS
Matrix: Water
Analysis Batch: 337725

Client Sample ID: B-08M
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	1000		10000	10700		ug/L		97	69 - 127
cis-1,3-Dichloropropene	ND		10000	8610		ug/L		86	68 - 120
Cyclohexane	ND		10000	10500		ug/L		105	56 - 135
Chlorodibromomethane	ND		10000	8950		ug/L		89	62 - 131
Dichlorodifluoromethane	ND		10000	6810		ug/L		68	45 - 130
Ethylbenzene	ND		10000	9370		ug/L		94	72 - 121
Isopropylbenzene	ND		10000	10300		ug/L		103	70 - 132
Methyl acetate	ND	F2	20000	19500		ug/L		97	52 - 139
Methyl tert-butyl ether	ND		10000	9410		ug/L		94	67 - 125
Methylcyclohexane	ND		10000	8680		ug/L		87	46 - 139
Methylene Chloride	ND	F2	10000	9960		ug/L		100	52 - 137
Styrene	ND		10000	10300		ug/L		103	74 - 125
Tetrachloroethene	ND		10000	9910		ug/L		99	69 - 126
Toluene	ND		10000	9920		ug/L		99	69 - 125
trans-1,2-Dichloroethene	ND		10000	9700		ug/L		97	66 - 131
trans-1,3-Dichloropropene	ND		10000	7860		ug/L		79	59 - 120
Trichloroethene	14000		10000	24800		ug/L		108	68 - 129
Trichlorofluoromethane	ND		10000	11700		ug/L		117	28 - 172
Vinyl chloride	ND		10000	10500		ug/L		105	55 - 123
Xylenes, Total	ND		20000	19000		ug/L		95	71 - 122
m-Xylene & p-Xylene	ND		10000	9150		ug/L		91	70 - 121
o-Xylene	ND		10000	9880		ug/L		99	71 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*89*		*73 - 120*
Dibromofluoromethane (Surr)	*84*		*69 - 124*
4-Bromofluorobenzene (Surr)	*88*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*75*		*61 - 138*

Lab Sample ID: 240-98766-1 MSD
Matrix: Water
Analysis Batch: 337725

Client Sample ID: B-08M
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		10000	9550		ug/L		95	57 - 156	2	13
1,1,2,2-Tetrachloroethane	ND		10000	7560		ug/L		76	51 - 123	6	17
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10000	9900		ug/L		99	58 - 137	15	35
1,1,2-Trichloroethane	ND		10000	9400		ug/L		94	68 - 127	8	11
1,1-Dichloroethane	ND	F2	10000	7780	F2	ug/L		78	69 - 122	21	11
1,1-Dichloroethene	ND		10000	9720		ug/L		97	62 - 127	2	14
1,2,4-Trichlorobenzene	190	J	10000	7830		ug/L		76	26 - 138	7	35
1,2-Dibromo-3-Chloropropane	ND		10000	7360		ug/L		74	48 - 130	5	31
Ethylene Dibromide	ND		10000	8870		ug/L		89	73 - 121	6	12
1,2-Dichlorobenzene	ND		10000	8660		ug/L		87	70 - 120	13	19
1,2-Dichloroethane	ND		10000	8890		ug/L		89	64 - 138	9	11
1,2-Dichloropropane	ND		10000	8410		ug/L		84	72 - 131	5	12
1,3-Dichlorobenzene	ND		10000	8970		ug/L		90	71 - 120	8	18

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

Lab Sample ID: 240-98766-1 MSD
Matrix: Water
Analysis Batch: 337725

Client Sample ID: B-08M
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	ND		10000	9460		ug/L		95	72 - 120	5	17
2-Butanone (MEK)	ND		20000	16800		ug/L		84	34 - 153	7	23
2-Hexanone	ND		20000	16400		ug/L		82	21 - 184	5	12
4-Methyl-2-pentanone (MIBK)	ND		20000	15900		ug/L		80	53 - 147	12	16
Acetone	ND		20000	20900		ug/L		104	19 - 133	6	35
Benzene	ND		10000	8790		ug/L		88	69 - 127	7	10
Dichlorobromomethane	ND	F1	10000	7390	F1	ug/L		74	75 - 128	6	13
Bromoform	ND		10000	6570		ug/L		66	61 - 135	4	13
Bromomethane	ND		10000	9150		ug/L		91	10 - 148	11	35
Carbon disulfide	ND		10000	7870		ug/L		79	46 - 143	8	18
Carbon tetrachloride	ND		10000	8070		ug/L		81	53 - 175	5	17
Chlorobenzene	ND		10000	9370		ug/L		94	76 - 120	8	12
Chloroethane	ND		10000	8640		ug/L		86	10 - 141	11	35
Chloroform	ND		10000	9150		ug/L		92	74 - 125	3	11
Chloromethane	ND		10000	8920		ug/L		89	34 - 127	8	25
cis-1,2-Dichloroethene	1000		10000	9890		ug/L		89	69 - 127	8	11
cis-1,3-Dichloropropene	ND		10000	8000		ug/L		80	68 - 120	7	13
Cyclohexane	ND		10000	8950		ug/L		90	56 - 135	16	35
Chlorodibromomethane	ND		10000	8030		ug/L		80	62 - 131	11	15
Dichlorodifluoromethane	ND		10000	6860		ug/L		69	45 - 130	1	34
Ethylbenzene	ND		10000	9030		ug/L		90	72 - 121	4	15
Isopropylbenzene	ND		10000	9450		ug/L		95	70 - 132	8	16
Methyl acetate	ND	F2	20000	16800	F2	ug/L		84	52 - 139	15	14
Methyl tert-butyl ether	ND		10000	9270		ug/L		93	67 - 125	2	12
Methylcyclohexane	ND		10000	7670		ug/L		77	46 - 139	12	35
Methylene Chloride	ND	F2	10000	7840	F2	ug/L		78	52 - 137	24	12
Styrene	ND		10000	9620		ug/L		96	74 - 125	7	14
Tetrachloroethene	ND		10000	9140		ug/L		91	69 - 126	8	18
Toluene	ND		10000	9030		ug/L		90	69 - 125	9	14
trans-1,2-Dichloroethene	ND		10000	9150		ug/L		92	66 - 131	6	11
trans-1,3-Dichloropropene	ND		10000	6990		ug/L		70	59 - 120	12	14
Trichloroethene	14000		10000	22900		ug/L		88	68 - 129	8	12
Trichlorofluoromethane	ND		10000	10700		ug/L		107	28 - 172	9	26
Vinyl chloride	ND		10000	9880		ug/L		99	55 - 123	6	12
Xylenes, Total	ND		20000	18400		ug/L		92	71 - 122	3	14
m-Xylene & p-Xylene	ND		10000	9120		ug/L		91	70 - 121	0	15
o-Xylene	ND		10000	9280		ug/L		93	71 - 125	6	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*81*		*73 - 120*
Dibromofluoromethane (Surr)	*78*		*69 - 124*
4-Bromofluorobenzene (Surr)	*85*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*71*		*61 - 138*

QC Association Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

GC/MS VOA

Analysis Batch: 337725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-98766-1	B-08M	Total/NA	Water	8260C	
240-98766-2	PW-03	Total/NA	Water	8260C	
240-98766-3	PS-02	Total/NA	Water	8260C	
240-98766-4	PS-01	Total/NA	Water	8260C	
MB 240-337725/7	Method Blank	Total/NA	Water	8260C	
LCS 240-337725/4	Lab Control Sample	Total/NA	Water	8260C	
240-98766-1 MS	B-08M	Total/NA	Water	8260C	
240-98766-1 MSD	B-08M	Total/NA	Water	8260C	

Lab Chronicle

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Client Sample ID: B-08M
Lab Sample ID: 240-98766-1
Date Collected: 07/16/18 13:15
Matrix: Water
Date Received: 07/19/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	337725	07/24/18 20:28	TJL1	TAL CAN

Client Sample ID: PW-03
Lab Sample ID: 240-98766-2
Date Collected: 07/16/18 13:20
Matrix: Water
Date Received: 07/19/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		25	337725	07/24/18 20:52	TJL1	TAL CAN

Client Sample ID: PS-02
Lab Sample ID: 240-98766-3
Date Collected: 07/18/18 07:55
Matrix: Water
Date Received: 07/19/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5000	337725	07/24/18 21:15	TJL1	TAL CAN

Client Sample ID: PS-01
Lab Sample ID: 240-98766-4
Date Collected: 07/18/18 08:10
Matrix: Water
Date Received: 07/19/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		50	337725	07/24/18 21:38	TJL1	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: AECOM
Project/Site: BP Sanborn Pilot Study

TestAmerica Job ID: 240-98766-1

Laboratory: TestAmerica Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10975	03-31-19

TA-Canton 0.8 | CO.8

Chain of Custody Record

267445

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Amy McCormick	Site Contact: J. Galzur	Date:	COC No:
Company Name: AECOM	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 257 W. Genesee St.	Analysis Turnaround Time			Sampler:
City/State/Zip: Buffalo NY 14213	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 716-856-5636	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: BP Sunburn Pilot Study	☐ 1 week			
Site: BP-PU Sunburn	☐ 2 days			Job / SDG No.:
PO# 97842	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260C	Sample Specific Notes:
B-08M	7-16-18	1315	G	W	3			3	
PW-03	7-16-18	1320	G	W	3			3	
PS-02	7-18-18	0755	G	W	3			3	Grab Sample, No purge
PS-01	7-18-18	0810	G	W	3			3	Grab Sample, No purge

240-98766 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
Please Bill to PO# 97842, Task 18.18

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: ____ Corr'd: ____		Therm ID No.: ____
Relinquished by:	Company: AECOM	Date/Time: 7-18-18 1643	Received by:	Company: TA	Date/Time: 07/18/18 1643
Relinquished by:	Company: TAC	Date/Time: 7/19/18 1645	Received by:	Company: TAC	Date/Time: 7/19/18 920
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

7/26/2018

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 48766**
Canton Facility

Client AECOM Site Name _____ Cooler unpacked by: SC

Cooler Received on 7/14/18 Opened on 7/14/18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0** °C) Observed Cooler Temp. 0.8 °C Corrected Cooler Temp. 0.8 °C
   IR GUN #36 (CF **-0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes (No)
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC849161**
13. Were VOAs on the COC? (Yes) No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes (No)
16. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: GB

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-100225-1
Client Project/Site: BP Sanborn
Revision: 1

For:
AECOM
257 West Genesee Street
Suite 400
Buffalo, New York 14202-2657

Attn: George Kisluk

Authorized for release by:
10/10/2018 5:11:04 PM

Amy McCormick, Project Manager II
(330)966-9787
amy.mccormick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 240-100225-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE
REVISED

Client: AECOM

Project: BP Sanborn

Report Number: 240-100225-1

Report has been revised to report additional Volatile Organic Compounds (GC/MS) as instructed by George Kisluk on 09/20/2018.

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 8/22/2018 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples T-002 (240-100225-1), P-2 (240-100225-2), P-3 (240-100225-3), P-4 (240-100225-4) and PW-1 (240-100225-5) were analyzed for Volatile organic compounds (GC/MS) in accordance with EPA Method 624.1. The samples were analyzed on 08/24/2018.

