PUMP TEST AND PUMP AND TREAT PILOT STUDY REPORT

FORMER MOBIL SERVICE STATION 99-MST - 979 MAIN STREET (1001 MAIN STREET)

BROWNFIELD CLEANUP PROGRAM SITE NO. C9915260

CITY OF BUFFALO, ERIE COUNTY, NEW YORK

Prepared by:

C&S Engineers, Inc.

141 Elm Street Suite 100

Buffalo, New York 14203

Prepared for:

CONVENTUS PARTNERS, LLC

April 2017

C&S Project No:

N46.001.001

EXECUTIVE SUMMARY

In response to a meeting held on September 28, 2016 with Jaspal Walia and Chad Staniszewski from New York State Department of Environmental Conservation (NYSDEC) regarding the remaining groundwater contamination under the newly constructed Conventus Building, C&S Engineers, Inc. (C&S) conducted a pump test and a Pump-and Treat Pilot Study to evaluate the efficacy of various remedial alternatives. The following summarizes the site conditions and the findings and conclusions of these efforts:

Contamination was present on the Site due to a release of gasoline at a service station formerly located in the southwest portion of the Site. The Site has undergone extensive remediation conducted January 2013 through May 2014, and these efforts included the removal of unsaturated soils which were the source of contamination; light, non-aqueous phase liquids (LNAPL); and contaminated groundwater. However, residual contamination exists in the groundwater present at the Site.

The Site was given a Certificate of Completion (COC) on December 23, 2014. As part of the COC, the remedial party is responsible for implementing engineering controls related to the residual groundwater contamination for no more than five years (December 2014 through December 2019) and has demonstrated to the NYSDEC there has been a bulk reduction in groundwater contamination to asymptotic levels.

Remedial efforts were designed to eliminate all potential exposure routes; vertical and horizontal groundwater recharge; and off-site migration of groundwater contamination. Groundwater contamination appears to be restricted to a thin lens of material that ranges in thickness from 0.5 to three feet. This material consists of sand and gravel while the surrounding soils are fine-grained and significantly less permeable. The lens was observed at depths of 32 to 36 feet below grade. Recent periodic groundwater sampling on the Site has demonstrated significant decreases in contaminant concentrations in most wells at the Site, and, in some cases, concentrations have appeared to have reached non-detect or asymptotic levels. Groundwater levels indicate that the sheet piling has effectively eliminated groundwater flow away from (downgradient of) the Site.

The pump test results demonstrate a hydraulic connection between the wells on-site and the upgradient, off-site wells. One of these off-site wells is significantly more contaminated than the on-site wells. The Pump-and-Treat Pilot Study included the withdrawal of more than 6,000 gallons of groundwater from four on-site wells over the course of 12 weeks. The contaminant concentrations in these wells did not significantly change over that time period, suggesting that this approach is largely ineffective.

As described above, the groundwater at the Conventus Site has been remediated to the extent possible. The removal of more than 67,000 tons of contaminated soils and a half million gallons of contaminated groundwater and LNAPL has resulted in the elimination of the contaminant source and the significant reduction in groundwater concentrations.

For three years, 2014 through 2017, following the source removal, the residual groundwater contamination has been monitored and periodically treated using in-situ methods. Based on the contaminant trends, petroleum concentrations have reached asymptotic levels in most on-site wells. The sheet piling around the Site has worked as designed and has eliminated all off-site migration of residual groundwater contamination. Additionally, potential exposure routes to the residual groundwater contamination have been eliminated due to the removal of the unsaturated source soils, the presence of the concrete slab of the building and the cessation of off-site migration.

Due to the presence of infrastructure associated with NFTA's train tunnel, a gap in the sheet piling was necessary during construction, creating a hydraulic connection between the Site and more highly contaminated off-site groundwater immediately upgradient of the Site. Because of this hydraulic connection, few methods, including installing a pump and treat system, will be effective in the long-term to remediate the remaining contaminant concentrations at the Site. The upgradient, off-site area will act as a continuing source of contaminant concentrations at the Site. This off-site area is currently being remediated to reduce contaminant concentrations.

In an attempt to further reduce contaminant concentrations to asymptotic levels underneath the sub-basement of the Conventus Site, C&S recommends conducting a fourth in-situ treatment using a chemical oxidizer.

1.0 INTRODUCTION

In response to the continuing presence of groundwater contamination in monitoring wells underlying the Conventus building, C&S Engineers, Inc. (C&S) completed various studies to evaluate the potential connection of an upgradient, off-site contaminant source to the Conventus Site and identify if additional mitigation measures are necessary. The Site's design, prior to construction of the building, had included the installation of sheet piling around the entire site perimeter to eliminate any hydrogeologic connection between the Site and upgradient and downgradient areas. The upgradient area is considered a separate site (Spill Site) and is being addressed under the NYSDEC Spills Program (NYSDEC Spill #9500234).

Recent sampling has demonstrated that the downgradient boundary sheet piling is acting as designed and contaminant concentrations in a downgradient, off-site monitoring well have been reduced to non-detect. However, the upgradient (northeast corner) sheet piling did not extend to the planned depth due to the presence of infrastructure associated with the underground rail system. Due to this gap, a pump test was previously conducted and the results of that were submitted to the Jaspal Walia at New York State Department of Environmental Conservation (NYSDEC). The pump test report concluded that a hydrogeologic connection does exist between the upgradient Spill Site and the Site and that the more heavily contaminated soils off-site will act as a continuing source of contamination to the Conventus Site.

Following the submission of the July 2016 Pump Test results on September 28, 2016, Daniel Riker and Cody Martin from C&S met with the Jaspal Walia and Chad Staniszewski from the NYSDEC and discussed the next steps for the Site. The NYSDEC requested the performance of three months of groundwater withdrawal from the most significantly impacted wells on the Conventus Site to help evaluate the efficacy of various remedial alternatives. This report describes the results of the additional pump test and Pump-and-Treat Pilot Study efforts.

2.0 SITE HISTORY

2.1 Groundwater Contamination Background

The Site is located at 1001 Main Street (formerly 979 Main Street) in the City of Buffalo. The Site was remediated by Conventus Partners, LLC, Kaleida Properties and Kaleida Health under the New York State Brownfield Cleanup Program (BCP) in 2013. Contamination was present on the Site due to a release of gasoline at a service station formerly located in the southwest portion of the Site. **Figure 1** shows the location of the Site.

Unsaturated soils at the Site were found to contain significant concentrations of petroleum, and, as such, as acted as a continuing source of groundwater contamination. In addition to impacted soil, groundwater impacts were observed at the Site. The principal groundwater bearing zone beneath the site is located within the coarse sand and gravel layer between 32 and 35 feet below ground surface. This layer is of variable thickness (generally six inches to three feet) but is horizontally discontinuous. The layer is located within the central and northeastern portions of the Site, but does not extend completely to the southern, northwestern or southeastern areas of the Site and is confined by the dense fine sands and silt above and below the groundwater bearing zone. Groundwater beneath the Site flows from the west to the northeast, following the depositional area of the confined groundwater bearing zone. The preferential flow of groundwater within this confined zone serves as the transport media for the petroleum release that occurred on the southwestern portion of the Site.

2.2 Site Remediation

Petroleum from leaking underground storage tanks (LUSTs) formerly located at a Mobil Service Station at the corner of Main and High Streets spilled petroleum products into the subsurface soils and groundwater for over 30 years. The main release area is located in the approximate area of the former LUSTs where contaminated soils were observed from 10 feet below ground surface (BGS) to approximately 20 feet BGS grade. From the main release area, historic migration of petroleum product entered into a semi-confined coarse sand and gravel lens observed approximately 32 to 35 feet BGS. Petroleum product within this lens generally moved horizontally across the Site with groundwater flow.

The area impacted by the petroleum spill included not only the Site but an area upgradient of the Site, along Main Street, and a downgradient area, along Goodrich Street. Prior to the remediation, it was agreed that the on-site and off-site impacts would be managed under separate regulatory regimes. All on-site remediation would be conducted under the BCP while the offsite contamination, would continue to be addressed under the NYSDEC Spills Program (NYSDEC Spill #9500234). In January 3, 2013, as part of the remediation program for the off-site contamination (referred to as the "Spill Site"), the NYSDEC and Kaleida Health entered into a Stipulation Agreement. In that same year, the Conventus Site (Site) was entered into the BCP.

To address the contamination at the Site, a plan was developed under the BCP to remove the source soils and LNAPL, which was expected to result in a decrease in groundwater

contaminant concentrations. An additional goal was to eliminate off-site migration of contamination via groundwater flow.

To initiate the remedial program at the Site, sheet piling was installed to depths of 40 to 50 feet along all site boundaries to provide structural stability of the surrounding lands. The remedial plan called for the removal of all impacted source soils and of the bulk of the contaminated groundwater. This action was also planned to effectively eliminate any hydraulic communication between the water-bearing zone at the Site (located at 32 to 36 feet below grade) and off-site. This action was intended to eliminate any migration of contamination, as well as eliminate any potential for migration of contamination from the Site to areas downgradient. However, due to the presence of infrastructure associated with the underground NFTA train tunnels along Main Street, the sheet piling in the southwestern portion of the Site (adjacent to wells MSMW-3 and -4) did not completely reach the originally intended depth of 50 feet.

Groundwater recharge from the surface was also eliminated due to the construction of the building, which completely covers the Site's surface recharge area.

The remediation of the Site consisted of the removal of 67,458 tons of petroleum contaminated soils and the removal of 537,490 gallons of light, non-aqueous phase liquids (free petroleum product) and contaminated groundwater within the source area. Through these actions all contaminated unsaturated soils were removed, thereby eliminating the on-site source of petroleum contamination. Under the BCP, the Site successfully achieved Track 2 cleanup standards via these removal actions. The NYSDEC awarded the Certificate of Completion (COC) in December 2014.

2.3 Conventus Site Ongoing Monitoring

As a requirement of the COC, a Site Management Plan (SMP) was established for the Site. The SMP required:

- Quarterly groundwater monitoring for two years;
- Annual Site wide inspection; and
- Periodic in-situ chemical treatment to reduce BTEX concentrations to asymptotic levels.

During construction, seven groundwater monitoring wells were installed on the bottom floor of underground parking. These wells were installed to monitor remaining groundwater contamination within the footprint of the Conventus Building. The COC conditionally granted Track 4 Cleanup status to the Site, with the caveat that if groundwater concentrations can be reduced to levels acceptable to the NYSDEC within five years, the Site will be awarded Track 2 status.

A number of factors from the site remedial activities have changed the historic hydraulic conditions of the Site and the characteristics of the original contaminant plume. These factors include:

- Removal of unsaturated soils which were the source of contamination.

- Removal of light, non-aqueous phase liquids (LNAPL) and contaminated groundwater.
- Eliminating recharge from the surface due to the construction of the building, which completely covers the Site's surface recharge area.
- Eliminating downgradient, horizontal groundwater recharge and off-site migration of groundwater contamination.
- Excavation and backfilling of a portion of the deepest contamination with flowable fill.

To evaluate the impacts of the source removal and of subsequent remedial activities, the following monitoring wells were sampled on a periodic basis since the completion of the source removal:

- BCP-MW-1
- BCP-MW-2
- BCP-MW-3
- BCP-MW-4
- BCP-MW-5
- BCP-MW-6
- BCP-MW-7

Figure 2 shows the well locations and Table 1 summarizes the analytical results generated for these wells since 2013. Graphs 2 and 3 also present the summarized results while Graphs 4 through 9 show the results for the individual wells. These results show that the contaminant concentrations have decreased in all most wells (BCP-MW-1, BCP-MW-3, BCP-MW5, BCP-MW6 and BCP-MW7) as a results of the removal of the source soils, generally remained the same in others (BCP-MW2), and increased in BCP-MW4. The increase in contaminant concentrations is not entirely understood at this time, but maybe related to the period between May 2014 and June 2015 when many of the monitoring wells onsite were dry. When normal groundwater conditions returned this may have pushed pockets of contaminated groundwater into the area of BCP-MW-4.

During the post-remediation monitoring period, three in-situ chemical treatments were implemented on the Site from December 2013 through June 2015. These treatments appeared to have little impact on contaminant concentrations. Based on conversations between NYSDEC, C&S and Conventus Partners, LLC, it was determined that additional groundwater treatment options should be evaluated and potentially implemented before the end of the five-year timeframe.

