PHASE VIII EXTENDED GROUNDWATER MONITORING PROGRAM REPORT

Prepared for:

MARATHON BATTERY REMEDIATION SITE
Village of Cold Spring, New York

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TABLE OF CONTENTS

PAGE NO.:

LIST OF TABLES

TABLE

LIST OF FIGURES

FIGURE

LIST OF APPENDICES

APPENDIX

EXECUTIVE SUMMARY

The selected groundwater remedy in the September 1988 Record of Decision to address chlorinated volatile organic compounds (CVOCs) on the former plant grounds was natural attenuation/long-term monitoring. A voluntary, multi-phase, seven-year, groundwater natural attenuation enhancement (NAE) program has been implemented since 2012 by Gould Electronics Inc. since the rate of attenuation had not been progressing as expected by USEPA. The NAE program included source area investigation and the targeted use of air sparging and ozone sparging in the former solvent storage shed area that had groundwater trichloroethene (TCE) concentrations greater than 100 µg/L.

The purpose of the NAE and extended monitoring program was to:

1. Reduce the VOC mass in the former solvent shed storage area and enhance the rate of natural attenuation.
2. Collect data to determine the presence of VOCs in the vadose zone.

The NAE program successfully reduced groundwater TCE concentrations by 25% to 70% to a level below 100 µg/L in the treatment area. In addition, monitoring wells immediately downgradient of the treatment area exhibited groundwater TCE concentration reductions of 40% and 45%. The soil sampling performed during the NAE program did not detect significant residual soil sources in the vadose zone. This report presents the results of an extended monitoring program performed over 8 quarters following completion of the NAE program.

Analysis of the data trends suggests that the TCE MCL will be reached by the years 2026 to 2044 in the downgradient wells. For onsite wells within the plume areas, trend analysis could not reliably predict when the TCE maximum contaminant level (MCL) would be met at seven wells. For the remaining wells, the predictions ranged up to the year 2053. The PCE MCL is being met at 10 out of the 15 wells that were monitored during the extended monitoring program, including all of the downgradient wells. For the remaining wells, trend analysis could not reliably predict when the MCL will be met.

1.0 INTRODUCTION

The Marathon Battery Site is located in the Village of Cold Spring, Putnam County New York (see Figure 1-1). The groundwater remedy in the September 1988 Record of Decision for Area II (a.k.a., the former Battery Plant Grounds, a.k.a., OU #3 (the "Site")) was natural attenuation/long-term monitoring for contamination of the groundwater with volatile organic compounds (VOCs), primarily trichloroethene (TCE) and tetrachloroethene (PCE).[1] Gould voluntarily implemented a groundwater natural attenuation enhancement (NAE) program between January 2012 and June 2018 at the request of the USEPA since the rate of attenuation had not been progressing at the rate USEPA had expected at the time of the Record of Decision.

The NAE program began in January 2012 with a 2-day air sparge (AS) and soil vapor extraction (SVE) pilot-test (Phase I). Phases II and III consisted of a 3-month AS/SVE program from March 22, 2012 to June 28, 2012 (Phase II) followed by a 6-month groundwater monitoring rebound study (Phase III). Phase IV and V/VI consisted of an 11-month expanded AS/SVE program from June 2013 through May 2014 followed by another groundwater monitoring rebound study from May 2014 to June 2017 (Phases V and VI). Phase VII and VIII consisted of a 12-month ozone injection program from June 2017 to June 2018 (Phase VII) followed by approximately 3 years of post-ozone groundwater and soil gas monitoring (the Phase VIII rebound and extended monitoring).

The Phase VIII rebound study was detailed in the Phase VIII Groundwater Natural Attenuation Enhancement Completion Report (dated October 2, 2019) and further discussed in the Response to USEPA Comments on the Phase VIII Groundwater Natural Attenuation Enhancement Completion Report (dated May 14, 2020). This report presents an updated conceptual site model and summarizes the period of extended groundwater monitoring following the Phase VIII rebound study. This report also includes an effectiveness summary for the NAE program. A current Site well network map is included as Figure 1-2, and a well construction summary is presented on Table 1-1.