Samples P-2 (240-100225-2)[50X], P-4 (240-100225-4)[40X] and PW-1 (240-100225-5)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

1,2-Dichloroethane was detected in method blank MB 240-342476/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Job ID: 240-100225-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Method Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-100225-1	T-002	Water	08/20/18 12:30	08/22/18 09:20
240-100225-2	P-2	Water	08/20/18 14:00	08/22/18 09:20
240-100225-3	P-3	Water	08/20/18 13:25	08/22/18 09:20
240-100225-4	P-4	Water	08/20/18 13:00	08/22/18 09:20
240-100225-5	PW-1	Water	08/20/18 13:45	08/22/18 09:20

Detection Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: T-002 — Lab Sample ID: 240-100225-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	230		2.5	0.16	ug/L	1		624.1	Total/NA
1,1-Dichloroethane	4.4	J	5.0	0.17	ug/L	1		624.1	Total/NA
1,1-Dichloroethene	0.91	J	5.0	0.19	ug/L	1		624.1	Total/NA
trans-1,2-Dichloroethene	3.6		2.5	0.19	ug/L	1		624.1	Total/NA
1,1,1-Trichloroethane	1.1	J	5.0	0.24	ug/L	1		624.1	Total/NA
Trichloroethene	240		5.0	0.10	ug/L	1		624.1	Total/NA
Tetrachloroethene	3.2	J	5.0	0.15	ug/L	1		624.1	Total/NA
Vinyl chloride	7.1	J	10	0.20	ug/L	1		624.1	Total/NA

Client Sample ID: P-2 — Lab Sample ID: 240-100225-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	310		25	1.6	ug/L	50		624.1	Total/NA
1,1-Dichloroethane	12	J	50	1.7	ug/L	50		624.1	Total/NA
1,1,1-Trichloroethane	72		50	2.4	ug/L	50		624.1	Total/NA
Trichloroethene	1800		50	1.0	ug/L	50		624.1	Total/NA

Client Sample ID: P-3 — Lab Sample ID: 240-100225-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	34		2.5	0.16	ug/L	1		624.1	Total/NA
trans-1,2-Dichloroethene	2.9		2.5	0.19	ug/L	1		624.1	Total/NA
Trichloroethene	2.8	J	5.0	0.10	ug/L	1		624.1	Total/NA
Vinyl chloride	2.1	J	10	0.20	ug/L	1		624.1	Total/NA

Client Sample ID: P-4 — Lab Sample ID: 240-100225-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	420		20	1.3	ug/L	40		624.1	Total/NA
1,1-Dichloroethane	15	J	40	1.4	ug/L	40		624.1	Total/NA
trans-1,2-Dichloroethene	7.3	J	20	1.5	ug/L	40		624.1	Total/NA
1,1,1-Trichloroethane	13	J	40	1.9	ug/L	40		624.1	Total/NA
Trichloroethene	750		40	0.80	ug/L	40		624.1	Total/NA

Client Sample ID: PW-1 — Lab Sample ID: 240-100225-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	240		25	1.6	ug/L	50		624.1	Total/NA
Trichloroethene	1100		50	1.0	ug/L	50		624.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: T-002
Date Collected: 08/20/18 12:30
Date Received: 08/22/18 09:20

Lab Sample ID: 240-100225-1
Matrix: Water

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		5.0	0.13	ug/L			08/24/18 00:45	1
cis-1,2-Dichloroethene	**230**		2.5	0.16	ug/L			08/24/18 00:45	1
1,1-Dichloroethane	**4.4**	**J**	5.0	0.17	ug/L			08/24/18 00:45	1
1,1-Dichloroethene	**0.91**	**J**	5.0	0.19	ug/L			08/24/18 00:45	1
Methylene Chloride	ND		10	2.6	ug/L			08/24/18 00:45	1
trans-1,2-Dichloroethene	**3.6**		2.5	0.19	ug/L			08/24/18 00:45	1
1,1,1-Trichloroethane	**1.1**	**J**	5.0	0.24	ug/L			08/24/18 00:45	1
Trichloroethene	**240**		5.0	0.10	ug/L			08/24/18 00:45	1
Tetrachloroethene	**3.2**	**J**	5.0	0.15	ug/L			08/24/18 00:45	1
Vinyl chloride	**7.1**	**J**	10	0.20	ug/L			08/24/18 00:45	1
Carbon tetrachloride	ND		5.0	0.26	ug/L			08/24/18 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*		*08/24/18 00:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*127*		*61 - 138*		*08/24/18 00:45*	*1*
Toluene-d8 (Surr)	*104*		*73 - 120*		*08/24/18 00:45*	*1*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: P-2
Date Collected: 08/20/18 14:00
Date Received: 08/22/18 09:20

Lab Sample ID: 240-100225-2
Matrix: Water

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		50	1.3	ug/L			08/24/18 19:29	50
cis-1,2-Dichloroethene	**310**		25	1.6	ug/L			08/24/18 19:29	50
1,1-Dichloroethane	**12**	**J**	50	1.7	ug/L			08/24/18 19:29	50
1,1-Dichloroethene	ND		50	1.9	ug/L			08/24/18 19:29	50
Methylene Chloride	ND		100	26	ug/L			08/24/18 19:29	50
trans-1,2-Dichloroethene	ND		25	1.9	ug/L			08/24/18 19:29	50
1,1,1-Trichloroethane	**72**		50	2.4	ug/L			08/24/18 19:29	50
Trichloroethene	**1800**		50	1.0	ug/L			08/24/18 19:29	50
Tetrachloroethene	ND		50	1.5	ug/L			08/24/18 19:29	50
Vinyl chloride	ND		100	2.0	ug/L			08/24/18 19:29	50
Carbon tetrachloride	ND		50	2.6	ug/L			08/24/18 19:29	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*69 - 120*		*08/24/18 19:29*	*50*
1,2-Dichloroethane-d4 (Surr)	*121*		*61 - 138*		*08/24/18 19:29*	*50*
Toluene-d8 (Surr)	*103*		*73 - 120*		*08/24/18 19:29*	*50*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: P-3
Date Collected: 08/20/18 13:25
Date Received: 08/22/18 09:20

Lab Sample ID: 240-100225-3
Matrix: Water

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		5.0	0.13	ug/L			08/24/18 01:29	1
cis-1,2-Dichloroethene	**34**		2.5	0.16	ug/L			08/24/18 01:29	1
1,1-Dichloroethane	ND		5.0	0.17	ug/L			08/24/18 01:29	1
1,1-Dichloroethene	ND		5.0	0.19	ug/L			08/24/18 01:29	1
Methylene Chloride	ND		10	2.6	ug/L			08/24/18 01:29	1
trans-1,2-Dichloroethene	**2.9**		2.5	0.19	ug/L			08/24/18 01:29	1
1,1,1-Trichloroethane	ND		5.0	0.24	ug/L			08/24/18 01:29	1
Trichloroethene	**2.8**	**J**	5.0	0.10	ug/L			08/24/18 01:29	1
Tetrachloroethene	ND		5.0	0.15	ug/L			08/24/18 01:29	1
Vinyl chloride	**2.1**	**J**	10	0.20	ug/L			08/24/18 01:29	1
Carbon tetrachloride	ND		5.0	0.26	ug/L			08/24/18 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*69 - 120*		*08/24/18 01:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*126*		*61 - 138*		*08/24/18 01:29*	*1*
Toluene-d8 (Surr)	*105*		*73 - 120*		*08/24/18 01:29*	*1*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: P-4
Date Collected: 08/20/18 13:00
Date Received: 08/22/18 09:20

Lab Sample ID: 240-100225-4
Matrix: Water

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		40	1.0	ug/L			08/24/18 19:51	40
cis-1,2-Dichloroethene	**420**		20	1.3	ug/L			08/24/18 19:51	40
1,1-Dichloroethane	**15**	**J**	40	1.4	ug/L			08/24/18 19:51	40
1,1-Dichloroethene	ND		40	1.5	ug/L			08/24/18 19:51	40
Methylene Chloride	ND		80	21	ug/L			08/24/18 19:51	40
trans-1,2-Dichloroethene	**7.3**	**J**	20	1.5	ug/L			08/24/18 19:51	40
1,1,1-Trichloroethane	**13**	**J**	40	1.9	ug/L			08/24/18 19:51	40
Trichloroethene	**750**		40	0.80	ug/L			08/24/18 19:51	40
Tetrachloroethene	ND		40	1.2	ug/L			08/24/18 19:51	40
Vinyl chloride	ND		80	1.6	ug/L			08/24/18 19:51	40
Carbon tetrachloride	ND		40	2.1	ug/L			08/24/18 19:51	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*69 - 120*		*08/24/18 19:51*	*40*
1,2-Dichloroethane-d4 (Surr)	*123*		*61 - 138*		*08/24/18 19:51*	*40*
Toluene-d8 (Surr)	*103*		*73 - 120*		*08/24/18 19:51*	*40*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: PW-1
Date Collected: 08/20/18 13:45
Date Received: 08/22/18 09:20

Lab Sample ID: 240-100225-5
Matrix: Water

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		50	1.3	ug/L			08/24/18 20:13	50
cis-1,2-Dichloroethene	**240**		25	1.6	ug/L			08/24/18 20:13	50
1,1-Dichloroethane	ND		50	1.7	ug/L			08/24/18 20:13	50
1,1-Dichloroethene	ND		50	1.9	ug/L			08/24/18 20:13	50
Methylene Chloride	ND		100	26	ug/L			08/24/18 20:13	50
trans-1,2-Dichloroethene	ND		25	1.9	ug/L			08/24/18 20:13	50
1,1,1-Trichloroethane	ND		50	2.4	ug/L			08/24/18 20:13	50
Trichloroethene	**1100**		50	1.0	ug/L			08/24/18 20:13	50
Tetrachloroethene	ND		50	1.5	ug/L			08/24/18 20:13	50
Vinyl chloride	ND		100	2.0	ug/L			08/24/18 20:13	50
Carbon tetrachloride	ND		50	2.6	ug/L			08/24/18 20:13	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*69 - 120*		*08/24/18 20:13*	*50*
1,2-Dichloroethane-d4 (Surr)	*126*		*61 - 138*		*08/24/18 20:13*	*50*
Toluene-d8 (Surr)	*105*		*73 - 120*		*08/24/18 20:13*	*50*

Surrogate Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

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

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-100225-1	T-002	103	127	104
240-100225-2	P-2	102	121	103
240-100225-3	P-3	105	126	105
240-100225-4	P-4	102	123	103
240-100225-5	PW-1	105	126	105
240-100225-5 MS	PW-1	104	123	103
240-100225-5 MSD	PW-1	107	123	108
LCS 240-342312/4	Lab Control Sample	103	122	104
LCS 240-342476/4	Lab Control Sample	103	119	104
MB 240-342312/6	Method Blank	103	128	105
MB 240-342476/6	Method Blank	103	124	104

Surrogate Legend

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

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-342312/6
Matrix: Water
Analysis Batch: 342312

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0	0.026	ug/L			08/23/18 20:40	1
cis-1,2-Dichloroethene	ND		0.50	0.032	ug/L			08/23/18 20:40	1
1,1-Dichloroethane	ND		1.0	0.034	ug/L			08/23/18 20:40	1
1,1-Dichloroethene	ND		1.0	0.038	ug/L			08/23/18 20:40	1
Methylene Chloride	ND		2.0	0.52	ug/L			08/23/18 20:40	1
trans-1,2-Dichloroethene	ND		0.50	0.038	ug/L			08/23/18 20:40	1
1,1,1-Trichloroethane	ND		1.0	0.048	ug/L			08/23/18 20:40	1
Trichloroethene	ND		1.0	0.020	ug/L			08/23/18 20:40	1
Tetrachloroethene	ND		1.0	0.030	ug/L			08/23/18 20:40	1
Vinyl chloride	ND		2.0	0.040	ug/L			08/23/18 20:40	1
Carbon tetrachloride	ND		1.0	0.052	ug/L			08/23/18 20:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*		*08/23/18 20:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*128*		*61 - 138*		*08/23/18 20:40*	*1*
Toluene-d8 (Surr)	*105*		*73 - 120*		*08/23/18 20:40*	*1*