One critical aspect of evaluating the groundwater conditions at the Site was to determine if contaminated groundwater on Main Street would continue to impact remedial activities on the Conventus Site. The reason for this focus is that the presence of the NFTA infrastructure impeded the advancement of sheet piling to the planned terminal depth of 50 feet in the southwestern portion of the Site.

One specific observation to note from the sampling program at the Spill Site along Main Street is the presence of approximately two inches of free petroleum product, or light non-

aqueous phase liquid (LNAPL), in well MSMW-2 in August 2015. This observation followed a period in which water levels in all wells on both the Conventus Site and the Spill Site were much lower than usual, and in some cases completely absent. For example, on March 12, 2015, Spill Site wells MS-MW-03 and MS-MW-04 were dry, and Conventus Site wells BCP-MW-1 and BCP-MW-6 were also dry. The explanation for the unusually low water levels was that a proximal property (the State University at New York at Buffalo's Jacobs School of Medicine and Biomedical Science) was undergoing redevelopment during the latter portion of 2014 and the early portion of 2015, and the construction activities included the removal of very large volumes of water from the construction excavation via pumping. This resulted in a significant depression of the water table throughout the area.

Following the cessation of pumping at the proximal construction site, water levels on the Conventus and Spill Sites increased and eventually returned to normal levels. It is believed that the free petroleum product observed in MSMW-2 was a direct result of groundwater liberating free product as water levels rose through unsaturated soils along Main Street. Another result of the recharge of the groundwater following the cessation of pumping occurred on the Conventus Site, where groundwater contaminant concentrations spiked.

In July 2016, C&S conducted a pump test on BCP-MW-6 and monitored the four wells along Main Street. The results of this pumping test demonstrated that a hydraulic connection exists between the off-site (Main Street) and on-site wells. One of these off-site wells (MSMW-2) is significantly more contaminated than the on-site wells, and concentrations in samples collected from this well are three times higher or more than the on-site concentrations. Because of this hydraulic connection, it appears that no method will be effective in the long-term to remediate the remaining contaminant concentrations along the western wall of the Conventus building. The upgradient, off-site contamination will act as a continuing source of contaminant concentrations at the Site.

2.4 Pump Test

Following receipt of the July 2016 pump test results, the NYSDEC requested the removal of significant volume of groundwater from the most contaminated on-site wells to determine if pump-and-treat is a viable remedial approach. The Department also requested the collection of additional data on the hydraulic communication between the on-site monitoring wells.

To determine the presence or lack of communication within the Site, C&S proposed performing a pump test on one of the monitoring wells in the underground parking lot and measuring water levels in the six other wells during the pumping. Groundwater samples were collected prior to, during, and at the end of the 12-week pumping program.

3.0 METHODS

3.1 Pump Test

Prior to the performance of the pump test, C&S measured the water levels on November 1, 2016 in the off-site and on-site monitoring wells for purposes of creating a comprehensive groundwater flow map. At this time, C&S also installed pressure transducers in the following wells:

- BCP-MW-3
- BCP-MW-4
- BCP-MW-5
- BCP-MW-6

These pressure transducers provided background water levels prior to, during and after the pumping tests at one-minute intervals. The pressure transducers were removed on November 3, 2016. Water levels were also measured in each of the on-site wells in which transducers were not installed periodically during the course of each pumping event.

The pump test was conducted on BCP-MW-4, a 2-inch diameter monitoring well, located approximately within the center of the Site. A Geotech SS Geosub pump was used to evacuate water from the pumping well. The pumped groundwater was transferred into a 55-gallon streel drum with 200 pounds of activated carbon and discharged to the sewer under a Buffalo Sewer Authority permit. The waste water discharge permit is provided in Appendix A.

A step test was performed to determine the optimal pumping rate on November 1, 2016. Following determination of the optimal pumping rate at 0.85 gallons per minute, the rate at which drawdown was at a maximum without dewatering the well, BCP-MW-4 was pumped for an 8-hour period on November 2, 2016 at that rate. The pressure transducers were removed from the wells the day after the cessation of pumping to measure the amount of recovery.

3.2 Pump and Treat Program

Limited groundwater extraction was conducted on the four monitoring wells that contain petroleum concentrations above NYDEC guidance levels. Groundwater was removed from the following wells:

- BCP-MW-3
- BCP-MW-4
- BCP-MW-5
- BCP-MW-6

Groundwater pumping occurred once a week for three months (12 groundwater extraction events from November 3, 2016 to January 20, 2017).

Groundwater was removed using submersible electric pumps. Groundwater was transferred into a 55-gallon steel drum with 200 pounds of activated carbon. C&S obtained a temporary discharge permit from the Buffalo Sewer Authority to discharge treated groundwater into a sanitary sewer sump located in the sub-basement of the building.

The waste water discharge permit is provided in Appendix A.

Prior to commencing the field work, groundwater samples were collected from all monitoring wells on the Conventus Site and analyzed for volatile organic compounds (VOC). Samples were collected from the four wells and from the point of discharge into the sanitary sewer at the mid-point (December 9, 2017) and at the end (January 20, 2017) of the field program.

4.0 RESULTS

4.1 Pump Test

The results of the comprehensive water level measurements and the pumping test indicate that hydraulic connection exists within the Site.

The November 1, 2016 water levels and inferred groundwater contours are shown on **Figure 3**. The groundwater contours suggest the following:

- Groundwater flow is generally limited to a slight gradient from the corner of Main and High Streets toward the Site.
- The groundwater contours in the remainder of the Site suggest a general lack of flow, as gradients are generally towards the center of the Site. This result suggests that the sheet piling has been effective in eliminating hydraulic connection to areas outside the Site, with the exception of the southwestern corner.

The water level measurements in the wells with pressure transducers are shown in **Graph 1 and Graph 1-1**. These measurements indicate the following:

- The water levels in the pumping well (BCP-MW-4) decreased over four feet during pumping on both days;
- Water levels in all wells with transducers showed decreases in elevation during the two pumping episodes:
    - Two of the six on-site wells showed a decrease in elevation – a number of observations can be made about these results:
        - The closest well to the pumping well, BCP-MW-3 (approximately 50 feet away), showed a slight decrease after a few hours of pumping then the recovery phase tracks closely to the recovery phase of BCP-MW-4;
        - BCP-MW-5, which is located approximately 65 feet to the northwest of the pumping well; and
        - BCP-MW-6, which is located adjacent to the wall along Main Street, reacted to the pumping through an approximate 0.2-foot decrease in water levels.

These results indicate that there is a hydraulic connection between these wells. Water levels were also measured by hand in wells BCP-MW-1 and BCP-MW-7 decreased slightly during the course of the pump test, although the response was less than 0.1 foot.

The July 2016 pump test demonstrated a hydraulic connection exists between on-site wells BCP-MW-01 and BCP-MW-06 and off-site wells MS-MW-02, -03, and -04. Coupled with the November 2016 pump test results, which demonstrated a connection between on-site wells BCP-MW-3, -4, -5, and 6, all on-site and off-site wells, with the exception of MS-MW-01, appear to have some level of hydraulic connection.

This suggests that the upgradient, more significantly contaminated off-site wells, due to their hydraulic connection with all on-site wells, will continue to impact the quality of the

groundwater at the Conventus Site. Therefore, the remediation of the on-site wells would likely only have a temporary impact, as the groundwater entering the Site will remain contaminated until the Spill Site is addressed.

4.2 Pump and Treat Program

Groundwater was extracted from four on-site wells on a weekly basis to determine if pump-and-treat methods would have a positive impact of groundwater quality. The table below presents the volumes of groundwater removed during these events.

Table 1: Gallons Removed from Monitoring Wells

DATE	*BCP-MW-3*	*BCP-MW-4*	*BCP-MW-5*	*BCP-MW-6*
11/3/2016	47	132	3	473
11/8/2016	40	213	7	395
11/17/2016	30	202	6	294
11/22/2016	38	133	5	230
12/1/2016	26	182	5	366
12/8/2016	25	179	5	249
12/15/2016	24	108	5	164
12/21/2016	28	136	5	360
1/5/2017	29	176	5	411
1/12/2017	29	213	5	320
1/19/2017	28	148	5	245
1/20/2017	26	115	5	288
Totals	**369**	**1939**	**61**	**3793**

Some observations from the pump and treat program are:

- Total volume of contaminated groundwater removed is 6,161 gallons;
- Groundwater could be easily removed from BCP-MW-4 and BCP-MW-6; Groundwater could be consistently removed from BCP-MW-6 at a rate of 1.5 gallons per minute;
- Groundwater was extracted from BCP-MW-4 at a rate of 0.85 gallons per minute; and
- Wells BCP-MW-3 (eight-inch diameter well) and BCP-MW-5 (two-inch diameter well) produced significantly less groundwater than the other two pumped wells, for example, once BCP-MW-3 was drained of the standing water inside the well over an hour was needed to produce only five gallons of water.

Samples were collected from the four wells prior to (November 1, 2016), at the mid-point (December 9, 2016), and at the end (January 20, 2017) of the Pump-and-Treat Pilot Study period. Samples were also collected at the point of discharge into the sanitary sewer to confirm the efficacy of the treatment via activated carbon. The results are summarized in Table 1. Sample results indicate the following:

- Concentrations in BCP-MW-3 had decreased prior to the initiation of pumping and fluctuated slightly during the Pump-and-Treat Pilot Study period;
- Concentrations in BCP-MW-4 increased during the Pump-and-Treat Pilot Study to levels at are consistent with results of the March and June 2016 sampling;
- Concentrations in BCP-MW-5 and BCP-MW-6 have generally remained at asymptotic levels at 5,000 to 6,600 ug/L and 1,000 to 1,200 ug/L, respectively; and
- Discharge sample results indicate that the activated carbon treatment removed 99% - 100% of VOCs in the groundwater.

Based on these results, the Pump-and-Treat Pilot study did not appear to have a significant effect on the groundwater contaminant concentrations.

5.0 DISCUSSION

The Conventus Site was the subject of a significant remedial program that consisted of the removal of 67,458 tons of petroleum contaminated soils and the removal of 537,490 gallons of water and light, non-aqueous phase liquids (LNAPL) and contaminated groundwater. Sheet piling was also installed to eliminate hydraulic connections from the Site's water-bearing zone with the surrounding properties. Through these efforts the soil contamination was completely remediated at the bulk of the groundwater contamination at the Site was addressed. **Figure 4** shows the concentration and extent of the original contaminant plume. However, the groundwater underneath the Conventus building retains some minor petroleum impacts.

Remedial activities have significantly reduced the size and concentration of the contaminant plume. The original plume extended throughout the Site and contained concentrations between 10,000 to 20,000 ug/L with some locations exceeding 50,000 ug/L. BCP-MW-6 and BCP-MW-3 were installed in a location from the original plume that contained concentrations over 42,000 ug/L and 20,000 ug/L, respectively. These areas have been reduced to 1,212 ug/L and 1,867 ug/L.

Areas deep petroleum contamination (26 to 40 feet below ground surface) were removed and replaced with flowable fill. This effectively eliminated the worst petroleum contamination on-site and replaced it with an impervious mass of flowable fill that eliminates or greatly reduces the hydraulic communication within the Site. What remains of the original contaminate plume is greatly reduced in VOC concentrations and is located in discontinuous pockets that have minimal vertical or horizontal recharge. The residual contaminant plume around BCP-MW-1 and BCP-MW-6 seem to still share a hydraulic connection with each other and with off-site well along Main Street (based on July 2016 pump test). Due to the presence of the flowable fill mass, BCP-MW-4 has a limited connection to BCP-MW-6.

C&S has used the results described above to evaluate various remediation scenarios to address the groundwater contamination remaining at the Site. Most options were eliminated for access or technical reasons, and the three remaining approaches evaluated are described below.

- In Situ or Enhanced In-Situ Bioremediation – Previous work at the Site demonstrated that the groundwater contains very little carbon due to the nature of the surrounding soils. This has resulted in a dearth of microbes available to treat the groundwater in situ. This lack of microbes eliminates the viability of this approach for the Site. Even if this approach was feasible, the presence of groundwater contamination at the immediately upgradient Spill Site indicates that the Site would only become re-contaminated via the flow of contaminated groundwater along Main Street onto the Site.