[1] The September 1988 Record of Decision for Area II stated "ARARs are expected to be achieved within three to ten years after removal of the volatile organic-contaminated soil."

2.0 CONCEPTUAL SITE MODEL

This Conceptual Site Model summarizes current conditions of the Site with regards to existing contaminants of concern and information relevant to addressing those contaminants.

2.1 SITE BACKGROUND AND CURRENT CONDITIONS

The Site consists of a 12-acre former nickel-cadmium battery manufacturing facility. Prior to remediation, an inactive battery plant and an underground asphalt and clay-lined vault containing spoils from dredging activities in East Foundry Cove were located in Area II. The facility buildings were demolished and the demolition debris disposed offsite. All spoils from dredging activities as well as other soils impacted by facility operations were also characterized and disposed of offsite. The Site was then restored by placing topsoil over disturbed areas and revegetating and now consists of a field surrounded by chain-link fence with some successional forest beginning to establish along the south and east property boundaries. The slopes of the Site can be described as flat to slightly rolling.

The Site is currently zoned “light industrial” and is awaiting redevelopment. Since the Site is surrounded on three sides by residential properties, and the access roads leading to it are very narrow, future use is unlikely to resemble its historic industrial use. Therefore, the Village of Cold Spring is evaluating rezoning of the property to “mixed-use” in order to facilitate redevelopment. Potential redevelopment scenarios include single and/or multi-family homes, senior housing and/or a municipal parking lot.

2.2 SITE GEOLOGY AND HYDROGEOLOGY

Regionally, the area is underlain by a granite and gneiss bedrock, probably of Precambrian age (Grossman, 1957). The crystalline bedrock is part of the New England Province of the Appalachian region and has been strongly folded and faulted. Depth to the bedrock varies throughout the region, ranging from surface outcrops to depths greater than 200 feet. Unconsolidated deposits overlying the bedrock consist mainly of stratified glacial drift and glacial till deposits (mostly sands, gravels, silts and cobbles). The approximate thickness of these deposits is as little as 10 feet to greater than 200 feet.

Boring logs indicate that the former Battery Plant Grounds stratigraphy conforms to the regional geologic setting. The area is underlain by thin, unconsolidated deposits of glacial till consisting of clay and boulders with some deposits of outwash sand and gravel resting upon fractured and faulted bedrock, mainly granite and gneiss. The degree of bedrock fracturing decreases with increasing depth. The depth to bedrock varies greatly throughout the Site (2.5 feet below ground surface [bgs] in the west corner to 89 feet bgs in the southern portion of the Site). The glacial deposits depth ranges from 67 to 83 feet in the former solvent storage shed area. Glacial deposits throughout the site consist of brown silty sands intermixed with some fine gravels. These deposits grade downward to fine sandy gravels or coarse sands. Cobbles were encountered randomly at various depths throughout the Site. Soil samples collected from borings located in the southern portion of the Site indicate the presence of silt laminae throughout the borings, thus indicating some degree of stratification.

The average depth to groundwater in the overburden aquifer ranges from approximately 25 to 30 feet bgs within the former Battery Plant Grounds. Groundwater flow in the overburden is generally to the south/southeast toward Foundry Cove under a flat hydraulic gradient in the area where VOC contamination of the groundwater was identified. Groundwater flow in the bedrock is generally to the southwest toward the Hudson River. The saturated aquifer thickness within the overburden varies throughout the Site; it is greatest at the southeastern portion of the plant grounds and thins significantly to the northwest as the depth to bedrock decreases.

2.3 SOURCE AREAS FOR VOCS IN GROUNDWATER

Multiple subsurface investigations conducted prior to, during and following remediation attempted to locate the source(s) of VOC impacts to groundwater. Those investigations concluded that while no significant source was identified, soil gas samples suggested the area of the former solvent storage shed as a potential source. The approximate location of the former solvent shed is shown on Figure 1-2. A subsurface investigation conducted during the building demolition showed low concentrations of VOCs in the vicinity of the former solvent shed, below the New York soil to groundwater leaching values applicable at that time as well as the current standards.