Lab Sample ID: LCS 240-342312/4
Matrix: Water
Analysis Batch: 342312

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	20.0	20.6		ug/L		103	70 - 135
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	25 - 175
1,1-Dichloroethane	20.0	19.7		ug/L		99	70 - 130
1,2-Dichloroethane	20.0	22.2		ug/L		111	70 - 130
1,1-Dichloroethene	20.0	20.9		ug/L		104	50 - 150
Methylene Chloride	20.0	19.4		ug/L		97	60 - 140
trans-1,2-Dichloroethene	20.0	19.6		ug/L		98	70 - 130
1,1,1-Trichloroethane	20.0	21.9		ug/L		110	70 - 130
Trichloroethene	20.0	20.1		ug/L		100	65 - 135
Tetrachloroethene	20.0	21.2		ug/L		106	70 - 130
Vinyl chloride	20.0	17.8		ug/L		89	5 - 195
Carbon tetrachloride	20.0	22.6		ug/L		113	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*122*		*61 - 138*
Toluene-d8 (Surr)	*104*		*73 - 120*

Lab Sample ID: MB 240-342476/6
Matrix: Water
Analysis Batch: 342476

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0	0.026	ug/L			08/24/18 19:06	1
cis-1,2-Dichloroethene	ND		0.50	0.032	ug/L			08/24/18 19:06	1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-342476/6
Matrix: Water
Analysis Batch: 342476

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		1.0	0.034	ug/L			08/24/18 19:06	1
1,1-Dichloroethene	ND		1.0	0.038	ug/L			08/24/18 19:06	1
Methylene Chloride	ND		2.0	0.52	ug/L			08/24/18 19:06	1
trans-1,2-Dichloroethene	ND		0.50	0.038	ug/L			08/24/18 19:06	1
1,1,1-Trichloroethane	ND		1.0	0.048	ug/L			08/24/18 19:06	1
Trichloroethene	ND		1.0	0.020	ug/L			08/24/18 19:06	1
Tetrachloroethene	ND		1.0	0.030	ug/L			08/24/18 19:06	1
Vinyl chloride	ND		2.0	0.040	ug/L			08/24/18 19:06	1
Carbon tetrachloride	ND		1.0	0.052	ug/L			08/24/18 19:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*		*08/24/18 19:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*124*		*61 - 138*		*08/24/18 19:06*	*1*
Toluene-d8 (Surr)	*104*		*73 - 120*		*08/24/18 19:06*	*1*

Lab Sample ID: LCS 240-342476/4
Matrix: Water
Analysis Batch: 342476

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	20.0	19.9		ug/L		99	70 - 135
cis-1,2-Dichloroethene	20.0	18.6		ug/L		93	25 - 175
1,1-Dichloroethane	20.0	18.8		ug/L		94	70 - 130
1,2-Dichloroethane	20.0	21.5		ug/L		108	70 - 130
1,1-Dichloroethene	20.0	20.0		ug/L		100	50 - 150
Methylene Chloride	20.0	18.3		ug/L		92	60 - 140
trans-1,2-Dichloroethene	20.0	18.9		ug/L		94	70 - 130
1,1,1-Trichloroethane	20.0	21.0		ug/L		105	70 - 130
Trichloroethene	20.0	19.7		ug/L		99	65 - 135
Tetrachloroethene	20.0	20.4		ug/L		102	70 - 130
Vinyl chloride	20.0	16.8		ug/L		84	5 - 195
Carbon tetrachloride	20.0	21.4		ug/L		107	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*119*		*61 - 138*
Toluene-d8 (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-100225-5 MS
Matrix: Water
Analysis Batch: 342476

Client Sample ID: PW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	ND		1000	950		ug/L		95	51 - 138
cis-1,2-Dichloroethene	240		1000	1110		ug/L		87	77 - 120
1,1-Dichloroethane	ND		1000	904		ug/L		90	59 - 155
1,2-Dichloroethane	ND		1000	1030		ug/L		103	49 - 155
1,1-Dichloroethene	ND		1000	956		ug/L		96	0 - 234

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-100225-5 MS
Matrix: Water
Analysis Batch: 342476

Client Sample ID: PW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	ND		1000	893		ug/L		89	0 - 221
trans-1,2-Dichloroethene	ND		1000	898		ug/L		90	54 - 156
1,1,1-Trichloroethane	ND		1000	996		ug/L		100	52 - 162
Trichloroethene	1100		1000	1960		ug/L		85	70 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*123*		*61 - 138*
Toluene-d8 (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-100225-5 MSD
Matrix: Water
Analysis Batch: 342476

Client Sample ID: PW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	ND		1000	953		ug/L		95	51 - 138	0	54
cis-1,2-Dichloroethene	240		1000	1110		ug/L		87	77 - 120	1	35
1,1-Dichloroethane	ND		1000	904		ug/L		90	59 - 155	0	40
1,2-Dichloroethane	ND		1000	1060		ug/L		106	49 - 155	3	49
1,1-Dichloroethene	ND		1000	927		ug/L		93	0 - 234	3	32
Methylene Chloride	ND		1000	898		ug/L		90	0 - 221	1	28
trans-1,2-Dichloroethene	ND		1000	887		ug/L		89	54 - 156	1	45
1,1,1-Trichloroethane	ND		1000	1020		ug/L		102	52 - 162	2	36
Trichloroethene	1100		1000	1990		ug/L		88	70 - 157	2	48

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*123*		*61 - 138*
Toluene-d8 (Surr)	*108*		*73 - 120*

QC Association Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

GC/MS VOA

Analysis Batch: 342312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-100225-1	T-002	Total/NA	Water	624.1	
240-100225-3	P-3	Total/NA	Water	624.1	
MB 240-342312/6	Method Blank	Total/NA	Water	624.1	
LCS 240-342312/4	Lab Control Sample	Total/NA	Water	624.1	

Analysis Batch: 342476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-100225-2	P-2	Total/NA	Water	624.1	
240-100225-4	P-4	Total/NA	Water	624.1	
240-100225-5	PW-1	Total/NA	Water	624.1	
MB 240-342476/6	Method Blank	Total/NA	Water	624.1	
LCS 240-342476/4	Lab Control Sample	Total/NA	Water	624.1	
240-100225-5 MS	PW-1	Total/NA	Water	624.1	
240-100225-5 MSD	PW-1	Total/NA	Water	624.1	

Lab Chronicle

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Client Sample ID: T-002
Lab Sample ID: 240-100225-1
Date Collected: 08/20/18 12:30
Matrix: Water
Date Received: 08/22/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	342312	08/24/18 00:45	TJL1	TAL CAN

Client Sample ID: P-2
Lab Sample ID: 240-100225-2
Date Collected: 08/20/18 14:00
Matrix: Water
Date Received: 08/22/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		50	342476	08/24/18 19:29	TJL1	TAL CAN

Client Sample ID: P-3
Lab Sample ID: 240-100225-3
Date Collected: 08/20/18 13:25
Matrix: Water
Date Received: 08/22/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	342312	08/24/18 01:29	TJL1	TAL CAN

Client Sample ID: P-4
Lab Sample ID: 240-100225-4
Date Collected: 08/20/18 13:00
Matrix: Water
Date Received: 08/22/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		40	342476	08/24/18 19:51	TJL1	TAL CAN

Client Sample ID: PW-1
Lab Sample ID: 240-100225-5
Date Collected: 08/20/18 13:45
Matrix: Water
Date Received: 08/22/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		50	342476	08/24/18 20:13	TJL1	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-100225-1

Laboratory: TestAmerica Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10975	03-31-19

3.0/C3,0

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP Sanborn **Req Due Date (mm/dd/yy):** _____ **Rush TAT:** Yes ____ No X

BP/ARC Facility No: _____ **Lab Work Order Number:** _____

Lab Name:	~~Lancaster Laboratories~~	BP/ARC Facility Address:	2040 Cory Dr.	Consultant/Contractor:	AECOM
Lab Address:	~~2425 New Holland Pike, Lancaster, PA~~	City, State, ZIP Code:	Sanborn, NY 14120	Consultant/Contractor Project No:	
Lab PM:	~~Alison Bainbridge~~	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	~~717-656-2300 x 1815~~	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:		Phone:	716-923-1300
Lab Bottle Order No:		Accounting Mode:	Provision ____ OOC-BU ____ OOC-RM ____	Email EDD To:	[illegible]@[illegible].com
Other Info:		Stage:	Activity:	Invoice To:	BP/ARC ____ Contractor X
BP/ARC EBM:					
EBM Phone:					
EBM Email:					

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix:	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl		Requested Analyses: 624												Report Type & QC Level
	T-002	8/20/2018	1230		x			3				X		X												Standard ____
	P-2	8/20/2018	1400		x			3				X		X												Full Data Package ____
	P-3	8/20/2018	1325		x			3				X		X												
	P-4	8/20/2018	1300		x			3				X		X												
	PW-1	8/20/2018	1345		x			3				X		X												

240-100225 Chain of Custody

Comments
Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Profect Number: 60481767

Task Number: 18.35

Sampler's Name:	Sean Connelly	**Relinquished By / Affiliation**	**Date**	**Time**	**Accepted By / Affiliation**	**Date**	**Time**
Sampler's Company:	AECOM	Sean Connelly	8/20/2018	1615	[illegible] Likolb	8/20/18	1615
Shipment Method:	Ship Date:	[illegible]	8/21/18	1640	[illegible]	8/22/18	930
Shipment Tracking No:							

Special Instructions: #1 ICE

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) / No | Temp Blank: Yes / (No) | Cooler Temp on Receipt: 3.8 °F/C | Trip Blank: Yes / (No) | MS/MSD Sample Submitted: Yes / (No)

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 100225**
Canton Facility

Client BP Site Name _____ Cooler unpacked by: SC

Cooler Received on 8/22/18 Opened on 8/22/18

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0** °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.0 °C
   IR GUN #36 (CF **-0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JR

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-102127-1
Client Project/Site: BP Sanborn

For:
AECOM
257 West Genesee Street
Suite 400
Buffalo, New York 14202-2657

Attn: George Kisluk

Authorized for release by:
10/14/2018 11:03:42 PM

Amy McCormick, Project Manager II
(330)966-9787
amy.mccormick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 240-102127-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-102127-1

Receipt
The samples were received on 10/2/2018 12:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

GC/MS VOA
Due to the color of the sample, the pH of sample PS-01 (240-102127-4) could not be taken.

Sample PS-01 (240-102127-4) was diluted due to the abundance of non-target analytes. Elevated reporting limits (RLs) have been provided.