- Pump and Treat – The results of this pumping test have demonstrated that a hydraulic connection exists in different conditions across the Site. There are two eight-inch diameter pumping wells on-site – BCP-MW-3 and BCP-MW-6. Since

BCP-MW-6 is hydraulically connected to off-site groundwater, if this well was pumped on a permanent basis, this would only serve to draw in the more contaminated groundwater from off-site and result in increases in contaminant concentrations on-site. The slow and incomplete recovery of BCP-MW-3 showed a response to pumping which suggests that it could not effectively dewater the water bearing zone. This would also result in continued recharge from the upgradient contaminated area to the southwest of the Site. This pump test showed that even if BCP-MW-4, a two-inch diameter well, was pumped on a permanent basis it would have minimal effect on the water bearing zone. Critically, the lack of decreases in concentrations of contaminants in the pumped wells during this Pump-an-Treat Pilot Study suggests that long-term pumping may not have a significant impact of groundwater quality at the Site.

- Chemical Oxidant Injections – Three rounds of chemical oxidation injections have already occurred at the Site, as reported to the NYSDEC in periodic reports. The first two injections were not effective in significantly reducing contaminant concentrations in groundwater. Groundwater sampling after the third chemical injection indicates a positive result from this treatment event. One possible reason for the success of third chemical treatment is due to the limited groundwater flow within the Site delaying the spread of chemical oxidant away from the injection point. It appears that over time the chemical treatment may reduce BTEX concentrations.

- Slurry Wall Construction – To eliminate the gap in the sheet piling (and eliminate the hydraulic connection between the off-site and on-site wells), C&S evaluated the potential for constructing a slurry wall. This approach is not feasible because the presence of the Conventus building eliminates the potential to drill within the Site. This area can also not be accessed from Main Street due to the infrastructure associated with NFTA's train tunnel. The placement of the slurry wall could also damage the NFTA infrastructure. Therefore, the construction of a slurry wall in the southwestern portion of the Site is not possible.

6.0 CONCLUSIONS

The following summarizes the site conditions and the findings and conclusions of these efforts:

Contamination was present on the Site due to a release of gasoline at a service station formerly located in the southwest portion of the Site. The Site has undergone extensive remediation, and these efforts included the removal of unsaturated soils which were the source of contamination; light, non-aqueous phase liquids (LNAPL); and contaminated groundwater. However, residual contamination exists in the groundwater present at the Site. Additionally, contaminated groundwater exists immediately upgradient of the Site. LNAPL was also observed immediately upgradient of the Site during a sampling in 2015. This Spill Site is being remediated as a separate site. On January 12, 2017 the NYSDEC approved the work plan for the Spill Site for two rounds of in-situ chemical injections

with subsequent groundwater sampling after each injection. The first chemical treatment was conducted on January 31, 2017. Groundwater sampling is scheduled for mid-April 2017.

The remedial efforts were designed to eliminate all potential exposure routes; vertical and horizontal groundwater recharge; and off-site migration of groundwater contamination. Groundwater contamination appears to be restricted to a thin lens of material that ranges in thickness from 0.5 to three feet. This material consists of sand and gravel while the surrounding soils are fine-grained and significantly less permeable. The lens was observed at depths of 32 to 36 feet below grade. Recent periodic groundwater sampling on the Site has demonstrated significant decreases in contaminant concentrations in most wells at the Site, and, in some cases, concentrations have appeared to have reached non-detect or asymptotic levels. The original contaminant plume has been eliminated and only residual contamination appears to remain. Groundwater levels indicate that the sheet piling has effectively eliminated groundwater flow away from (downgradient of) the Site.

As described above, the groundwater at the Conventus Site has been remediated to the extent possible. The removal of more than 67,000 tons of contaminated soils and a half million gallons of contaminated groundwater and LNAPL has resulted in the elimination of the contaminant source and the significant reduction in groundwater concentrations.

For three years following the source removal, the residual groundwater contamination has been monitored and periodically treated using in-situ methods. Based on the contaminant trends, petroleum concentrations have reached asymptotic levels in most on-site wells. The sheet piling around the Site has worked as designed and has eliminated all off-site migration of residual groundwater contamination. Additionally, potential exposure routes to the residual groundwater contamination have been eliminated due to the removal of the unsaturated source soils, the presence of the concrete slab of the building, and the cessation of off-site migration.

Due to the presence of infrastructure associated with NFTA's train tunnel, a gap in the sheet piling was necessary during construction, creating a hydraulic connection between the Site and more highly contaminated groundwater immediately upgradient of the Site. Because of this hydraulic connection, no method, including installing a pump and treat system, will be effective in the long-term to remediate the remaining contaminant concentrations at the Site. The upgradient, off-site area will act as a continuing source of contaminant concentrations at the Site.

7.0 RECOMMENDATIONS

Based on the positive results from the third chemical treatment, C&S recommends conducting a fourth treatment on the monitoring wells containing BTEX concentrations. The groundwater remediation will be performed using the In-Situ Chemical Oxidation (ISCO) treatment method on the monitoring wells located in the sub-basement of the Conventus Building. The proposed material also creates conditions amiable to aerobic bioremediation following chemical oxidant injection. The onsite treatment areas have exceedances for the BTEX compounds in a ½ - 3-foot zone located approximately 30 feet below ground surface. The goal of the ISCO injections for the on-site areas is to reduce

the groundwater BTEX concentrations until they reach asymptotic levels. C&S will select the chemical mixture needed to treat the Site based on the BTEX concentration of the groundwater monitoring wells.

To address the residual contamination, oxidizing chemicals will be applied into the following wells:

- BCP-MW-3
- BCP-MW-4
- BCP-MW-5
- BCP-MW-6

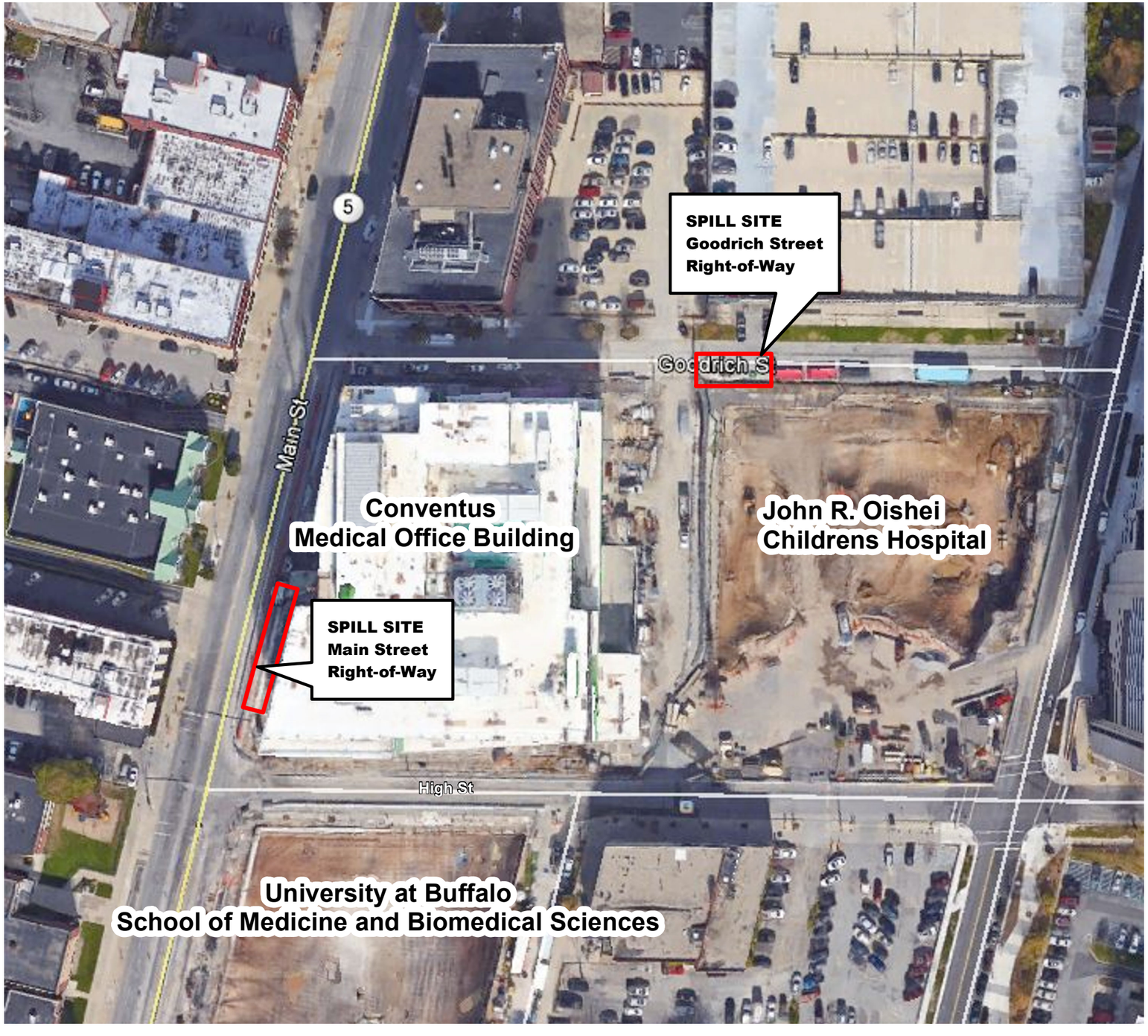
No treatments will be applied to BCP-MW-1, 2, and 7 because no contaminants have been detected in these monitoring wells.

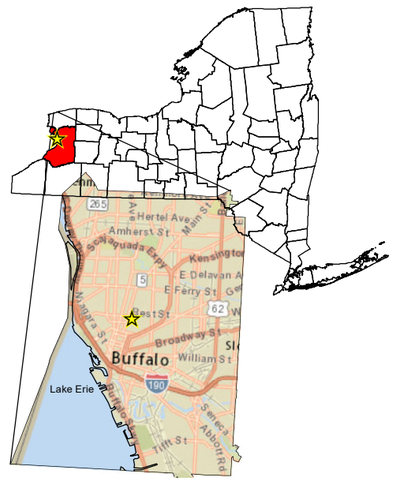
In-situ treatment consists of gravity-feeding a chemical oxidizer mixed with water directly into monitoring wells. The ISCO product is RegenOX manufactured by Regensis. RegenOX is sodium percarbonate formulated to degrade petroleum hydrocarbons through direct oxidation and through the generation of free radical compounds which will also oxidize contaminants. RegenOx produces minimal heat and pressure and is non-corrosive, making it a relatively safe chemical oxidant that is compatible for use in direct contact with underground infrastructure such as utilities, tanks, piping, and communication lines. This was an important characteristic when selecting the ISCO product due to the close proximity of the monitoring wells to the earth retention sheeting for the Conventus Building.

At this time one treatment event will be conducted followed by groundwater sampling 6-8 weeks after treatment. All groundwater samples will be collected for volatile organic compounds (VOC) and analyzed using EPA Method 8260. The results will be compared to prior groundwater sample results. A report will be provided to the NYSDEC that describes the field program, evaluates performance of the selected remedy, and discusses the possible next steps for the Site.