This investigation also identified a potential minor source area of VOCs, upgradient of the former solvent storage shed. While a sample collected from fill within a former process trench (sample TH-3 shown on Figure 1-2) had elevated TCE and PCE concentrations, VOC screening of the subsoils after removal of the fill and demolition of the process trenches did not exhibit readings above background. Subsequent rounds of groundwater sampling at VP-3, which was installed 15 years following building demolition downgradient of the former process trenches, indicate a minor source area of VOCs may be associated with the former process trenches within the former plant building.

During each round of well installation conducted by Advanced GeoServices Engineering (AGE) (now known as Montrose Engineering & Geology, P.C.), soils were field screened as the borings were advanced. If an elevated reading was detected, then a soil sample was collected and analyzed for volatile organic compounds. Soil samples were only collected at two locations, AS-2 and AS-3. Results of that testing indicated that residual concentrations of VOCs were present, indicating that contaminants were adsorbed to soil particles, albeit at levels well below the New York State soil to groundwater leaching standard. The results of the previous NAE efforts and extended groundwater monitoring program indicate that TCE may also be adsorbed to soil particles beneath the water table.

2.4 GROUNDWATER IMPACTS

The interpretation of the horizontal extent of TCE and PCE contaminated groundwater from the *Groundwater Protectiveness Determination (GPD) Study* was presented on Figures 9 through 12 of the GPD Report (see Appendix A - Historic 2009 Groundwater Isoconcentration Maps). The on-site vertical profiling confirmed the highest TCE and PCE impacted groundwater was located near the former solvent storage shed (i.e., in the vicinity of IW-8). The vertical profiling results indicate that VOC impacts in the vicinity of the former solvent shed generally decrease with depth with TCE concentrations above 5 µg/L extending to a depth of about 60 feet below the ground surface.

Collected groundwater quality data indicate that the TCE impact has extended off-site beneath at least one of the Constitution Drive residences immediately adjacent to the Site. The lateral extent

of the TCE groundwater impact (above the MCLs) is thought not to extend south of Constitution Drive based on the non-detects for VOCs during the USEPA vapor intrusion sampling at 13 Constitution Drive and the low VOC concentrations in the off-site wells. The collected groundwater data indicate a more limited extent of PCE impact to groundwater that does not extend off-site.

2.5 EXPOSURE PATHWAYS AND RISK

Drinking water for nearby residents comes from water service provided by the Cold Spring Water Department that uses surface water from reservoirs located topographically higher than the Site as its source. Overall, the Site groundwater discharges in insignificant quantities into the surface water of Foundry Cove and the Hudson River. Since there are no potable water production wells within the vicinity of the Site and the downgradient concentrations are below the detection limit, there is no complete pathway for VOC contaminated groundwater from the former Battery Plant Grounds for either humans or the ecosystem.

3.0 PHASE VIII EXTENDED GROUNDWATER MONITORING PROGRAM SUMARY

Groundwater sampling during Phase VIII was initially performed in accordance with the same semi-annual sampling schedule during Phases VI and VII. Following the submission of the Phase VIII Groundwater Natural Attenuation Enhancement Completion Report (October 2, 2019) and in accordance with its recommendations, groundwater monitoring for Phase VIII was extended for an additional eight consecutive quarters. The Phase VIII Extended Groundwater Monitoring Program began in December 2019 and was completed in September 2021.