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

Method Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

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

Protocol References:

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-102127-1	B-8M	Water	09/27/18 13:55	10/02/18 12:50
240-102127-2	PS-02	Water	09/28/18 14:40	10/02/18 12:50
240-102127-3	B-18M	Water	09/28/18 15:55	10/02/18 12:50
240-102127-4	PS-01	Water	09/28/18 16:20	10/02/18 12:50
240-102127-5	TB-092818	Water	09/28/18 00:00	10/02/18 12:50

Detection Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: B-8M — Lab Sample ID: 240-102127-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	230		50	8.0	ug/L	50		8260C	Total/NA
Trichloroethene	1500		50	5.0	ug/L	50		8260C	Total/NA

Client Sample ID: PS-02 — Lab Sample ID: 240-102127-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2700		2000	320	ug/L	2000		8260C	Total/NA
Trichloroethene	110000		2000	200	ug/L	2000		8260C	Total/NA

Client Sample ID: B-18M — Lab Sample ID: 240-102127-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	65		1.0	0.16	ug/L	1		8260C	Total/NA
trans-1,2-Dichloroethene	1.2		1.0	0.19	ug/L	1		8260C	Total/NA
Trichloroethene	0.18	J	1.0	0.10	ug/L	1		8260C	Total/NA
Vinyl chloride	29		1.0	0.20	ug/L	1		8260C	Total/NA

Client Sample ID: PS-01 — Lab Sample ID: 240-102127-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.87	J	4.0	0.52	ug/L	4		8260C	Total/NA

Client Sample ID: TB-092818 — Lab Sample ID: 240-102127-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: B-8M
Date Collected: 09/27/18 13:55
Date Received: 10/02/18 12:50

Lab Sample ID: 240-102127-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		50	13	ug/L			10/06/18 19:55	50
Chloroform	ND		50	6.5	ug/L			10/06/18 19:55	50
cis-1,2-Dichloroethene	**230**		50	8.0	ug/L			10/06/18 19:55	50
1,1-Dichloroethane	ND		50	8.5	ug/L			10/06/18 19:55	50
1,1-Dichloroethene	ND		50	9.5	ug/L			10/06/18 19:55	50
Methylene Chloride	ND		250	130	ug/L			10/06/18 19:55	50
Tetrachloroethene	ND		50	7.5	ug/L			10/06/18 19:55	50
trans-1,2-Dichloroethene	ND		50	9.5	ug/L			10/06/18 19:55	50
1,1,1-Trichloroethane	ND		50	12	ug/L			10/06/18 19:55	50
Trichloroethene	**1500**		50	5.0	ug/L			10/06/18 19:55	50
Vinyl chloride	ND		50	10	ug/L			10/06/18 19:55	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*		*10/06/18 19:55*	*50*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*10/06/18 19:55*	*50*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 121*		*10/06/18 19:55*	*50*
Toluene-d8 (Surr)	*104*		*70 - 123*		*10/06/18 19:55*	*50*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: PS-02
Date Collected: 09/28/18 14:40
Date Received: 10/02/18 12:50

Lab Sample ID: 240-102127-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		2000	520	ug/L			10/06/18 20:17	2000
Chloroform	ND		2000	260	ug/L			10/06/18 20:17	2000
cis-1,2-Dichloroethene	**2700**		2000	320	ug/L			10/06/18 20:17	2000
1,1-Dichloroethane	ND		2000	340	ug/L			10/06/18 20:17	2000
1,1-Dichloroethene	ND		2000	380	ug/L			10/06/18 20:17	2000
Methylene Chloride	ND		10000	5200	ug/L			10/06/18 20:17	2000
Tetrachloroethene	ND		2000	300	ug/L			10/06/18 20:17	2000
trans-1,2-Dichloroethene	ND		2000	380	ug/L			10/06/18 20:17	2000
1,1,1-Trichloroethane	ND		2000	480	ug/L			10/06/18 20:17	2000
Trichloroethene	**110000**		2000	200	ug/L			10/06/18 20:17	2000
Vinyl chloride	ND		2000	400	ug/L			10/06/18 20:17	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*59 - 120*		*10/06/18 20:17*	*2000*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*10/06/18 20:17*	*2000*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*		*10/06/18 20:17*	*2000*
Toluene-d8 (Surr)	*104*		*70 - 123*		*10/06/18 20:17*	*2000*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: B-18M
Date Collected: 09/28/18 15:55
Date Received: 10/02/18 12:50

Lab Sample ID: 240-102127-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			10/06/18 20:40	1
Chloroform	ND		1.0	0.13	ug/L			10/06/18 20:40	1
cis-1,2-Dichloroethene	**65**		1.0	0.16	ug/L			10/06/18 20:40	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			10/06/18 20:40	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			10/06/18 20:40	1
Methylene Chloride	ND		5.0	2.6	ug/L			10/06/18 20:40	1
Tetrachloroethene	ND		1.0	0.15	ug/L			10/06/18 20:40	1
trans-1,2-Dichloroethene	**1.2**		1.0	0.19	ug/L			10/06/18 20:40	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			10/06/18 20:40	1
Trichloroethene	**0.18**	**J**	1.0	0.10	ug/L			10/06/18 20:40	1
Vinyl chloride	**29**		1.0	0.20	ug/L			10/06/18 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*59 - 120*		*10/06/18 20:40*	*1*
Dibromofluoromethane (Surr)	*113*		*75 - 128*		*10/06/18 20:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 121*		*10/06/18 20:40*	*1*
Toluene-d8 (Surr)	*106*		*70 - 123*		*10/06/18 20:40*	*1*

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: PS-01
Date Collected: 09/28/18 16:20
Date Received: 10/02/18 12:50

Lab Sample ID: 240-102127-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		4.0	1.0	ug/L			10/06/18 21:02	4
Chloroform	**0.87**	**J**	4.0	0.52	ug/L			10/06/18 21:02	4
cis-1,2-Dichloroethene	ND		4.0	0.64	ug/L			10/06/18 21:02	4
1,1-Dichloroethane	ND		4.0	0.68	ug/L			10/06/18 21:02	4
1,1-Dichloroethene	ND		4.0	0.76	ug/L			10/06/18 21:02	4
Methylene Chloride	ND		20	10	ug/L			10/06/18 21:02	4
Tetrachloroethene	ND		4.0	0.60	ug/L			10/06/18 21:02	4
trans-1,2-Dichloroethene	ND		4.0	0.76	ug/L			10/06/18 21:02	4
1,1,1-Trichloroethane	ND		4.0	0.96	ug/L			10/06/18 21:02	4
Trichloroethene	ND		4.0	0.40	ug/L			10/06/18 21:02	4
Vinyl chloride	ND		4.0	0.80	ug/L			10/06/18 21:02	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*59 - 120*		*10/06/18 21:02*	*4*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*10/06/18 21:02*	*4*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 121*		*10/06/18 21:02*	*4*
Toluene-d8 (Surr)	*100*		*70 - 123*		*10/06/18 21:02*	*4*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: TB-092818
Date Collected: 09/28/18 00:00
Date Received: 10/02/18 12:50

Lab Sample ID: 240-102127-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			10/06/18 21:24	1
Chloroform	ND		1.0	0.13	ug/L			10/06/18 21:24	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			10/06/18 21:24	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			10/06/18 21:24	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			10/06/18 21:24	1
Methylene Chloride	ND		5.0	2.6	ug/L			10/06/18 21:24	1
Tetrachloroethene	ND		1.0	0.15	ug/L			10/06/18 21:24	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			10/06/18 21:24	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			10/06/18 21:24	1
Trichloroethene	ND		1.0	0.10	ug/L			10/06/18 21:24	1
Vinyl chloride	ND		1.0	0.20	ug/L			10/06/18 21:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*76*		*59 - 120*		*10/06/18 21:24*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*10/06/18 21:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*		*10/06/18 21:24*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*10/06/18 21:24*	*1*

Surrogate Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-121)	(70-123)
240-102127-1	B-8M	94	110	112	104
240-102127-2	PS-02	98	108	110	104
240-102127-3	B-18M	97	113	112	106
240-102127-4	PS-01	99	107	111	100
240-102127-5	TB-092818	76	108	110	101
LCS 240-348849/4	Lab Control Sample	100	104	106	104
MB 240-348849/6	Method Blank	94	105	108	101

Surrogate Legend

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

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

Lab Sample ID: MB 240-348849/6
Matrix: Water
Analysis Batch: 348849

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			10/06/18 13:57	1
Chloroform	ND		1.0	0.13	ug/L			10/06/18 13:57	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			10/06/18 13:57	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			10/06/18 13:57	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			10/06/18 13:57	1
Methylene Chloride	ND		5.0	2.6	ug/L			10/06/18 13:57	1
Tetrachloroethene	ND		1.0	0.15	ug/L			10/06/18 13:57	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			10/06/18 13:57	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			10/06/18 13:57	1
Trichloroethene	ND		1.0	0.10	ug/L			10/06/18 13:57	1
Vinyl chloride	ND		1.0	0.20	ug/L			10/06/18 13:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*		*10/06/18 13:57*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*10/06/18 13:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 121*		*10/06/18 13:57*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*10/06/18 13:57*	*1*

Lab Sample ID: LCS 240-348849/4
Matrix: Water
Analysis Batch: 348849

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	20.0	20.7		ug/L		103	63 - 140
Chloroform	20.0	21.8		ug/L		109	79 - 127
cis-1,2-Dichloroethene	20.0	21.5		ug/L		107	76 - 128
1,1-Dichloroethane	20.0	21.4		ug/L		107	75 - 133
1,1-Dichloroethene	20.0	21.7		ug/L		108	65 - 139
Methylene Chloride	20.0	20.2		ug/L		101	70 - 134
Tetrachloroethene	20.0	21.5		ug/L		107	74 - 130
trans-1,2-Dichloroethene	20.0	21.6		ug/L		108	78 - 133
1,1,1-Trichloroethane	20.0	21.3		ug/L		107	69 - 134
Trichloroethene	20.0	20.3		ug/L		101	76 - 125
Vinyl chloride	20.0	19.1		ug/L		95	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*
Dibromofluoromethane (Surr)	*104*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 121*
Toluene-d8 (Surr)	*104*		*70 - 123*

QC Association Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

GC/MS VOA

Analysis Batch: 348849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-102127-1	B-8M	Total/NA	Water	8260C	
240-102127-2	PS-02	Total/NA	Water	8260C	
240-102127-3	B-18M	Total/NA	Water	8260C	
240-102127-4	PS-01	Total/NA	Water	8260C	
240-102127-5	TB-092818	Total/NA	Water	8260C	
MB 240-348849/6	Method Blank	Total/NA	Water	8260C	
LCS 240-348849/4	Lab Control Sample	Total/NA	Water	8260C	

Lab Chronicle

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Client Sample ID: B-8M
Lab Sample ID: 240-102127-1
Date Collected: 09/27/18 13:55
Matrix: Water
Date Received: 10/02/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		50	348849	10/06/18 19:55	TJL1	TAL CAN

Client Sample ID: PS-02
Lab Sample ID: 240-102127-2
Date Collected: 09/28/18 14:40
Matrix: Water
Date Received: 10/02/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2000	348849	10/06/18 20:17	TJL1	TAL CAN

Client Sample ID: B-18M
Lab Sample ID: 240-102127-3
Date Collected: 09/28/18 15:55
Matrix: Water
Date Received: 10/02/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	348849	10/06/18 20:40	TJL1	TAL CAN

Client Sample ID: PS-01
Lab Sample ID: 240-102127-4
Date Collected: 09/28/18 16:20
Matrix: Water
Date Received: 10/02/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		4	348849	10/06/18 21:02	TJL1	TAL CAN

Client Sample ID: TB-092818
Lab Sample ID: 240-102127-5
Date Collected: 09/28/18 00:00
Matrix: Water
Date Received: 10/02/18 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	348849	10/06/18 21:24	TJL1	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-102127-1

Laboratory: TestAmerica Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10975	03-31-19

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP Sanborn **Req Due Date (mm/dd/yy):** _____ **Rush TAT:** Yes ___ No X

BP/ARC Facility No: _____ **Lab Work Order Number:** _____

Lab Name:	Test America, Canton	BP/ARC Facility Address:	2040 Cory Dr.	Consultant/Contractor:	AECOM
Lab Address:	4101 Shuffel St. NW Canton, OH 44720	City, State, ZIP Code:	Sanborn, NY 14120	Consultant/Contractor Project No:	60481767.18.31
Lab PM:	Patrick O'Meara	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	330-497-9396	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:		Phone:	716-923-1300
Lab Bottle Order No:		Accounting Mode: 10	Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To:	James.Kaczor@aecom.com
Other Info:		Stage: 60	Activity:	Invoice To:	BP/ARC ___ Contractor X
BP/ARC EBM:					
EBM Phone:					
EBM Email:					

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Requested Analyses: 624	Comments
	B-8M	9-27-18	1355		X		3				X	X	
	PS-02	9-28-18	1440		X		3				X	X	
	B-18M	9-28-18	1555		X		3				X	X	
	PS-01	9-28-18	1620		X		3				X	X	*permanganate in sample
	TB-092818	9-28-18	—		X		2				X	X	

240-102127 Chain of Custody

Report Type & QC Level: Standard ___ Full Data Package ___

Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: E. Au, S. Connelly	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: AECOM		9/28/18	1730		9-28-18	1730
Shipment Method: Drop Off at TA Buffalo Ship Date:		9/28/18	1740		10/2/18	0930
Shipment Tracking No:						

Special Instructions: Please Bill Sanborn Samples to AECOM PO# PO97842 Line 3 FB Line 6

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP/ARC LaMP COC Rev. 6 01/01/2009

10/14/2018

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 102127**
Canton Facility

Client BP Sunbury Site Name _____ Cooler unpacked by: SV

Cooler Received on 10/2/18 Opened on 10/2/18

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 2.2 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JR

Shipping Label unreadable

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-103813-1
Client Project/Site: BP Sanborn GW

For:
AECOM
257 West Genesee Street
Suite 400
Buffalo, New York 14202-2657

Attn: George Kisluk

Authorized for release by:
11/13/2018 4:50:23 PM

Amy McCormick, Project Manager II
(330)966-9787
amy.mccormick@testamericainc.com

Table of Contents

Definitions/Glossary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.
B	Compound was found in the blank and sample.