F:\Project\K11-Kaleida Health\K11.002.001 - MOB Brownfield Cleanup Program\Environmental-study\Correspondence\Pump Test\Pump Test Report.docx

FIGURES





C&S COMPANIES®
C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

N

FORMER MOBIL STATION 99-MST
979 MAIN ST (1001 MAIN ST)
BROWNFIELD CLEANUP PROGRAM
BUFFALO, NEW YORK

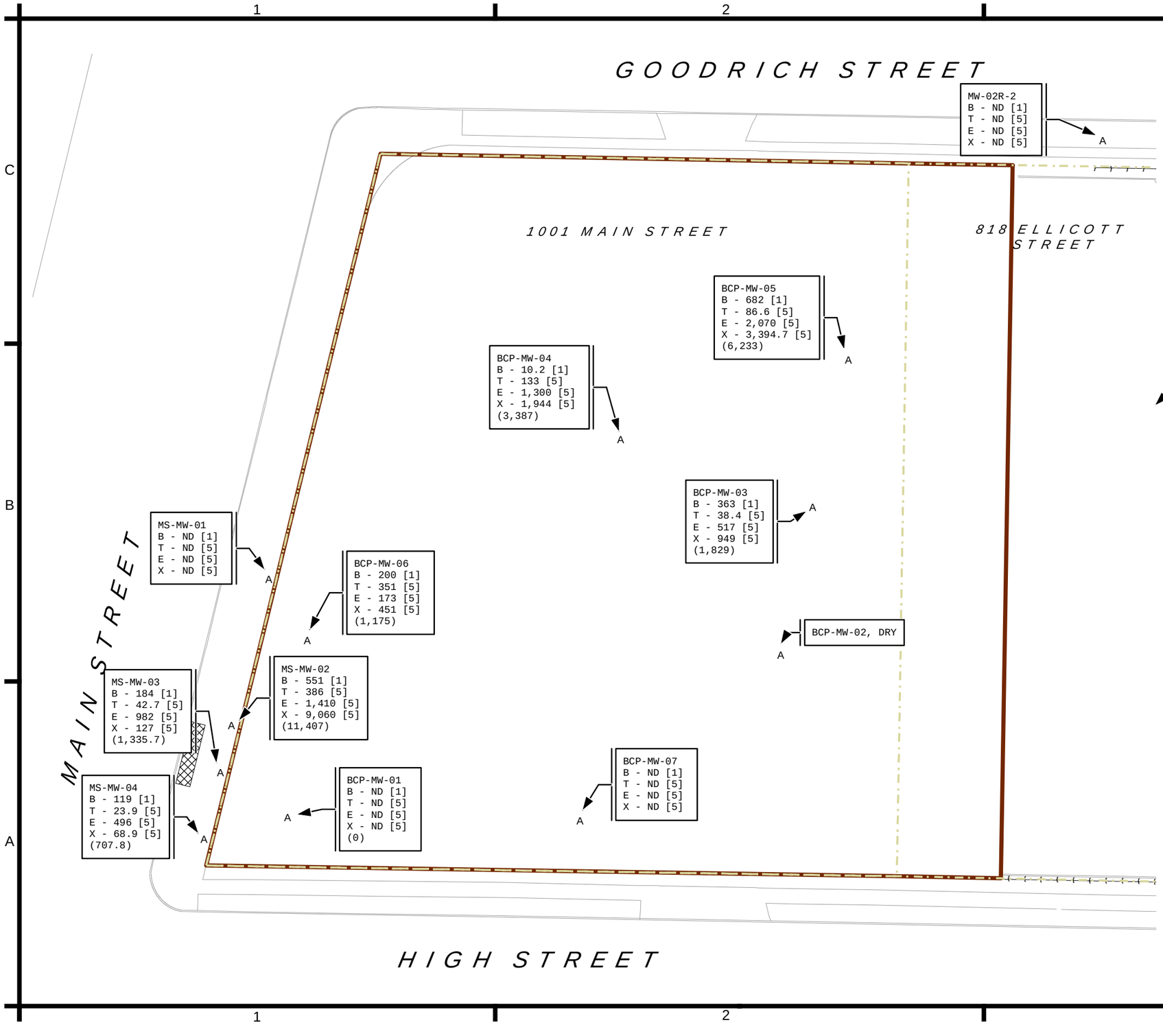
MARK	DATE	DESCRIPTION
REVISIONS		

PROJECT NO:	K11.002.001
DATE:	SEPT. 13, 2016
DRAWN BY:	C. MARTIN
DESIGNED BY:	C. MARTIN
CHECKED BY:	D. RIKER

SITE LOCATION

FIGURE 1

Path: F:\Project\K11-Kaleida Health\K11.002.001 - MOB Brownfield Cleanup Program\Environmental-study\CADD-GIS\GIS\Projects\FIGURE_1_PUMP_TEST_SITE_LOCATION.mxd

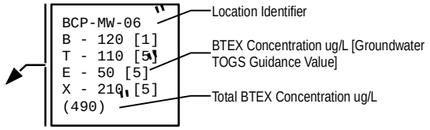


Legend

- Property Lines
- Brownfield Cleanup Program Boundary
- A — Groundwater Monitoring Well Location

Label Note

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes



Main/Goodrich Streets - 12/9/2016 Sampling Event
Conventus BCP Site - 1/20/2017 Sampling Event

Property Note

1) The BCP Project Area ("Site") includes the entire western parcel [1001 Main Street (formerly 979 Main Street)] and extends approximately 40 feet east onto the adjacent eastern parcel (818 Ellicott Street). Total acreage of the BCP Project Site is 1.72 acres.

Notes

1) Coordinate System: NAD 1983 StatePlane NY West FIPS 3103
Projection: Transverse Mercator
Datum: North American 1983
Units: Foot US

2) Survey data from McIntosh & McIntosh P.C. "Topographical Map of Part of Lot-29, TWP.-11, R.-8, Holland Purchase" Job No. 7669-B(2) September 24, 2008.

0 25 50 100 Feet

C&S COMPANIES®
C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

FORMER MOBIL STATION 99-MST
979 MAIN ST (1001 MAIN ST)
BROWNFIELD CLEANUP PROGRAM
BUFFALO, NEW YORK

MARK	DATE	DESCRIPTION

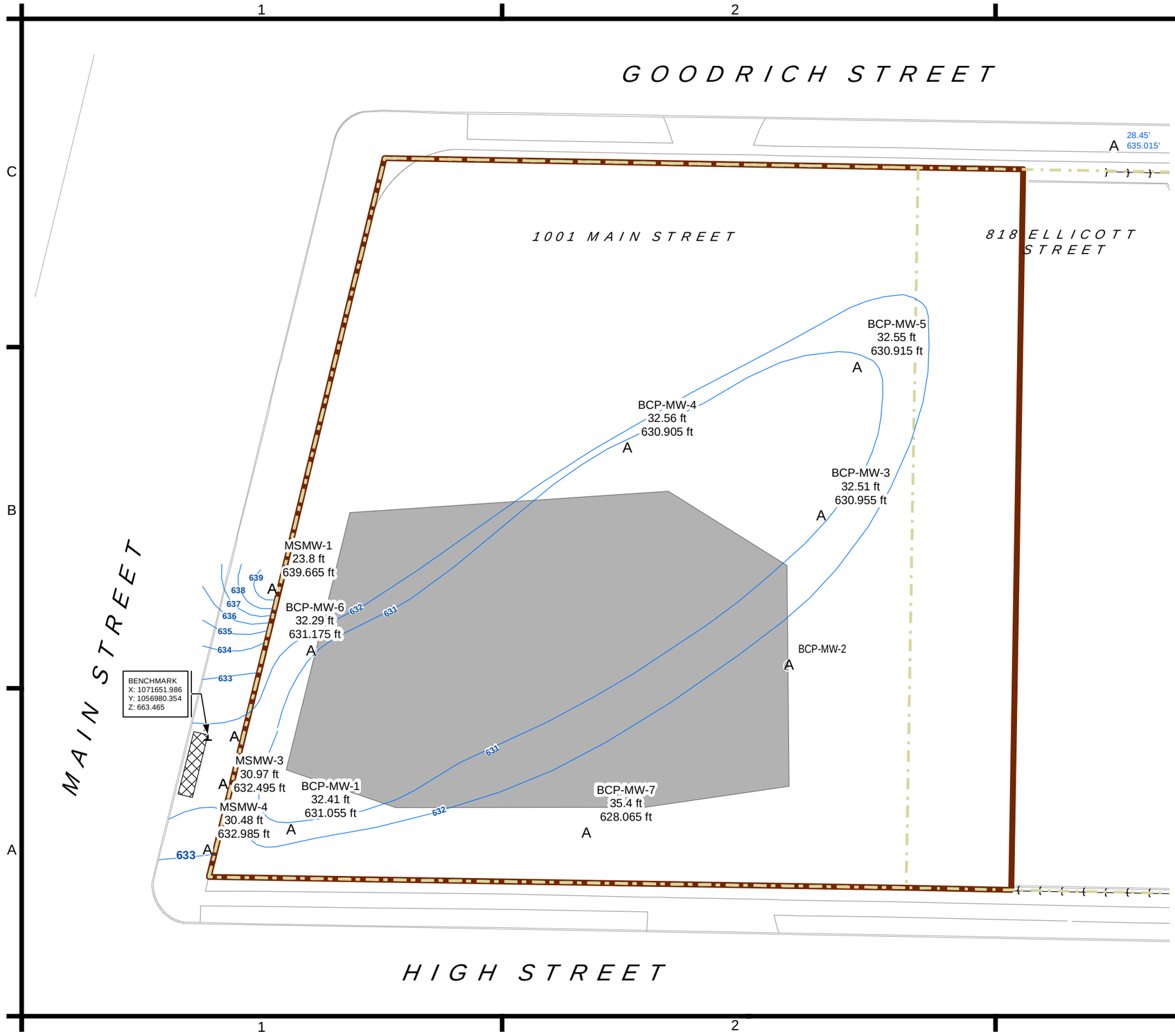
REVISIONS

PROJECT NO:	K11.002.001
DATE:	JUNE 15, 2016
DRAWN BY:	C. MARTIN
DESIGNED BY:	C. MARTIN
CHECKED BY:	D. RIKER

OFFSITE & ONSITE GROUNDWATER WELLS

FIGURE 2

Path: F:\Project\K11-Kaleida Health\K11.002.001 - MOB Brownfield Cleanup Program\Environmental-study\CADD-GIS\GIS\Projects\BCP_GW_WELL_LOCATIONS.mxd



Legend

- Property Lines
- Brownfield Cleanup Program Boundary
- Area of Deep Excavation / Flowable Fill Area
- A — Groundwater Monitoring Well Location

Label Note

32.5' — Depth to Water (feet)
630.965' — Groundwater Elevation below Benchmark (feet)

Property Note

1) The BCP Project Area ("Site") includes the entire western parcel [1001 Main Street (formerly 979 Main Street)] and extends approximately 40 feet east onto the adjacent eastern parcel (818 Ellicott Street). Total acreage of the BCP Project Site is 1.72 acres.

Notes

1) Coordinate System: NAD 1983 StatePlane NY West FIPS 3103
Projection: Transverse Mercator
Datum: North American 1983
Units: Foot US

2) Survey data from McIntosh & McIntosh P.C. "Topographical Map of Part of Lot-29, TWP.-11, R.-8, Holland Purchase" Job No. 7669-B(2) September 24, 2008.