Glossary

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

Job ID: 240-103813-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-103813-1

Receipt
The samples were received on 11/2/2018 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

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

Protocol References:

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-103813-1	PS-1	Water	10/30/18 09:40	11/02/18 09:35
240-103813-2	PS-2	Water	10/30/18 08:30	11/02/18 09:35
240-103813-3	B-18M	Water	10/30/18 10:30	11/02/18 09:35
240-103813-4	B-8M	Water	10/30/18 11:20	11/02/18 09:35
240-103813-5	PW-3	Water	10/30/18 12:15	11/02/18 09:35
240-103813-6	TRIP BLANK	Water	10/30/18 09:55	11/02/18 09:35

Detection Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: PS-1 — Lab Sample ID: 240-103813-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.33	J	1.0	0.13	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	3.1		1.0	0.16	ug/L	1		8260C	Total/NA
Trichloroethene	15		1.0	0.10	ug/L	1		8260C	Total/NA

Client Sample ID: PS-2 — Lab Sample ID: 240-103813-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	7400		2000	320	ug/L	2000		8260C	Total/NA
Trichloroethene	160000		2000	200	ug/L	2000		8260C	Total/NA

Client Sample ID: B-18M — Lab Sample ID: 240-103813-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	77		1.0	0.16	ug/L	1		8260C	Total/NA
trans-1,2-Dichloroethene	1.4		1.0	0.19	ug/L	1		8260C	Total/NA
Trichloroethene	0.52	J	1.0	0.10	ug/L	1		8260C	Total/NA
Vinyl chloride	29		1.0	0.20	ug/L	1		8260C	Total/NA

Client Sample ID: B-8M — Lab Sample ID: 240-103813-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1700		25	4.0	ug/L	25		8260C	Total/NA
trans-1,2-Dichloroethene	7.1	J	25	4.8	ug/L	25		8260C	Total/NA
Trichloroethene	3100		100	10	ug/L	100		8260C	Total/NA

Client Sample ID: PW-3 — Lab Sample ID: 240-103813-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1200		25	4.0	ug/L	25		8260C	Total/NA
Tetrachloroethene	5.5	J	25	3.8	ug/L	25		8260C	Total/NA
trans-1,2-Dichloroethene	11	J	25	4.8	ug/L	25		8260C	Total/NA
Trichloroethene	1400		25	2.5	ug/L	25		8260C	Total/NA
Vinyl chloride	27		25	5.0	ug/L	25		8260C	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-103813-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.20	J B	1.0	0.16	ug/L	1		8260C	Total/NA
Trichloroethene	0.23	J B	1.0	0.10	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: PS-1
Date Collected: 10/30/18 09:40
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			11/07/18 21:51	1
Chloroform	**0.33**	**J**	1.0	0.13	ug/L			11/07/18 21:51	1
cis-1,2-Dichloroethene	**3.1**		1.0	0.16	ug/L			11/07/18 21:51	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			11/07/18 21:51	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 21:51	1
Methylene Chloride	ND		5.0	2.6	ug/L			11/07/18 21:51	1
Tetrachloroethene	ND		1.0	0.15	ug/L			11/07/18 21:51	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 21:51	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			11/07/18 21:51	1
Trichloroethene	**15**		1.0	0.10	ug/L			11/07/18 21:51	1
Vinyl chloride	ND		1.0	0.20	ug/L			11/07/18 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*59 - 120*		*11/07/18 21:51*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*11/07/18 21:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*		*11/07/18 21:51*	*1*
Toluene-d8 (Surr)	*104*		*70 - 123*		*11/07/18 21:51*	*1*

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: PS-2
Date Collected: 10/30/18 08:30
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		2000	520	ug/L			11/07/18 22:13	2000
Chloroform	ND		2000	260	ug/L			11/07/18 22:13	2000
cis-1,2-Dichloroethene	**7400**		2000	320	ug/L			11/07/18 22:13	2000
1,1-Dichloroethane	ND		2000	340	ug/L			11/07/18 22:13	2000
1,1-Dichloroethene	ND		2000	380	ug/L			11/07/18 22:13	2000
Methylene Chloride	ND		10000	5200	ug/L			11/07/18 22:13	2000
Tetrachloroethene	ND		2000	300	ug/L			11/07/18 22:13	2000
trans-1,2-Dichloroethene	ND		2000	380	ug/L			11/07/18 22:13	2000
1,1,1-Trichloroethane	ND		2000	480	ug/L			11/07/18 22:13	2000
Trichloroethene	**160000**		2000	200	ug/L			11/07/18 22:13	2000
Vinyl chloride	ND		2000	400	ug/L			11/07/18 22:13	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*59 - 120*		*11/07/18 22:13*	*2000*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*11/07/18 22:13*	*2000*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*11/07/18 22:13*	*2000*
Toluene-d8 (Surr)	*98*		*70 - 123*		*11/07/18 22:13*	*2000*

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: B-18M
Date Collected: 10/30/18 10:30
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			11/07/18 22:35	1
Chloroform	ND		1.0	0.13	ug/L			11/07/18 22:35	1
cis-1,2-Dichloroethene	**77**		1.0	0.16	ug/L			11/07/18 22:35	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			11/07/18 22:35	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 22:35	1
Methylene Chloride	ND		5.0	2.6	ug/L			11/07/18 22:35	1
Tetrachloroethene	ND		1.0	0.15	ug/L			11/07/18 22:35	1
trans-1,2-Dichloroethene	**1.4**		1.0	0.19	ug/L			11/07/18 22:35	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			11/07/18 22:35	1
Trichloroethene	**0.52**	**J**	1.0	0.10	ug/L			11/07/18 22:35	1
Vinyl chloride	**29**		1.0	0.20	ug/L			11/07/18 22:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*59 - 120*		*11/07/18 22:35*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*11/07/18 22:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*11/07/18 22:35*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*11/07/18 22:35*	*1*

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: B-8M
Date Collected: 10/30/18 11:20
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		25	6.5	ug/L			11/07/18 22:58	25
Chloroform	ND		25	3.3	ug/L			11/07/18 22:58	25
cis-1,2-Dichloroethene	**1700**		25	4.0	ug/L			11/07/18 22:58	25
1,1-Dichloroethane	ND		25	4.3	ug/L			11/07/18 22:58	25
1,1-Dichloroethene	ND		25	4.8	ug/L			11/07/18 22:58	25
Methylene Chloride	ND		130	66	ug/L			11/07/18 22:58	25
Tetrachloroethene	ND		25	3.8	ug/L			11/07/18 22:58	25
trans-1,2-Dichloroethene	**7.1**	**J**	25	4.8	ug/L			11/07/18 22:58	25
1,1,1-Trichloroethane	ND		25	6.0	ug/L			11/07/18 22:58	25
Trichloroethene	**3100**		100	10	ug/L			11/08/18 19:26	100
Vinyl chloride	ND		25	5.0	ug/L			11/07/18 22:58	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*59 - 120*		*11/07/18 22:58*	*25*
4-Bromofluorobenzene (Surr)	*99*		*59 - 120*		*11/08/18 19:26*	*100*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*11/07/18 22:58*	*25*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*11/08/18 19:26*	*100*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*11/07/18 22:58*	*25*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*11/08/18 19:26*	*100*
Toluene-d8 (Surr)	*101*		*70 - 123*		*11/07/18 22:58*	*25*
Toluene-d8 (Surr)	*103*		*70 - 123*		*11/08/18 19:26*	*100*

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: PW-3
Date Collected: 10/30/18 12:15
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		25	6.5	ug/L			11/08/18 19:48	25
Chloroform	ND		25	3.3	ug/L			11/08/18 19:48	25
cis-1,2-Dichloroethene	**1200**		25	4.0	ug/L			11/08/18 19:48	25
1,1-Dichloroethane	ND		25	4.3	ug/L			11/08/18 19:48	25
1,1-Dichloroethene	ND		25	4.8	ug/L			11/08/18 19:48	25
Methylene Chloride	ND		130	66	ug/L			11/08/18 19:48	25
Tetrachloroethene	**5.5**	**J**	25	3.8	ug/L			11/08/18 19:48	25
trans-1,2-Dichloroethene	**11**	**J**	25	4.8	ug/L			11/08/18 19:48	25
1,1,1-Trichloroethane	ND		25	6.0	ug/L			11/08/18 19:48	25
Trichloroethene	**1400**		25	2.5	ug/L			11/08/18 19:48	25
Vinyl chloride	**27**		25	5.0	ug/L			11/08/18 19:48	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*		*11/08/18 19:48*	*25*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*11/08/18 19:48*	*25*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*		*11/08/18 19:48*	*25*
Toluene-d8 (Surr)	*101*		*70 - 123*		*11/08/18 19:48*	*25*

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: TRIP BLANK
Date Collected: 10/30/18 09:55
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			11/07/18 23:42	1
Chloroform	ND		1.0	0.13	ug/L			11/07/18 23:42	1
cis-1,2-Dichloroethene	**0.20**	**J B**	1.0	0.16	ug/L			11/07/18 23:42	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			11/07/18 23:42	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 23:42	1
Methylene Chloride	ND		5.0	2.6	ug/L			11/07/18 23:42	1
Tetrachloroethene	ND		1.0	0.15	ug/L			11/07/18 23:42	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 23:42	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			11/07/18 23:42	1
Trichloroethene	**0.23**	**J B**	1.0	0.10	ug/L			11/07/18 23:42	1
Vinyl chloride	ND		1.0	0.20	ug/L			11/07/18 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*59 - 120*		*11/07/18 23:42*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*11/07/18 23:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*11/07/18 23:42*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*11/07/18 23:42*	*1*

Surrogate Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-121)	(70-123)
240-103813-1	PS-1	99	103	102	104
240-103813-2	PS-2	97	100	101	98
240-103813-2 MS	PS-2	101	100	100	102
240-103813-2 MSD	PS-2	100	99	97	100
240-103813-3	B-18M	97	100	99	99
240-103813-4	B-8M	98	101	103	101
240-103813-4	B-8M	99	104	104	103
240-103813-5	PW-3	100	101	102	101
240-103813-5 MS	PW-3	100	99	100	100
240-103813-5 MSD	PW-3	99	97	97	99
240-103813-6	TRIP BLANK	96	102	103	101
LCS 240-354226/4	Lab Control Sample	100	98	98	102
LCS 240-354438/4	Lab Control Sample	103	100	100	100
MB 240-354226/6	Method Blank	98	102	102	99
MB 240-354438/6	Method Blank	95	101	100	101