C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

3

FORMER MOBIL STATION 99-MST
979 MAIN ST (1001 MAIN ST)
BROWNFIELD CLEANUP PROGRAM
BUFFALO, NEW YORK

MARK	DATE	DESCRIPTION

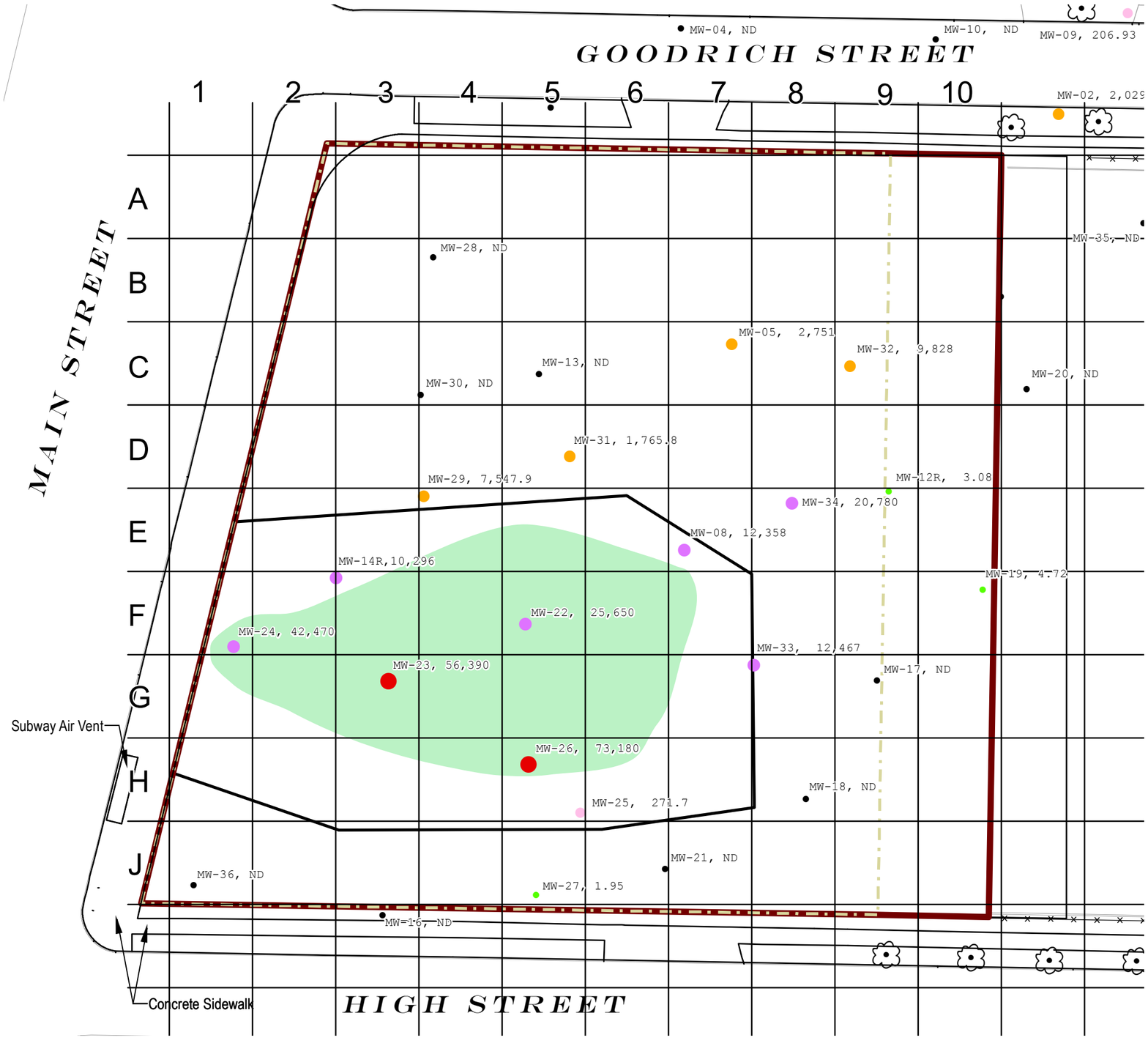
REVISIONS

PROJECT NO:	K11.002.001
DATE:	JUNE 15, 2016
DRAWN BY:	C. MARTIN
DESIGNED BY:	C. MARTIN
CHECKED BY:	D. RIKER

GROUNDWATER CONTOUR

FIGURE 3

Path: F:\Project\K11-Kaleida Health\K11.002.001 - MOB Brownfield Cleanup Program\Environmental-study\CADD-GIS\GIS\Projects\PUMP_TEST_GW_CONTOURS.mxd



Legend

- Parcel Boundary
- Brownfield Cleanup Program Boundary
- Area of Deep Excavation to -40 ft (below former ground surface)

Total BTEX Concentration (ug/L) February 2012

- Not Detected
- <10
- 10 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 50,000
- >50,000

Location Identifier — Concentration ug/L

MW-24, 42,470

ND = Not Detected

Notes

1) Elevations from New York State Erie County LiDAR Dataset, 2005, NAD 88.

2) Coordinate System: NAD 1983 StatePlane NY West FIPS 3103
Projection: Transverse Mercator
Datum: North American 1983
Units: Foot US

3) Survey data from McIntosh & McIntosh P.C. "Topographical Map of Part of Lot-29, TWP.-11, R.-8, Holland Purchase" Job No. 7669-B(2) September 24, 2008.

0 20 40 80 Feet

C&S COMPANIES®
C&S Engineers, Inc.
90 Broadway
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

N

CONVENTUS
1001 MAIN STREET
BROWNFIELD CLEANUP PROGRAM
BUFFALO, NEW YORK

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:		K11.002.001
DATE:		JANUARY 24, 2014
DRAWN BY:		C. MARTIN
DESIGNED BY:		C. MARTIN
CHECKED BY:		M. COLMERAUER

HISTORIC GROUNDWATER CONTAMINATION

FIGURE 4

Path: F:\Project\K11-Kaleida Health\K11.002.001 - MOB Brownfield Cleanup Program\Environmental-study\CADD-GIS\GIS\Projects\RI-IRM\FIGURE_1-3_HISTORIC_GW_CONTAMINATION.mxd

TABLES

Table 1 - Groundwater Analytical Results
Summary of Detected Compounds
Former Mobil Station 99-MST 979 Main Street (1001 Main Street) Brownfield Cleanup

		Sample Name	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3
		Date Collected	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2014	12/15/2015	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2015	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
		Matrix	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG
		Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
NYSDEC Ambient Water Quality Standards & Guidance Values																											
Volatile Organic Compound	**Surface Water**	**Groundwater**																									
2-HEXANONE	50	50	ND	ND	ND		ND	ND	3.5	ND	ND	ND			ND	ND	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACETONE	50	50	ND	ND	ND		ND	ND	ND	ND	ND	ND			ND	**98**	ND	17	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	1	1	ND	ND	ND		**35**	**39**	**5.7**	**1.4**	0.72	ND			**6,600**	**4,500**	**4,700**	**3,700**	**4,300**	**4,100**	**2,100**	**2,200**	**1,900**	**3,100**	**1,390**	**635**	**363**
ETHYLBENZENE	5	5	ND	ND	ND		2	1.5	ND	ND	ND	ND			**1,200**	**1,600**	**1,500**	**1,600**	**1,500**	**1,700**	**1,400**	**1,600**	**1,600**	**610**	**194**	**899**	**517**
ISOPROPYLBENZENE (CUMENE)	5	5	ND	ND	ND		1.3	ND	ND	ND	ND	ND			ND	**37**	ND	**32**	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYL ETHYL KETONE (2-BUTANONE)	50	50	ND	ND	ND		ND	45	ND	ND	ND	ND			ND	**71**	ND	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	5	5	ND	ND	ND		ND	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	**35**	ND	ND	ND
TOLUENE	5	5	ND	ND	ND		**19**	**38**	0.55	ND	ND	ND			**110**	**150**	**150**	**110**	**110**	**130**	**100**	**110**	**110**	**67**	**39.4**	**74.5**	**38.4**
1,1,2-TRICHLOROETHANE			ND	ND	ND		ND	ND	ND	0.33 J	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND				
XYLENES, TOTAL	5	5	ND	ND	ND		**6.4**	4.2	ND	ND	ND	ND			**3,700**	**3,600**	**3,200**	**4200**	**4000**	**3900**	**2200**	**2600**	**2200**	**2100**	**806.3**	**1430**	**949**
No Standard																											
CARBON DISULFIDE			ND	ND	0.94		ND	ND	ND	ND	ND	ND			ND	ND	ND	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND
CYCLOHEXANE			ND	ND	ND		35	59	61	51	72	ND			120	320	270	390	330	210	100	93	110	170	ND	ND	ND
METHYL ISOBUTYL KETONE			ND	ND	ND		ND	13	ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLCYCLOHEXANE			ND	ND	0.47		3.2	17	15	11	ND	ND			ND	130	150	120	160	96	34	33	36 J	170	47.7	ND	ND
Total VOCs			**0**	**0**	**1.41**	**-**	**101.90**	**216.70**	**85.75**	**63.40**	**72.72**	**0**			**11,730**	**10,506**	**9,970**	**10,179**	**10,400**	**10,136**	**5,934**	**6,636**	**5,920**	**6,252**	**2,477**	**3,038**	**1,867**
Total BTEX			**0**	**0**	**0**	**-**	**62**	**83**	**6**	**1.4**	**0.7**	**0**			**11,610**	**9,850**	**9,550**	**9,610**	**9,910**	**9,830**	**5,800**	**6,510**	**5,810**	**5,877**	**2,430**	**2,964**	**1,829**

Notes:

Not Sampled

1) BCP MW-2 was dry and not sampled

2) For the March 11, 2015 monitoring event well MW-1, MW-5, MW-6 and MW-7 were dry or not enough water was inside the well for a representative sample.

3) WG = groundwater

Volatile Organic Compound	Surface Water	Groundwater	Sample Name	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5
			Date Collected	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
			Matrix	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG
			Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
NYSDEC Ambient Water Quality Standards & Guidance Values																													
2-HEXANONE	50	50		ND	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
ACETONE	50	50		10	**250**	**170**	**67**	ND	210.00	ND	ND	ND	ND	ND	ND	ND	ND	**520**	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	1	1		**42**	**29**	**15**	**26**	**24**	**242**	ND	**21**	ND	**21**	**9.57**	**12.8**	**10.2**	**5,600**	**4,800**	**4,900**		**3,700**	**4,100**	**1,800**	**1,800**	**1,700**	**1,600**	**899**	**949**	**682**
ETHYLBENZENE	5	5		4.7	**34**	**32**	**560**	**1,000**	**680**	**1,100**	**1300**	**1,400**	**1400**	**1,000**	**1170**	**1,300**	**1,900**	**1,600**	**1,600**		**2,800**	**2,600**	**1,600**	**1,900**	**2,200**	**2,200**	**1,490**	**1,450**	**2,070**
ISOPROPYLBENZENE (CUMENE)	5	5		ND	ND	ND	**9.8**	**15.0**	**26**	ND	ND	ND	ND	**19**	**30.3**	**28.7**	**28**	**29**	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYL ETHYL KETONE (2-BUTANONE)	50	50		ND	ND	ND	ND	8.50	ND	ND	ND	ND	ND	ND	ND	ND	10	**350**	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	5	5		ND	ND	1 J	ND	ND	ND	ND	**52**	ND	**42**	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	**77**	**96**	ND	ND	ND
TOLUENE	5	5		1.1	**190**	**110**	**53**	**57**	**140**	**180**	**270**	**150**	**97**	**62.4**	**130**	**133**	**170**	**220**	**310**		**290**	**290**	**70**	**80**	**88**	**77**	**68.5**	**84.9**	**86.6**
1,1,2-TRICHLOROETHANE				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
XYLENES, TOTAL	5	5		**29**	**180**	**160**	**800**	**1,200**	**3100**	**1,800**	**2600**	**2,100**	**1800**	**1,160**	**1892**	**1,944**	**10,000**	**6,800**	**8,300**		**9,100**	**10,000**	**2,600**	**3,100**	**3,300**	**2,800**	**2,271.3**	**2,152.2**	**3,394.7**
No Standard																													
CARBON DISULFIDE				ND	ND	1.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
CYCLOHEXANE				8.2	11	7	170	170	110	160	220	250	340	189	259	276	230	340	240		430	260	230	250	280	430	198	148	257
METHYL ISOBUTYL KETONE				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLCYCLOHEXANE				7.5	3.7	3.1	87	92	69	86	100	110	140	85.1	110	123	100	170	150		190	130	92	100	100	140	67.5	58.4	92.8
Total VOCs				**102.5**	**697.7**	**497.1**	**1,774.5**	**2,566.5**	**4,577.0**	**3,326.0**	**4,563.0**	**4,010.0**	**3,840.0**	**2,525.5**	**3,604.1**	**3,814.9**	**18,072**	**14,829**	**15,500**	**-**	**16,510**	**17,380**	**6,392**	**7,230**	**7,745**	**7,343**	**4,994**	**4,843**	**6,583**
Total BTEX				**76.8**	**433**	**317**	**1,439**	**2,281**	**4,162**	**3,080**	**4,191**	**3,650**	**3,318**	**2,232**	**3,205**	**3,387**	**17,670**	**13,420**	**15,110**	**-**	**15,890**	**16,990**	**6,070**	**6,880**	**7,288**	**6,677**	**4,729**	**4,636**	**6,233**

Notes:

Not Sampled

1) BCP MW-2 was dry and not sampled

2) For the March 11, 2015 monitoring event well MW-1, MW-5, MW-6 and MW-
were dry or not enough water was inside the well for a representative sample.