Surrogate Legend

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

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

Lab Sample ID: MB 240-354226/6
Matrix: Water
Analysis Batch: 354226

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			11/07/18 17:43	1
Chloroform	ND		1.0	0.13	ug/L			11/07/18 17:43	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			11/07/18 17:43	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			11/07/18 17:43	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 17:43	1
Methylene Chloride	ND		5.0	2.6	ug/L			11/07/18 17:43	1
Tetrachloroethene	ND		1.0	0.15	ug/L			11/07/18 17:43	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			11/07/18 17:43	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			11/07/18 17:43	1
Trichloroethene	ND		1.0	0.10	ug/L			11/07/18 17:43	1
Vinyl chloride	ND		1.0	0.20	ug/L			11/07/18 17:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*59 - 120*		*11/07/18 17:43*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*11/07/18 17:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*		*11/07/18 17:43*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*11/07/18 17:43*	*1*

Lab Sample ID: LCS 240-354226/4
Matrix: Water
Analysis Batch: 354226

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	20.0	19.6		ug/L		98	63 - 140
Chloroform	20.0	20.1		ug/L		101	79 - 127
cis-1,2-Dichloroethene	20.0	19.9		ug/L		100	76 - 128
1,1-Dichloroethane	20.0	19.9		ug/L		99	75 - 133
1,1-Dichloroethene	20.0	20.4		ug/L		102	65 - 139
Methylene Chloride	20.0	18.7		ug/L		93	70 - 134
Tetrachloroethene	20.0	21.0		ug/L		105	74 - 130
trans-1,2-Dichloroethene	20.0	19.8		ug/L		99	78 - 133
1,1,1-Trichloroethane	20.0	19.5		ug/L		98	69 - 134
Trichloroethene	20.0	20.5		ug/L		103	76 - 125
Vinyl chloride	20.0	18.2		ug/L		91	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*
Toluene-d8 (Surr)	*102*		*70 - 123*

Lab Sample ID: 240-103813-2 MS
Matrix: Water
Analysis Batch: 354226

Client Sample ID: PS-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	ND		40000	35300		ug/L		88	41 - 143

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

Lab Sample ID: 240-103813-2 MS
Matrix: Water
Analysis Batch: 354226

Client Sample ID: PS-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	ND		40000	37900		ug/L		95	68 - 130
cis-1,2-Dichloroethene	7400		40000	45000		ug/L		94	64 - 130
1,1-Dichloroethane	ND		40000	37500		ug/L		94	63 - 136
1,1-Dichloroethene	ND		40000	37700		ug/L		94	53 - 140
Methylene Chloride	ND		40000	35700		ug/L		89	61 - 130
Tetrachloroethene	ND		40000	37600		ug/L		94	51 - 136
trans-1,2-Dichloroethene	ND		40000	36400		ug/L		91	68 - 133
1,1,1-Trichloroethane	ND		40000	35100		ug/L		88	51 - 138
Trichloroethene	160000		40000	186000	E	ug/L		69	55 - 131
Vinyl chloride	ND		40000	34100		ug/L		85	43 - 154

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*59 - 120*
Dibromofluoromethane (Surr)	*100*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*
Toluene-d8 (Surr)	*102*		*70 - 123*

Lab Sample ID: 240-103813-2 MSD
Matrix: Water
Analysis Batch: 354226

Client Sample ID: PS-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	ND		40000	33900		ug/L		85	41 - 143	4	30
Chloroform	ND		40000	37300		ug/L		93	68 - 130	2	23
cis-1,2-Dichloroethene	7400		40000	44500		ug/L		93	64 - 130	1	21
1,1-Dichloroethane	ND		40000	36400		ug/L		91	63 - 136	3	23
1,1-Dichloroethene	ND		40000	36400		ug/L		91	53 - 140	4	35
Methylene Chloride	ND		40000	34700		ug/L		87	61 - 130	3	29
Tetrachloroethene	ND		40000	36400		ug/L		91	51 - 136	3	23
trans-1,2-Dichloroethene	ND		40000	35400		ug/L		89	68 - 133	3	24
1,1,1-Trichloroethane	ND		40000	34700		ug/L		87	51 - 138	1	27
Trichloroethene	160000		40000	183000	E	ug/L		62	55 - 131	2	23
Vinyl chloride	ND		40000	32700		ug/L		82	43 - 154	4	29

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*
Toluene-d8 (Surr)	*100*		*70 - 123*

Lab Sample ID: MB 240-354438/6
Matrix: Water
Analysis Batch: 354438

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			11/08/18 19:04	1
Chloroform	ND		1.0	0.13	ug/L			11/08/18 19:04	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			11/08/18 19:04	1

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

Lab Sample ID: MB 240-354438/6
Matrix: Water
Analysis Batch: 354438

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		1.0	0.17	ug/L			11/08/18 19:04	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			11/08/18 19:04	1
Methylene Chloride	ND		5.0	2.6	ug/L			11/08/18 19:04	1
Tetrachloroethene	ND		1.0	0.15	ug/L			11/08/18 19:04	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			11/08/18 19:04	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			11/08/18 19:04	1
Trichloroethene	ND		1.0	0.10	ug/L			11/08/18 19:04	1
Vinyl chloride	ND		1.0	0.20	ug/L			11/08/18 19:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*59 - 120*		*11/08/18 19:04*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*11/08/18 19:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*11/08/18 19:04*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*11/08/18 19:04*	*1*

Lab Sample ID: LCS 240-354438/4
Matrix: Water
Analysis Batch: 354438

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	20.0	19.1		ug/L		95	63 - 140
Chloroform	20.0	19.7		ug/L		98	79 - 127
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	76 - 128
1,1-Dichloroethane	20.0	19.0		ug/L		95	75 - 133
1,1-Dichloroethene	20.0	19.3		ug/L		97	65 - 139
Methylene Chloride	20.0	18.5		ug/L		92	70 - 134
Tetrachloroethene	20.0	20.3		ug/L		101	74 - 130
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	78 - 133
1,1,1-Trichloroethane	20.0	19.0		ug/L		95	69 - 134
Trichloroethene	20.0	19.6		ug/L		98	76 - 125
Vinyl chloride	20.0	18.5		ug/L		93	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*
Dibromofluoromethane (Surr)	*100*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*
Toluene-d8 (Surr)	*100*		*70 - 123*

Lab Sample ID: 240-103813-5 MS
Matrix: Water
Analysis Batch: 354438

Client Sample ID: PW-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	ND		500	448		ug/L		90	41 - 143
Chloroform	ND		500	490		ug/L		98	68 - 130
cis-1,2-Dichloroethene	1200		500	1670		ug/L		92	64 - 130
1,1-Dichloroethane	ND		500	489		ug/L		98	63 - 136
1,1-Dichloroethene	ND		500	483		ug/L		97	53 - 140

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

Lab Sample ID: 240-103813-5 MS
Matrix: Water
Analysis Batch: 354438

Client Sample ID: PW-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	ND		500	470		ug/L		94	61 - 130
Tetrachloroethene	5.5	J	500	488		ug/L		96	51 - 136
trans-1,2-Dichloroethene	11	J	500	479		ug/L		93	68 - 133
1,1,1-Trichloroethane	ND		500	461		ug/L		92	51 - 138
Trichloroethene	1400		500	1770		ug/L		74	55 - 131
Vinyl chloride	27		500	493		ug/L		93	43 - 154

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*
Toluene-d8 (Surr)	*100*		*70 - 123*

Lab Sample ID: 240-103813-5 MSD
Matrix: Water
Analysis Batch: 354438

Client Sample ID: PW-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	ND		500	436		ug/L		87	41 - 143	3	30
Chloroform	ND		500	483		ug/L		97	68 - 130	1	23
cis-1,2-Dichloroethene	1200		500	1620		ug/L		83	64 - 130	3	21
1,1-Dichloroethane	ND		500	473		ug/L		95	63 - 136	3	23
1,1-Dichloroethene	ND		500	462		ug/L		92	53 - 140	4	35
Methylene Chloride	ND		500	466		ug/L		93	61 - 130	1	29
Tetrachloroethene	5.5	J	500	474		ug/L		94	51 - 136	3	23
trans-1,2-Dichloroethene	11	J	500	465		ug/L		91	68 - 133	3	24
1,1,1-Trichloroethane	ND		500	447		ug/L		89	51 - 138	3	27
Trichloroethene	1400		500	1700		ug/L		61	55 - 131	4	23
Vinyl chloride	27		500	472		ug/L		89	43 - 154	4	29

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*59 - 120*
Dibromofluoromethane (Surr)	*97*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*
Toluene-d8 (Surr)	*99*		*70 - 123*

QC Association Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

GC/MS VOA

Analysis Batch: 354226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-103813-1	PS-1	Total/NA	Water	8260C	
240-103813-2	PS-2	Total/NA	Water	8260C	
240-103813-3	B-18M	Total/NA	Water	8260C	
240-103813-4	B-8M	Total/NA	Water	8260C	
240-103813-6	TRIP BLANK	Total/NA	Water	8260C	
MB 240-354226/6	Method Blank	Total/NA	Water	8260C	
LCS 240-354226/4	Lab Control Sample	Total/NA	Water	8260C	
240-103813-2 MS	PS-2	Total/NA	Water	8260C	
240-103813-2 MSD	PS-2	Total/NA	Water	8260C	

Analysis Batch: 354438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-103813-4	B-8M	Total/NA	Water	8260C	
240-103813-5	PW-3	Total/NA	Water	8260C	
MB 240-354438/6	Method Blank	Total/NA	Water	8260C	
LCS 240-354438/4	Lab Control Sample	Total/NA	Water	8260C	
240-103813-5 MS	PW-3	Total/NA	Water	8260C	
240-103813-5 MSD	PW-3	Total/NA	Water	8260C	

Lab Chronicle

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Client Sample ID: PS-1
Date Collected: 10/30/18 09:40
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	354226	11/07/18 21:51	TJL1	TAL CAN

Client Sample ID: PS-2
Date Collected: 10/30/18 08:30
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2000	354226	11/07/18 22:13	TJL1	TAL CAN

Client Sample ID: B-18M
Date Collected: 10/30/18 10:30
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	354226	11/07/18 22:35	TJL1	TAL CAN

Client Sample ID: B-8M
Date Collected: 10/30/18 11:20
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		25	354226	11/07/18 22:58	TJL1	TAL CAN
Total/NA	Analysis	8260C		100	354438	11/08/18 19:26	TJL1	TAL CAN

Client Sample ID: PW-3
Date Collected: 10/30/18 12:15
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		25	354438	11/08/18 19:48	TJL1	TAL CAN

Client Sample ID: TRIP BLANK
Date Collected: 10/30/18 09:55
Date Received: 11/02/18 09:35

Lab Sample ID: 240-103813-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	354226	11/07/18 23:42	TJL1	TAL CAN

Laboratory References:
TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: AECOM
Project/Site: BP Sanborn GW

TestAmerica Job ID: 240-103813-1

Laboratory: TestAmerica Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10975	03-31-19

Chain of Custody Record

275125

TestAmer THE LEADER

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Jim Kazcor	Site Contact:	Date:	COC No:
Company Name: Aecom	Tel/Fax: (716) 923-1300	Lab Contact:	Carrier:	____ of ____ COCs
Address: 257 W. Genesee St #400	Analysis Turnaround Time			Sampler:
City/State/Zip: Buffalo NY 14202	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (716) 856-4506	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: BP Sanborn GW	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260C - Project TCL VOCs	Sample Specific Notes:
PS-1	10/30/18	940	G	W	3	N	N	3	
PS-2	10/30/18	830	G	W	3	N	N	3	
B-18M	10/30/18	~~830~~ 1030	G	W	3	N	N	3	
B-8M	10/30/18	1120	G	W	3	N	N	3	
DW-3	10/30/18	1215	G	W	3	N	N	3	
Trip Blank	10/30/18	955		W	2	N	N	2	