3) WG = groundwater

Volatile Organic Compound	Surface Water	Groundwater	Sample Name	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7
			Date Collected	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/14/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
			Matrix	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG	WG
NYSDEC Ambient Water Quality Standards & Guidance Values			Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-HEXANONE	50	50		ND	ND	ND		190	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8		ND	ND	ND	ND	ND	ND		
ACETONE	50	50		ND	ND	ND		480	340	ND	ND	ND	ND	ND	ND	ND	ND	3	ND		ND	ND	ND	ND	ND	ND		
BENZENE	1	1		**190**	**33**	**16**		**470**	**890**	**250**	**230**	**200**	**120**	**302**	**168**	**200**	0.51	**8.8**	**14**		ND	ND	ND	ND	ND	ND		
ETHYLBENZENE	5	5		**130**	**20**	**31**		**36**	**210**	**22**	**44**	**67**	**50**	**163**	**169**	**173**	ND	ND	3		ND	ND	ND	ND	ND	ND		
ISOPROPYLBENZENE (CUMENE)	5	5		4.4	ND	1.9 J			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		
METHYL ETHYL KETONE (2-BUTANONE)	50	50		ND	ND	ND		110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		
METHYLENE CHLORIDE	5	5		ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		
TOLUENE	5	5		**810**	**42**	**79**		**1,000**	**1,900**	**85**	**120**	**78**	**120**	**130**	**255**	**351**	ND	0.56	4.7		ND	ND	ND	ND	ND	ND		
1,1,2-TRICHLOROETHANE				ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND												
XYLENES, TOTAL	5	5		**750**	**85**	**150**		**740**	**1,100**	**140**	**190**	**130**	**210**	**393**	**360**	**451**	0.96	4.8	**94**		ND	ND	ND	0.99 J	ND	ND		
No Standard																												
CARBON DISULFIDE				ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.97		ND	ND	ND	ND	ND	ND		
CYCLOHEXANE				68	ND	130		270	41	62	110	110	91	81.5	ND	ND	ND	4.3	9.6		ND	ND	0.71	ND	ND	ND		
METHYL ISOBUTYL KETONE				ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		
METHYLCYCLOHEXANE				46	16	18		170	27	24	21	10	24	32.2	30.2	36.9	ND	1.7	5.1		0.18	ND	ND	ND	ND	ND		
Total VOCs				**1,998.4**	**196**	**424**	-	**3,466**	**4,508**	**583**	**715**	**595**	**615**	**1,101**	**983**	**1,212**	**1.47**	**23.16**	**136.17**	-	**0.18**	-	**0.71**	-	-	-	-	-
Total BTEX				**1,880**	**180**	**276**	-	**2,246**	**4,100**	**497**	**584**	**475**	**500**	**988**	**952**	**1,175**	**0.51**	**14.16**	**115.7**	-	-	-	-	-	-	-	-	-

Notes:

Not Sampled

1) BCP MW-2 was dry and not sampled

2) For the March 11, 2015 monitoring event well MW-1, MW-5, MW-6 and MW-

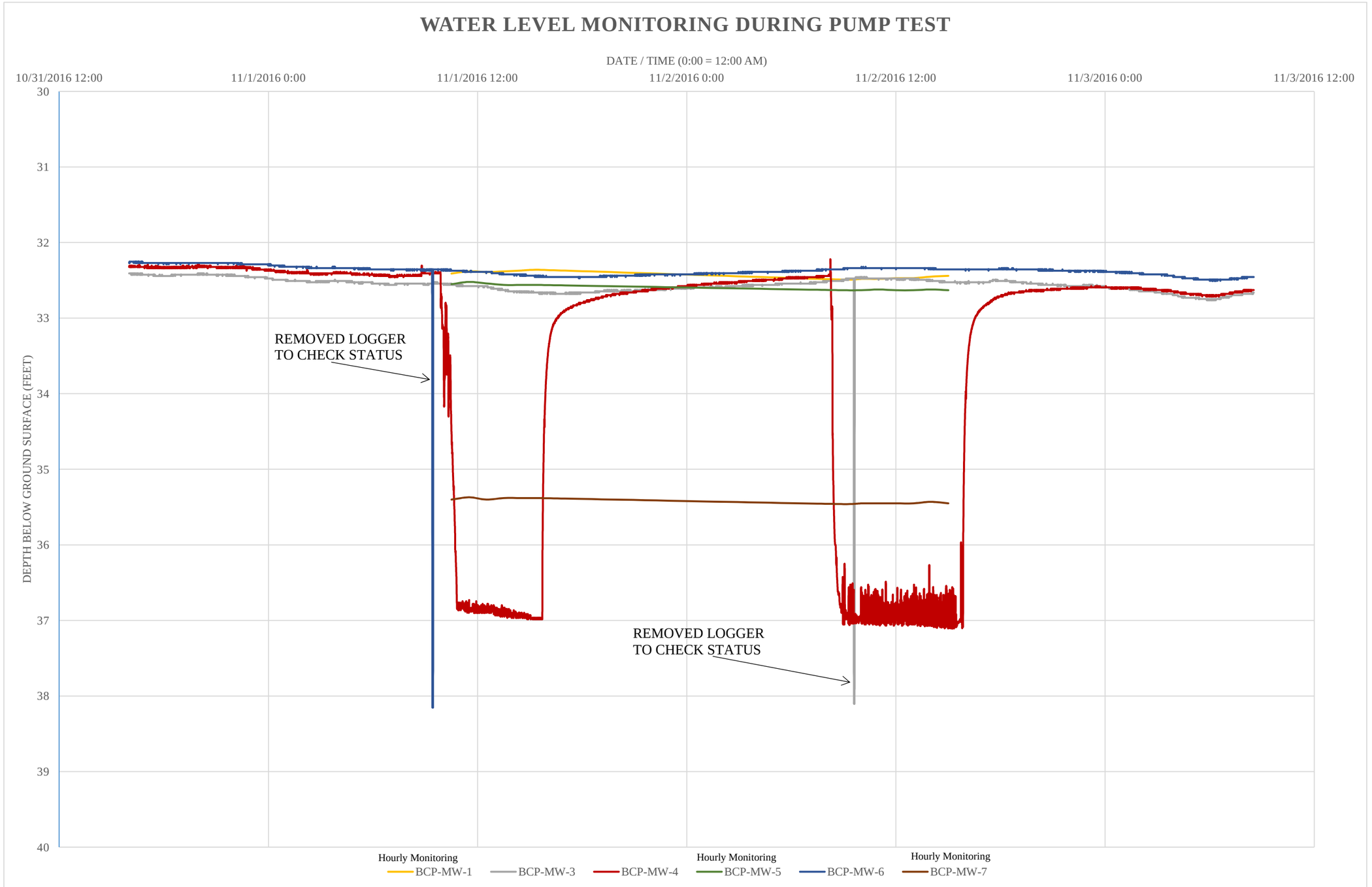
were dry or not enough water was inside the well for a representative sample.

3) WG = groundwater

GRAPHS

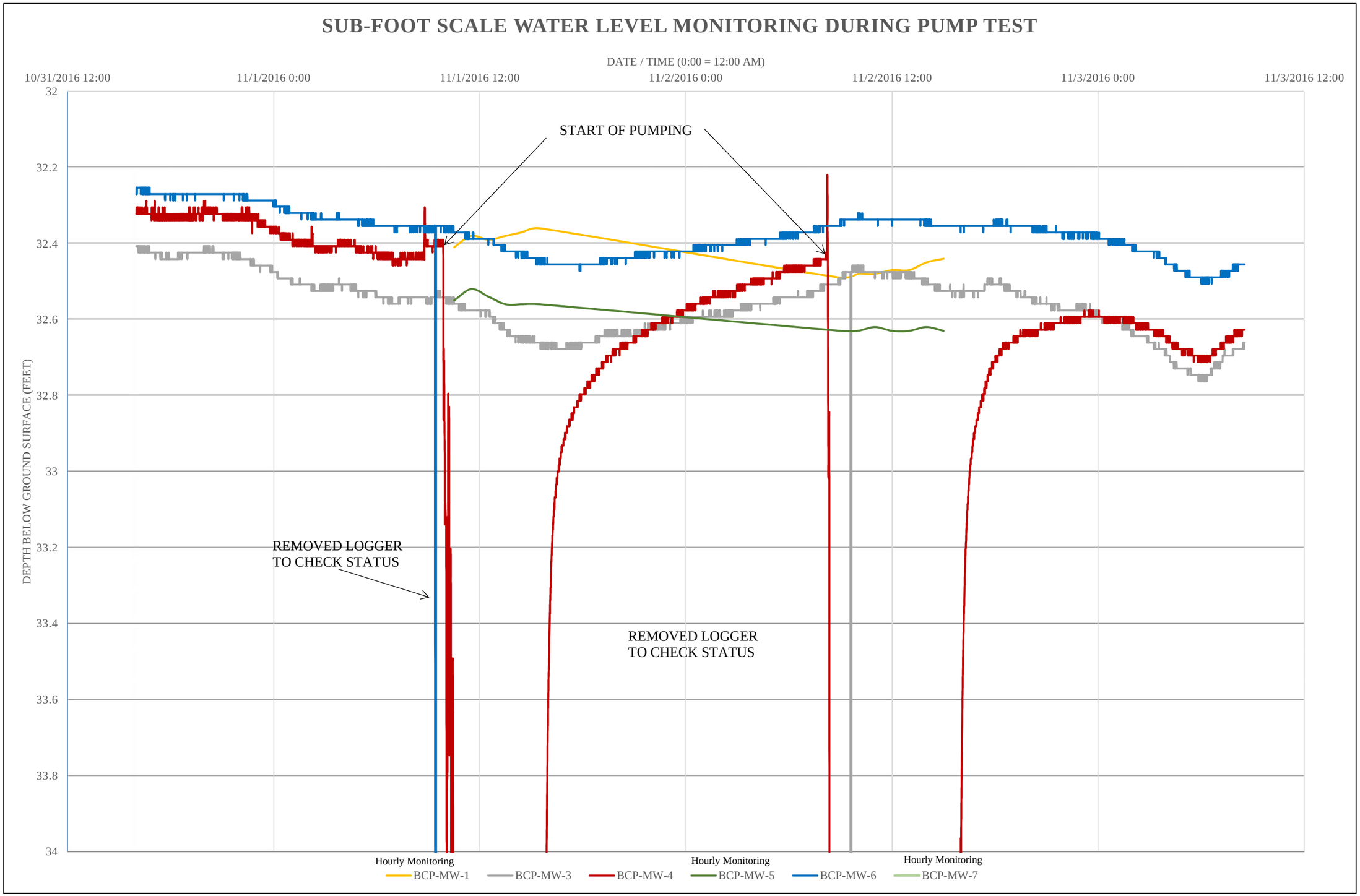
Former Mobil Station 99-MST 979 Main Street (1001 Main Street)
Conventus Groundwater Remediation

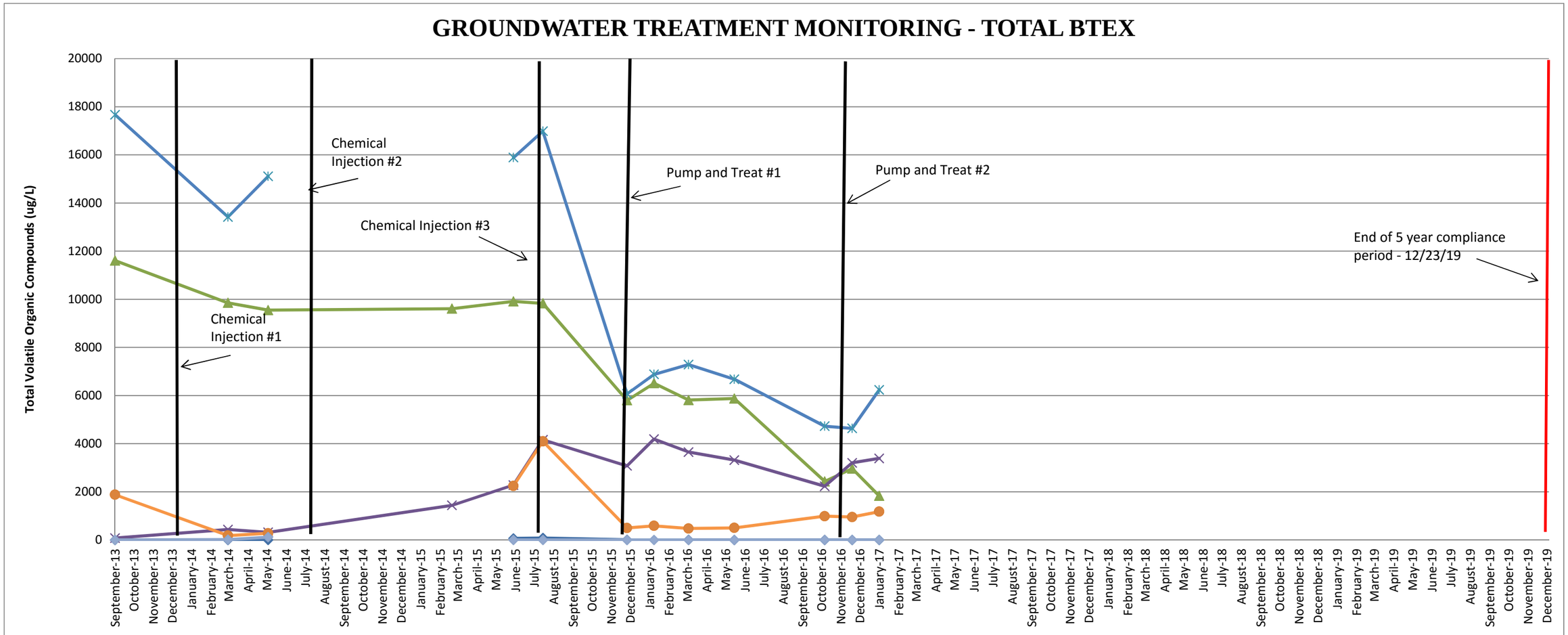
Graph 1



Former Mobil Station 99-MST 979 Main Street (1001 Main Street)
Conventus Groundwater Remediation

Graph 1-1



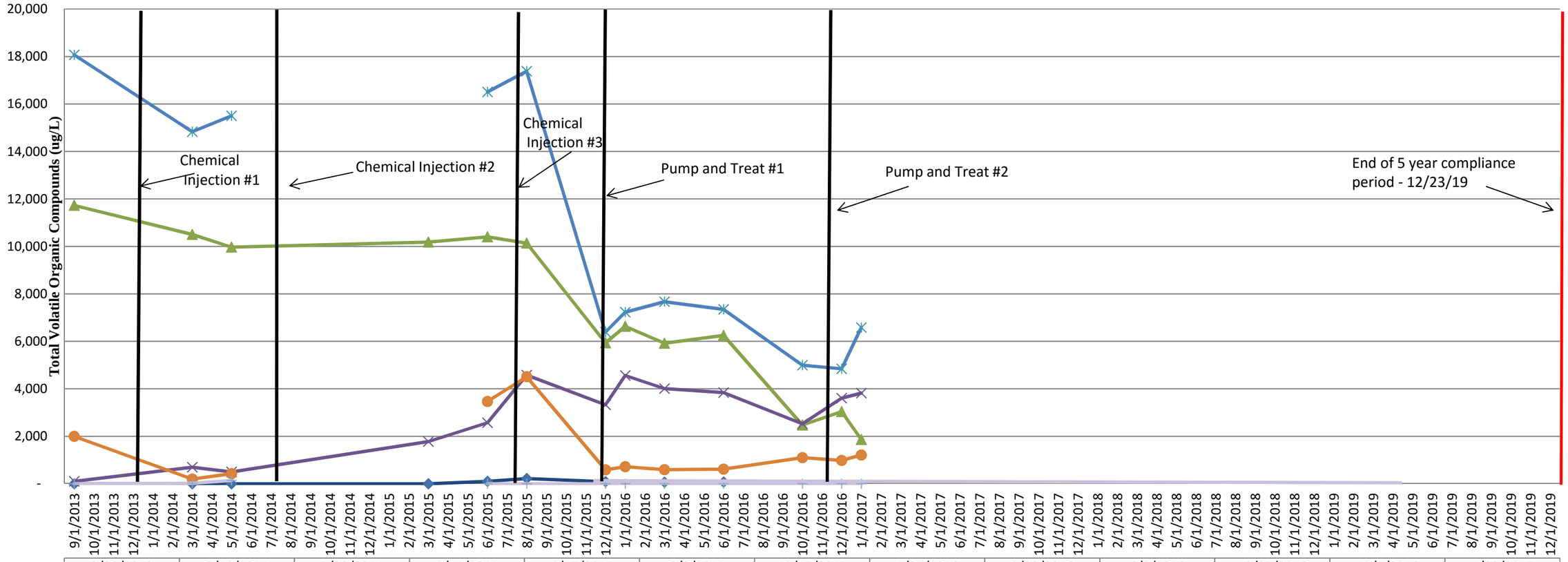


	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-1	0	0	0		62	83	6.25		1	1	-	-	-
BCP MW-2													
BCP MW-3	11,610	9,850	9,550	9,610	9,910	9,830	5,800	6,510	5,810	5,877	2,430	2,964	1,829
BCP MW-4	76.8	433	317	1,439	2,281	4,162	3,080	4,191	3,650	3,318	2,232	3,205	3,387
BCP MW-5	17,670	13,420	15,110		15,890	16,990	6,070	6,880	7,288	6,677	4,729	4,636	6,233
BCP MW-6	1,880	180	276		2,246	4,100	497	584	475	500	988	952	1,175
BCP MW-7	1	14.16	115.7		0	0	0	-	-	-	-	-	-

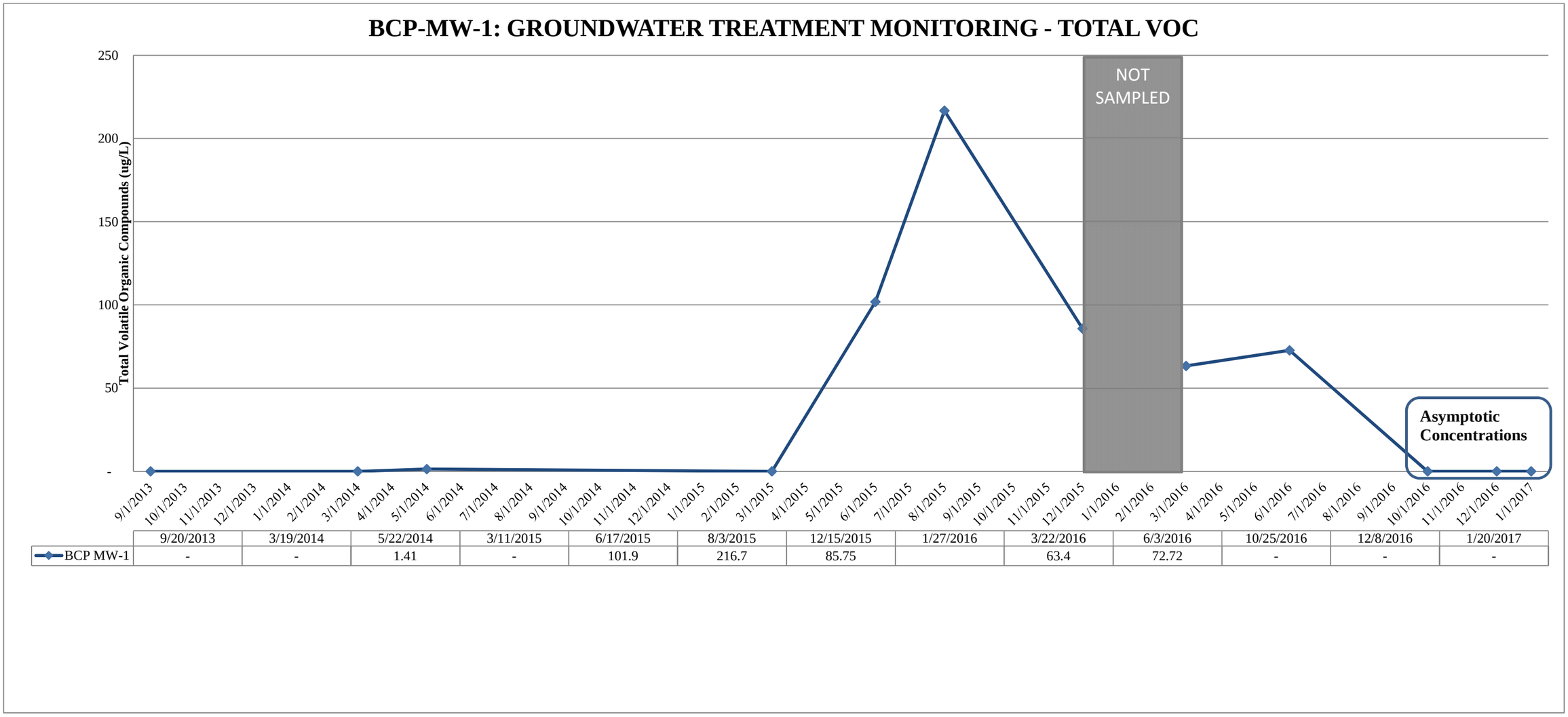
Former Mobil Station 99-MST 979 Main Street (1001 Main Street)
Conventus Groundwater Remediation

Graph 3

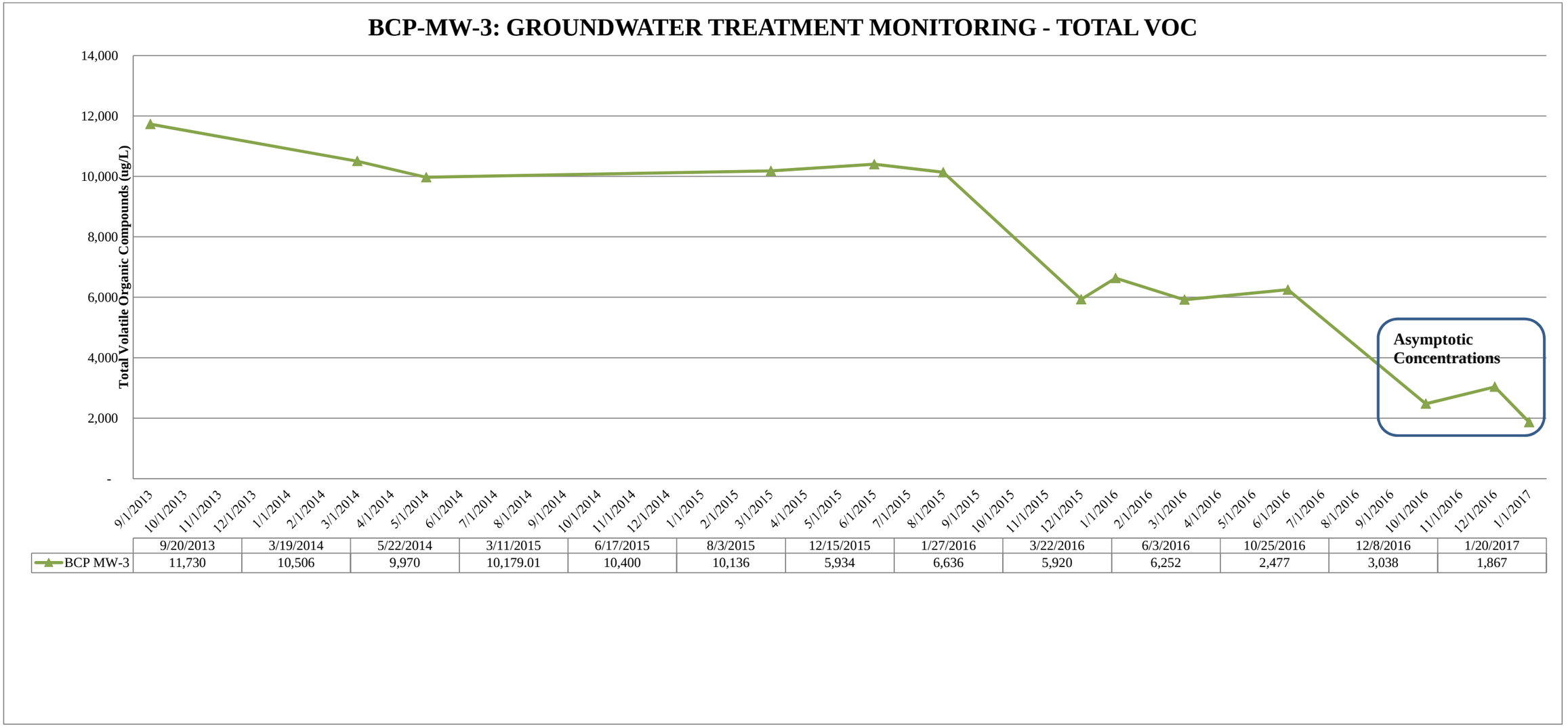
GROUNDWATER TREATMENT MONITORING - TOTAL VOC



	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-1	-	-	1.41	-	101.9	216.7	85.75		63.4	72.72			
BCP MW-2													
BCP MW-3	11,730	10,506	9,970	10,179.01	10,400	10,136	5,934	6,636	5,920	6,252	2,477	3,038	1,867
BCP MW-4	102.5	697.7	497.1	1,774.5	2,566.50	4,577	3,326	4,563	4,010	3,840	2,526	3,604	3,815
BCP MW-5	18,072	14,829	15,500		16,510	17,380	6,392	7,230	7,668	7,343	4,994	4,843	6,583
BCP MW-6	1,998.4	196	424		3,466	4,508	583	715	595	615	1,101	983	1,212
BCP MW-7	1.47	23.16	136.17		0.18	-	0.71	-	-	-	-	-	-