240-103813 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: Ship to Test America Canton. Any questions please call Ann Marie Kropovitch @ (716) 923-1137

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.2 Corr'd: ____ Therm ID No.: #4

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sean P. Connelly	Aecom	10/31/18			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
		1400			
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	TAS	10/31/18 1715		TA	10/31/18 1400

TA 11-2-18 935

11/13/2018

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 103813**
Canton Facility

Client AECOM Site Name _____ Cooler unpacked by:

Cooler Received on 11-2-18 Opened on 11-2-18

FedEx: 1st Grd ~~Exp~~ UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box ~~Client Cooler~~ Box Other _____

Packing material used: ~~Bubble~~ Wrap Foam Plastic Bag None Other _____

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 2.7 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	~~Yes~~ No	
-Were the seals on the outside of the cooler(s) signed & dated?	~~Yes~~ No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes ~~No~~	
-Were tamper/custody seals intact and uncompromised?	~~Yes~~ No	NA
3. Shippers' packing slip attached to the cooler(s)?	~~Yes~~ No	
4. Did custody papers accompany the sample(s)?	~~Yes~~ No	
5. Were the custody papers relinquished & signed in the appropriate place?	~~Yes~~ No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes ~~No~~	
7. Did all bottles arrive in good condition (Unbroken)?	~~Yes~~ No	
8. Could all bottle labels be reconciled with the COC?	~~Yes~~ No	
9. Were correct bottle(s) used for the test(s) indicated?	~~Yes~~ No	
10. Sufficient quantity received to perform indicated analyses?	~~Yes~~ No	
11. Are these work share samples?	Yes ~~No~~	
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes No ~~NA~~	pH Strip Lot# **HC849161**
13. Were VOAs on the COC?	~~Yes~~ No	
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes ~~No~~	NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	~~Yes~~ No	
16. Was a LL Hg or Me Hg trip blank present? _____	Yes ~~No~~	

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: POP

On COC Tripblank = 2x40 10/30/18 @955,
Tripblank recd. = 1x40 10/29/18 @1620, will log per COC.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-107569-1
Client Project/Site: BP Sanborn

For:
AECOM
257 West Genesee Street
Suite 400
Buffalo, New York 14202-2657

Attn: George Kisluk

Authorized for release by:
2/6/2019 9:59:29 AM

Amy McCormick, Project Manager II
(330)966-9787
amy.mccormick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 240-107569-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-107569-1

Receipt
The samples were received on 2/1/2019 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC/MS VOA
The continuing calibration verification (CCV) associated with batch 366634 recovered above the upper control limit for Vinyl chloride. Samples SP-02 (240-107569-2), B-08M (240-107569-3), PW-3 (240-107569-5) and TRIP BLANK (240-107569-6) associated with this CCV were non-detect for the affected analyte; therefore, the data have been reported.

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

Method Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

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

Protocol References:

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-107569-1	SP-01	Water	01/29/19 07:45	02/01/19 10:30
240-107569-2	SP-02	Water	01/29/19 09:05	02/01/19 10:30
240-107569-3	B-08M	Water	01/29/19 10:45	02/01/19 10:30
240-107569-4	B-18M	Water	01/29/19 12:45	02/01/19 10:30
240-107569-5	PW-3	Water	01/29/19 14:50	02/01/19 10:30
240-107569-6	TRIP BLANK	Water	01/29/19 00:00	02/01/19 10:30

Detection Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: SP-01 — Lab Sample ID: 240-107569-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	43		2.5	0.40	ug/L	2.5		8260C	Total/NA
Trichloroethene	71		2.5	0.25	ug/L	2.5		8260C	Total/NA

Client Sample ID: SP-02 — Lab Sample ID: 240-107569-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9200	J	10000	1600	ug/L	10000		8260C	Total/NA
Trichloroethene	130000		10000	1000	ug/L	10000		8260C	Total/NA

Client Sample ID: B-08M — Lab Sample ID: 240-107569-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2800		200	32	ug/L	200		8260C	Total/NA
Trichloroethene	4100		200	20	ug/L	200		8260C	Total/NA

Client Sample ID: B-18M — Lab Sample ID: 240-107569-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	59		2.5	0.40	ug/L	2.5		8260C	Total/NA
trans-1,2-Dichloroethene	1.0	J	2.5	0.48	ug/L	2.5		8260C	Total/NA
Trichloroethene	40		2.5	0.25	ug/L	2.5		8260C	Total/NA

Client Sample ID: PW-3 — Lab Sample ID: 240-107569-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1400		100	16	ug/L	100		8260C	Total/NA
Trichloroethene	410		100	10	ug/L	100		8260C	Total/NA
Vinyl chloride	96	J	100	20	ug/L	100		8260C	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-107569-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.21	J	1.0	0.16	ug/L	1		8260C	Total/NA
Trichloroethene	0.25	J	1.0	0.10	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: SP-01
Date Collected: 01/29/19 07:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		2.5	0.65	ug/L			02/05/19 12:17	2.5
Chloroform	ND		2.5	0.33	ug/L			02/05/19 12:17	2.5
cis-1,2-Dichloroethene	**43**		2.5	0.40	ug/L			02/05/19 12:17	2.5
1,1-Dichloroethane	ND		2.5	0.43	ug/L			02/05/19 12:17	2.5
1,1-Dichloroethene	ND		2.5	0.48	ug/L			02/05/19 12:17	2.5
Methylene Chloride	ND		13	6.6	ug/L			02/05/19 12:17	2.5
Tetrachloroethene	ND		2.5	0.38	ug/L			02/05/19 12:17	2.5
trans-1,2-Dichloroethene	ND		2.5	0.48	ug/L			02/05/19 12:17	2.5
1,1,1-Trichloroethane	ND		2.5	0.60	ug/L			02/05/19 12:17	2.5
Trichloroethene	**71**		2.5	0.25	ug/L			02/05/19 12:17	2.5
Vinyl chloride	ND		2.5	0.50	ug/L			02/05/19 12:17	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*02/05/19 12:17*	*2.5*
Dibromofluoromethane (Surr)	*82*		*75 - 128*		*02/05/19 12:17*	*2.5*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 121*		*02/05/19 12:17*	*2.5*
Toluene-d8 (Surr)	*84*		*70 - 123*		*02/05/19 12:17*	*2.5*

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: SP-02
Date Collected: 01/29/19 09:05
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		10000	2600	ug/L			02/04/19 15:36	10000
Chloroform	ND		10000	1300	ug/L			02/04/19 15:36	10000
cis-1,2-Dichloroethene	**9200**	**J**	10000	1600	ug/L			02/04/19 15:36	10000
1,1-Dichloroethane	ND		10000	1700	ug/L			02/04/19 15:36	10000
1,1-Dichloroethene	ND		10000	1900	ug/L			02/04/19 15:36	10000
Methylene Chloride	ND		50000	26000	ug/L			02/04/19 15:36	10000
Tetrachloroethene	ND		10000	1500	ug/L			02/04/19 15:36	10000
trans-1,2-Dichloroethene	ND		10000	1900	ug/L			02/04/19 15:36	10000
1,1,1-Trichloroethane	ND		10000	2400	ug/L			02/04/19 15:36	10000
Trichloroethene	**130000**		10000	1000	ug/L			02/04/19 15:36	10000
Vinyl chloride	ND		10000	2000	ug/L			02/04/19 15:36	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*02/04/19 15:36*	*10000*
Dibromofluoromethane (Surr)	*75*		*75 - 128*		*02/04/19 15:36*	*10000*
1,2-Dichloroethane-d4 (Surr)	*78*		*70 - 121*		*02/04/19 15:36*	*10000*
Toluene-d8 (Surr)	*79*		*70 - 123*		*02/04/19 15:36*	*10000*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: B-08M
Date Collected: 01/29/19 10:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		200	52	ug/L			02/04/19 15:59	200
Chloroform	ND		200	26	ug/L			02/04/19 15:59	200
cis-1,2-Dichloroethene	**2800**		200	32	ug/L			02/04/19 15:59	200
1,1-Dichloroethane	ND		200	34	ug/L			02/04/19 15:59	200
1,1-Dichloroethene	ND		200	38	ug/L			02/04/19 15:59	200
Methylene Chloride	ND		1000	520	ug/L			02/04/19 15:59	200
Tetrachloroethene	ND		200	30	ug/L			02/04/19 15:59	200
trans-1,2-Dichloroethene	ND		200	38	ug/L			02/04/19 15:59	200
1,1,1-Trichloroethane	ND		200	48	ug/L			02/04/19 15:59	200
Trichloroethene	**4100**		200	20	ug/L			02/04/19 15:59	200
Vinyl chloride	ND		200	40	ug/L			02/04/19 15:59	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*02/04/19 15:59*	*200*
Dibromofluoromethane (Surr)	*79*		*75 - 128*		*02/04/19 15:59*	*200*
1,2-Dichloroethane-d4 (Surr)	*81*		*70 - 121*		*02/04/19 15:59*	*200*
Toluene-d8 (Surr)	*83*		*70 - 123*		*02/04/19 15:59*	*200*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: B-18M
Date Collected: 01/29/19 12:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		2.5	0.65	ug/L			02/05/19 12:39	2.5
Chloroform	ND		2.5	0.33	ug/L			02/05/19 12:39	2.5
cis-1,2-Dichloroethene	**59**		2.5	0.40	ug/L			02/05/19 12:39	2.5
1,1-Dichloroethane	ND		2.5	0.43	ug/L			02/05/19 12:39	2.5
1,1-Dichloroethene	ND		2.5	0.48	ug/L			02/05/19 12:39	2.5
Methylene Chloride	ND		13	6.6	ug/L			02/05/19 12:39	2.5
Tetrachloroethene	ND		2.5	0.38	ug/L			02/05/19 12:39	2.5
trans-1,2-Dichloroethene	**1.0**	**J**	2.5	0.48	ug/L			02/05/19 12:39	2.5
1,1,1-Trichloroethane	ND		2.5	0.60	ug/L			02/05/19 12:39	2.5
Trichloroethene	**40**		2.5	0.25	ug/L			02/05/19 12:39	2.5
Vinyl chloride	ND		2.5	0.50	ug/L			02/05/19 12:39	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*		*02/05/19 12:39*	*2.5*
Dibromofluoromethane (Surr)	*79*		*75 - 128*		*02/05/19 12:39*	*2.5*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 121*		*02/05/19 12:39*	*2.5*
Toluene-d8 (Surr)	*86*		*70 - 123*		*02/05/19 12:39*	*2.5*

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: PW-3
Date Collected: 01/29/19 14:50
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		100	26	ug/L			02/04/19 16:42	100
Chloroform	ND		100	13	ug/L			02/04/19 16:42	100
cis-1,2-Dichloroethene	**1400**		100	16	ug/L			02/04/19 16:42	100
1,1-Dichloroethane	ND		100	17	ug/L			02/04/19 16:42	100
1,1-Dichloroethene	ND		100	19	ug/L			02/04/19 16:42	100
Methylene Chloride	ND		500	260	ug/L			02/04/19 16:42	100
Tetrachloroethene	ND		100	15	ug/L			02/04/19 16:42	100
trans-1,2-Dichloroethene	ND		100	19	ug/L			02/04/19 16:42	100
1,1,1-Trichloroethane	ND		100	24	ug/L			02/04/19 16:42	100
Trichloroethene	**410**		100	10	ug/L			02/04/19 16:42	100
Vinyl chloride	**96**	**J**	100	20	ug/L			02/04/19 16:42	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*02/04/19 16:42*	*100*
Dibromofluoromethane (Surr)	*83*		*75 - 128*		*02/04/19 16:42*	*100*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 121*		*02/04/19 16:42*	*100*
Toluene-d8 (Surr)	*86*		*70 - 123*		*02/04/19 16:42*	*100*