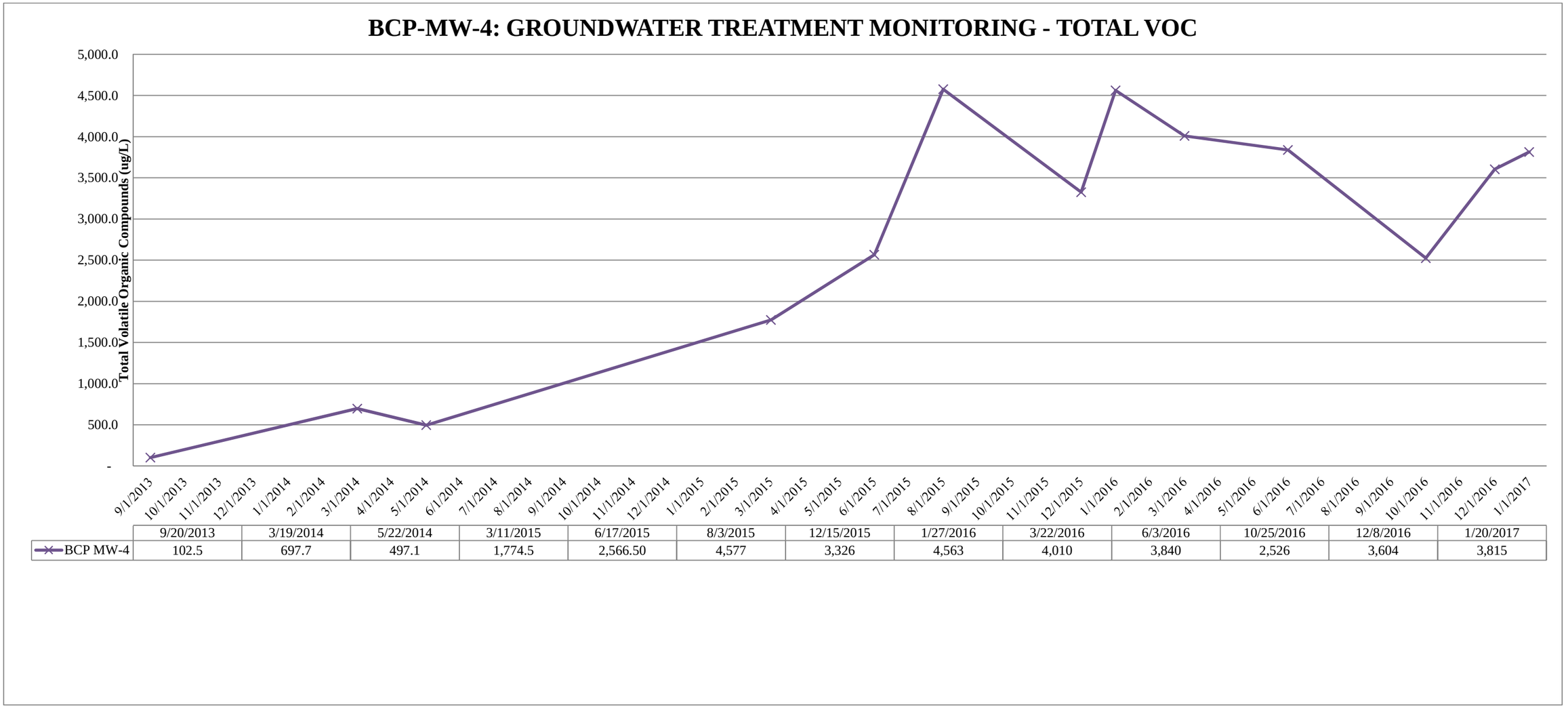
	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-1	-	-	1.41	-	101.9	216.7	85.75		63.4	72.72	-	-	-



	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-3	11,730	10,506	9,970	10,179.01	10,400	10,136	5,934	6,636	5,920	6,252	2,477	3,038	1,867

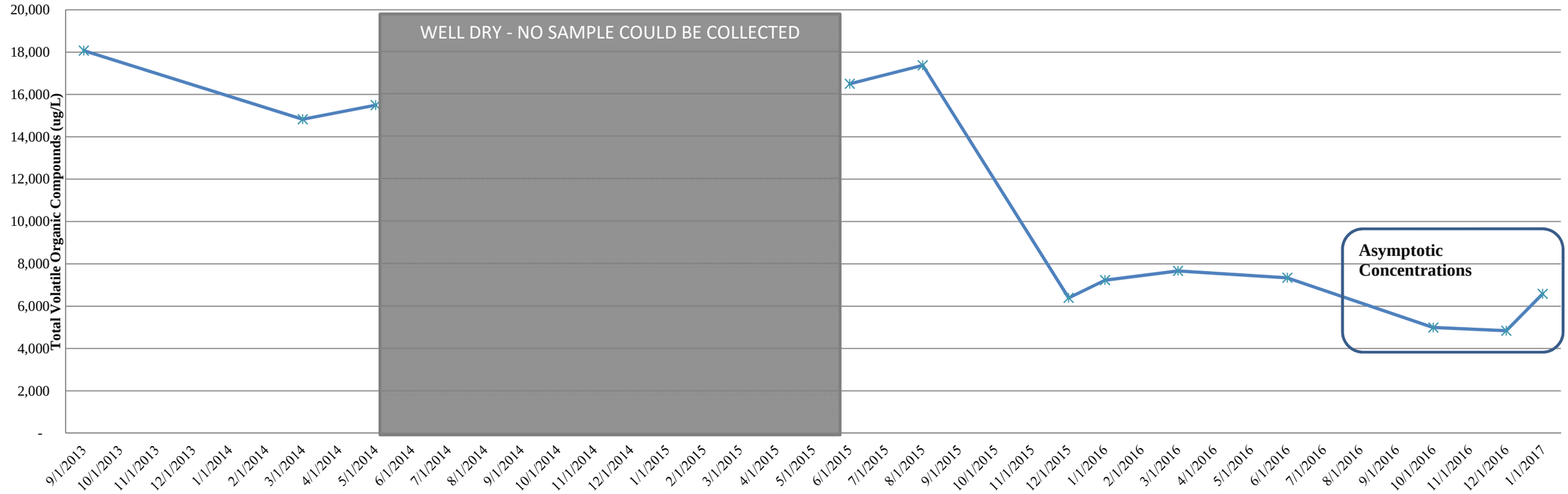
Former Mobil Station 99-MST 979 Main Street (1001 Main Street)
Conventus Groundwater Remediation

Graph 6



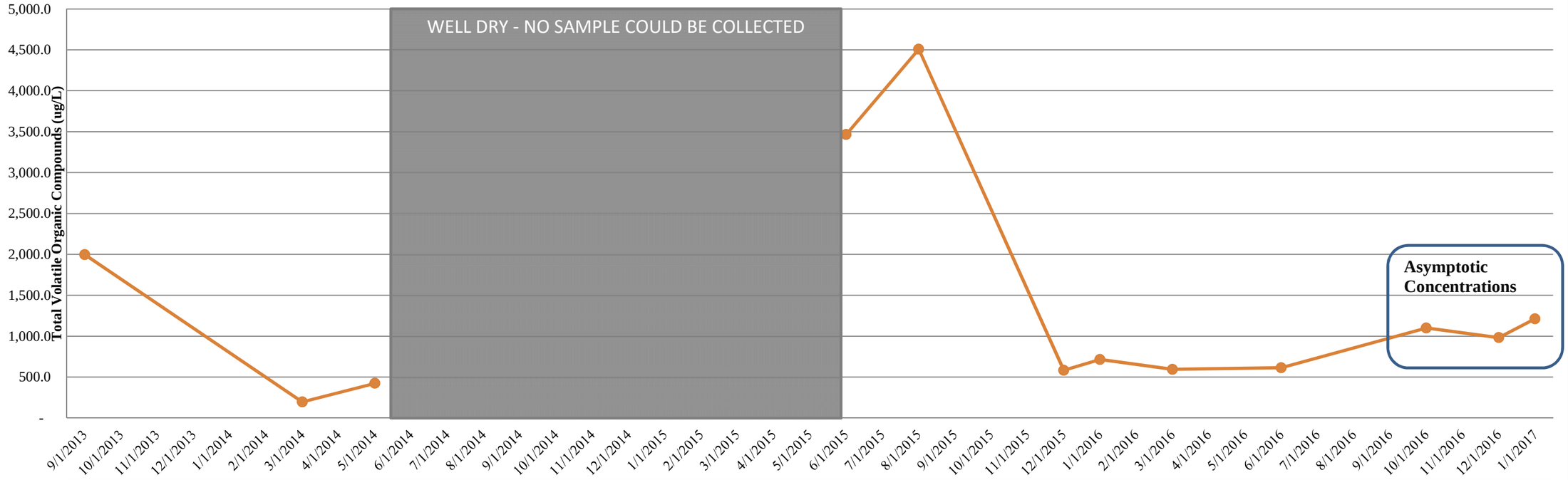
	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-4	102.5	697.7	497.1	1,774.5	2,566.50	4,577	3,326	4,563	4,010	3,840	2,526	3,604	3,815

BCP-MW-5: GROUNDWATER TREATMENT MONITORING - TOTAL VOC



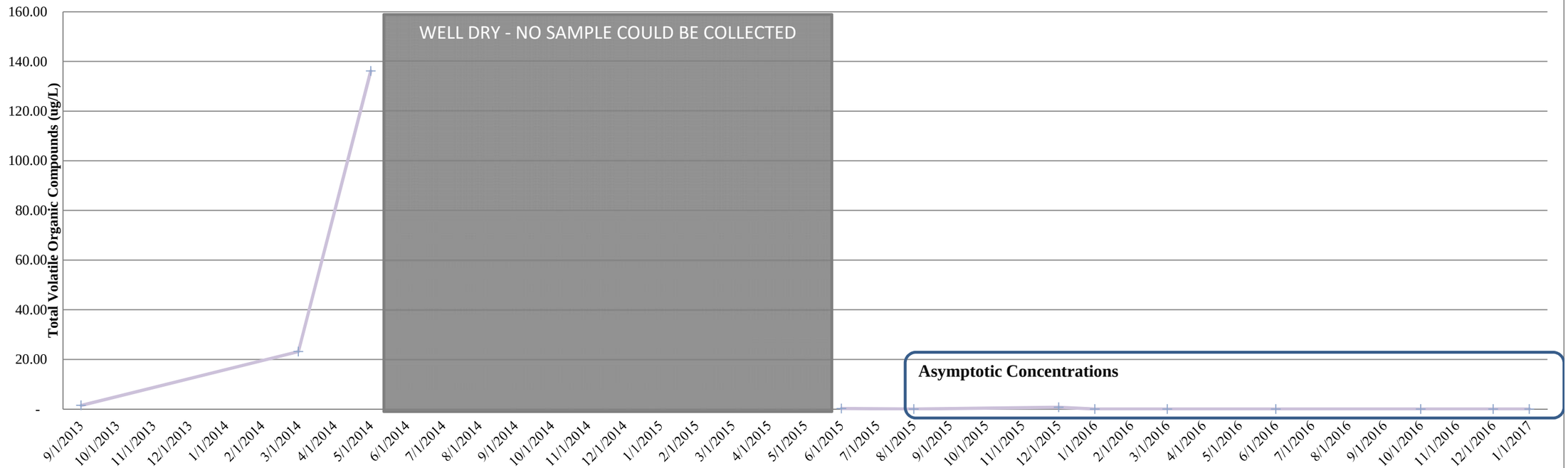
	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-5	18,072	14,829	15,500		16,510	17,380	6,392	7,230	7,668	7,343	4,994	4,843	6,583

BCP-MW-6: GROUNDWATER TREATMENT MONITORING - TOTAL VOC



	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-6	1,998.4	196	424		3,466	4,508	583	715	595	615	1,101	983	1,212

BCP-MW-7: GROUNDWATER TREATMENT MONITORING - TOTAL VOC



	9/20/2013	3/19/2014	5/22/2014	3/11/2015	6/17/2015	8/3/2015	12/15/2015	1/27/2016	3/22/2016	6/3/2016	10/25/2016	12/8/2016	1/20/2017
BCP MW-7	1.47	23.16	136.17		0.18	-	0.71	-	-	-	-	-	-