Client Sample Results

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: TRIP BLANK
Date Collected: 01/29/19 00:00
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			02/04/19 17:04	1
Chloroform	ND		1.0	0.13	ug/L			02/04/19 17:04	1
cis-1,2-Dichloroethene	**0.21**	**J**	1.0	0.16	ug/L			02/04/19 17:04	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			02/04/19 17:04	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			02/04/19 17:04	1
Methylene Chloride	ND		5.0	2.6	ug/L			02/04/19 17:04	1
Tetrachloroethene	ND		1.0	0.15	ug/L			02/04/19 17:04	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			02/04/19 17:04	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			02/04/19 17:04	1
Trichloroethene	**0.25**	**J**	1.0	0.10	ug/L			02/04/19 17:04	1
Vinyl chloride	ND		1.0	0.20	ug/L			02/04/19 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*02/04/19 17:04*	*1*
Dibromofluoromethane (Surr)	*83*		*75 - 128*		*02/04/19 17:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 121*		*02/04/19 17:04*	*1*
Toluene-d8 (Surr)	*86*		*70 - 123*		*02/04/19 17:04*	*1*

Surrogate Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-121)	(70-123)
240-107569-1	SP-01	83	82	85	84
240-107569-2	SP-02	79	75	78	79
240-107569-3	B-08M	82	79	81	83
240-107569-4	B-18M	85	79	84	86
240-107569-5	PW-3	84	83	83	86
240-107569-6	TRIP BLANK	83	83	84	86
LCS 240-366634/4	Lab Control Sample	91	91	85	90
LCS 240-366776/4	Lab Control Sample	95	91	86	91
LCSD 240-366776/30	Lab Control Sample Dup	86	84	79	85
MB 240-366634/6	Method Blank	86	86	84	87
MB 240-366776/6	Method Blank	85	84	85	86

Surrogate Legend

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

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

Lab Sample ID: MB 240-366634/6
Matrix: Water
Analysis Batch: 366634

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			02/04/19 14:09	1
Chloroform	ND		1.0	0.13	ug/L			02/04/19 14:09	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			02/04/19 14:09	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			02/04/19 14:09	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			02/04/19 14:09	1
Methylene Chloride	ND		5.0	2.6	ug/L			02/04/19 14:09	1
Tetrachloroethene	ND		1.0	0.15	ug/L			02/04/19 14:09	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			02/04/19 14:09	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			02/04/19 14:09	1
Trichloroethene	ND		1.0	0.10	ug/L			02/04/19 14:09	1
Vinyl chloride	ND		1.0	0.20	ug/L			02/04/19 14:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*02/04/19 14:09*	*1*
Dibromofluoromethane (Surr)	*86*		*75 - 128*		*02/04/19 14:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*70 - 121*		*02/04/19 14:09*	*1*
Toluene-d8 (Surr)	*87*		*70 - 123*		*02/04/19 14:09*	*1*

Lab Sample ID: LCS 240-366634/4
Matrix: Water
Analysis Batch: 366634

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	10.0	9.89		ug/L		99	63 - 140
Chloroform	10.0	10.4		ug/L		104	79 - 127
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	76 - 128
1,1-Dichloroethane	10.0	10.7		ug/L		107	75 - 133
1,1-Dichloroethene	10.0	9.50		ug/L		95	65 - 139
Methylene Chloride	10.0	9.46		ug/L		95	70 - 134
Tetrachloroethene	10.0	10.3		ug/L		103	74 - 130
trans-1,2-Dichloroethene	10.0	10.8		ug/L		108	78 - 133
1,1,1-Trichloroethane	10.0	11.3		ug/L		113	69 - 134
Trichloroethene	10.0	10.3		ug/L		103	76 - 125
Vinyl chloride	10.0	10.2		ug/L		102	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*59 - 120*
Dibromofluoromethane (Surr)	*91*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 121*
Toluene-d8 (Surr)	*90*		*70 - 123*

Lab Sample ID: MB 240-366776/6
Matrix: Water
Analysis Batch: 366776

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.26	ug/L			02/05/19 11:25	1

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

Lab Sample ID: MB 240-366776/6
Matrix: Water
Analysis Batch: 366776

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0	0.13	ug/L			02/05/19 11:25	1
cis-1,2-Dichloroethene	ND		1.0	0.16	ug/L			02/05/19 11:25	1
1,1-Dichloroethane	ND		1.0	0.17	ug/L			02/05/19 11:25	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			02/05/19 11:25	1
Methylene Chloride	ND		5.0	2.6	ug/L			02/05/19 11:25	1
Tetrachloroethene	ND		1.0	0.15	ug/L			02/05/19 11:25	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			02/05/19 11:25	1
1,1,1-Trichloroethane	ND		1.0	0.24	ug/L			02/05/19 11:25	1
Trichloroethene	ND		1.0	0.10	ug/L			02/05/19 11:25	1
Vinyl chloride	ND		1.0	0.20	ug/L			02/05/19 11:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*		*02/05/19 11:25*	*1*
Dibromofluoromethane (Surr)	*84*		*75 - 128*		*02/05/19 11:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*85*		*70 - 121*		*02/05/19 11:25*	*1*
Toluene-d8 (Surr)	*86*		*70 - 123*		*02/05/19 11:25*	*1*

Lab Sample ID: LCS 240-366776/4
Matrix: Water
Analysis Batch: 366776

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	10.0	9.80		ug/L		98	63 - 140
Chloroform	10.0	10.8		ug/L		108	79 - 127
cis-1,2-Dichloroethene	10.0	10.7		ug/L		107	76 - 128
1,1-Dichloroethane	10.0	10.7		ug/L		107	75 - 133
1,1-Dichloroethene	10.0	9.60		ug/L		96	65 - 139
Methylene Chloride	10.0	9.13		ug/L		91	70 - 134
Tetrachloroethene	10.0	10.5		ug/L		105	74 - 130
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	78 - 133
1,1,1-Trichloroethane	10.0	10.8		ug/L		108	69 - 134
Trichloroethene	10.0	10.6		ug/L		106	76 - 125
Vinyl chloride	10.0	8.86		ug/L		89	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*59 - 120*
Dibromofluoromethane (Surr)	*91*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 121*
Toluene-d8 (Surr)	*91*		*70 - 123*

Lab Sample ID: LCSD 240-366776/30
Matrix: Water
Analysis Batch: 366776

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	10.0	8.89		ug/L		89	63 - 140	10	35
Chloroform	10.0	9.82		ug/L		98	79 - 127	9	35
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	76 - 128	6	35

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

Lab Sample ID: LCSD 240-366776/30
Matrix: Water
Analysis Batch: 366776

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane			10.0	9.78		ug/L		98	75 - 133	9	35
1,1-Dichloroethene			10.0	8.93		ug/L		89	65 - 139	7	35
Methylene Chloride			10.0	9.45		ug/L		95	70 - 134	3	35
Tetrachloroethene			10.0	9.89		ug/L		99	74 - 130	6	35
trans-1,2-Dichloroethene			10.0	10.3		ug/L		103	78 - 133	5	35
1,1,1-Trichloroethane			10.0	10.2		ug/L		102	69 - 134	6	35
Trichloroethene			10.0	9.79		ug/L		98	76 - 125	8	35
Vinyl chloride			10.0	10.2		ug/L		102	58 - 143	14	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*
Dibromofluoromethane (Surr)	*84*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*79*		*70 - 121*
Toluene-d8 (Surr)	*85*		*70 - 123*

QC Association Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

GC/MS VOA

Analysis Batch: 366634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-107569-2	SP-02	Total/NA	Water	8260C	
240-107569-3	B-08M	Total/NA	Water	8260C	
240-107569-5	PW-3	Total/NA	Water	8260C	
240-107569-6	TRIP BLANK	Total/NA	Water	8260C	
MB 240-366634/6	Method Blank	Total/NA	Water	8260C	
LCS 240-366634/4	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 366776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-107569-1	SP-01	Total/NA	Water	8260C	
240-107569-4	B-18M	Total/NA	Water	8260C	
MB 240-366776/6	Method Blank	Total/NA	Water	8260C	
LCS 240-366776/4	Lab Control Sample	Total/NA	Water	8260C	
LCSD 240-366776/30	Lab Control Sample Dup	Total/NA	Water	8260C	

Lab Chronicle

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Client Sample ID: SP-01
Date Collected: 01/29/19 07:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2.5	366776	02/05/19 12:17	LEE	TAL CAN

Client Sample ID: SP-02
Date Collected: 01/29/19 09:05
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		10000	366634	02/04/19 15:36	LEE	TAL CAN

Client Sample ID: B-08M
Date Collected: 01/29/19 10:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		200	366634	02/04/19 15:59	LEE	TAL CAN

Client Sample ID: B-18M
Date Collected: 01/29/19 12:45
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2.5	366776	02/05/19 12:39	LEE	TAL CAN

Client Sample ID: PW-3
Date Collected: 01/29/19 14:50
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		100	366634	02/04/19 16:42	LEE	TAL CAN

Client Sample ID: TRIP BLANK
Date Collected: 01/29/19 00:00
Date Received: 02/01/19 10:30

Lab Sample ID: 240-107569-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	366634	02/04/19 17:04	LEE	TAL CAN

Laboratory References:
TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: AECOM
Project/Site: BP Sanborn

TestAmerica Job ID: 240-107569-1

Laboratory: TestAmerica Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10975	03-31-19 *

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

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP Sanborn **Req Due Date (mm/dd/yy):** _____ **Rush TAT:** Yes X No ___

BP/ARC Facility No: _____ **Lab Work Order Number:** _____

Lab Name:	TestAmerica Canton	BP/ARC Facility Address:	2040 Cory Dr.	Consultant/Contractor:	AECOM
Lab Address:	4101 Shuffel St NW Canton, OH 44720	City, State, ZIP Code:	Sanborn, NY 14120	Consultant/Contractor Project No:	
Lab PM:	Patrick O'Meara	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	330-497-9396	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:		Phone:	716-923-1300
Lab Bottle Order No:		Accounting Mode:	10 Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To:	
Other Info:		Stage 60	Activity:	Invoice To:	BP/ARC ___ Contractor X

BP/ARC EBM:

EBM Phone:

EBM Email:

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix:	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl			Requested Analyses: 8260c	TSS	BOD	HEM Oil + Grease	Total Metals	Disolved Metals					Report Type & QC Level
	SP-01	1/29/2019	745		x			3				X			X									
	SP-02	1/29/2019	905		x			3				X			X									
	B-08M	1/29/2019	1045		x			3				X			X									
	B-18M	1/29/2019	1245		x			3				X			X									
	PW-3	1/29/2019	1450		x			3				X			X									
	Trip Blank	1/29/2019	-		x			3				X			X									

Standard ___

Full Data Package ___

Comments

Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

240-107569 Chain of Custody

Sampler's Name:	Ernest Thalhamer	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	AECOM	[signature] AECOM	1-29-19	16:20	[signature] H&P	1/29/19	1620
Shipment Method: Drop off at TA Buffalo	Ship Date:	[signature] TA3	1/30/19	1005	[signature] TA	2-1-19	1030
Shipment Tracking No:							

Special Instructions: Please Bill Sanborn Samples to AECOM PO# 97842

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 107589**
Canton Facility

Client AECOM Site Name

Cooler Received on 2-1-19 Opened on 2-1-19 1030

Cooler unpacked by: Ryan Cribley

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #36 (CF **+0**°C) Observed Cooler Temp. 1.9 °C Corrected Cooler Temp. 1.9 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes (No) NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? Yes (No)
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC854592**
13. Were VOAs on the COC? (Yes) No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B825401VB (Yes) No
16. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Sample "B-18m" received only 2 out of 3 samples reported on the CoC.

18. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):