3.1 SAMPLE LOCATIONS, METHODS AND PARAMETERS

The 19 monitoring wells sampled during Phase VIII program (except for the April 2020 sampling event) included wells within the NAE treatment zone: ASMP-1, IW-6, IW-7, IW-8 and IW-9; wells within the plume area but outside the treatment zone: VP-1, VP-2, VP-3, VP-7, VP-8, VP-9, VP-10 and VP-11; and downgradient wells: MB-3, MW-4, MW-7S, OSMW-1, OSMW-2 and OSMW-3. The April 2020 sampling event was reduced due to the Covid-19 pandemic and resulted in only sampling seven wells: ASMP-1, IW-6, MB-3, MW-4, MW-7S, VP-3 and VP-7. All wells were sampled utilizing low flow techniques with either decontaminated bladder pumps or peristaltic pumps with dedicated sample tubing. All samples were analyzed at Eurofins-TestAmerica laboratories in Edison, NJ for VOCs using USEPA SW-846 Method 8260B.

3.2 INVESTIGATION DERIVED WASTE MANAGEMENT

Approximately 30 to 50 gallons of purge water were generated during each groundwater sampling event. Purge water generated during all groundwater sampling activities was cycled through a small (5-gallon) liquid phase carbon vessel. The filtered purge water was then discharged to the ground surface where it would infiltrate instead of draining to surface water, at a location previously agreed to by AGE, NYSDEC, and the USEPA.

3.3 EXTENDED GROUNDWATER MONITORING PROGRAM RESULTS

A potentiometric map for the most recent groundwater sampling event conducted during the Phase VIII Extended Groundwater Monitoring Program (September 2021) is included as Figure 3-1. PCE and TCE isoconcentration maps for the same groundwater sampling event are included on Figures 3-2 and 3-3. The potentiometric maps as well as the PCE and TCE isoconcentration maps from the seven (7) previous sample events conducted during the Phase VIII Extended Groundwater Monitoring Program are provided in Appendix B. The ranges of PCE and TCE detections observed at each well during the eight (8) Phase VIII Extended Groundwater Monitoring sample events are summarized on Table 3-1. Laboratory sample results for these groundwater sampling events are provided in Appendix C.

3.4 ADDITIONAL SAMPLING FOR EMERGING CONTAMINANTS

The USEPA and NYSDEC requested in an email received on June 17, 2021, that three wells be sampled for Per- and Polyfluoroalkyl Substances (PFAS) constituents and 1,4-Dioxane as part of USEPA Region 2 evaluation of all Superfund Sites with a contaminated groundwater component. The request included that samples be collected from wells which would appropriately represent upgradient, midpoint and downgradient groundwater conditions as compared to the source area. Gould Electronics approved the request to voluntarily collect and analyze samples for PFAS and 1,4-Dioxane. Monitoring wells VP-1, MW-7S and MW-4 were proposed to, and accepted by, the USEPA as satisfactory locations representing upgradient, midpoint and downgradient areas, respectively.

Samples were collected from all three locations on September 20, 2021, during the 3rd quarter 2021 sampling event using a peristaltic pump and one-time use disposable HDPE tubing. In general, sampling procedures followed the NYDEC guidance for *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)* dated January 2021.

3.5 RESULTS

All groundwater sample results for PFAS were below New York standards. The Trip Blank, Field Blank and Equipment Blank samples were all below the detection limit for PFAS. Although low levels of PFAS were detected in groundwater samples, PFAS are considered to be ubiquitous in groundwater at such concentrations. PFAS concentrations observed in groundwater results from the Site do not represent a source or release. All groundwater sample results for 1,4-Dioxane were below the detection limit. Sample results are shown on Table 3-2.

4.0 SOIL GAS MONITORING PHASE V THROUGH VIII

Soil gas sampling during Phase VIII was initially performed in accordance with the same semi-annual sampling schedule during Phases VI and VII. Following the submission of the Phase VIII Groundwater Natural Attenuation Enhancement Completion Report (October 2, 2019), soil gas sampling was performed annually during 2020 and 2021.

Soil gas samples were collected from an on-site ambient air location as well as four well locations (SVE-1, VMP-3, VMP-4, and VMP-5). Samples were collected using laboratory provided SUMMA canisters set to collect for six hours from the on-site ambient air location, and for one hour at each of the four well locations. Three well volumes of air were purged from each well prior to collecting soil gas samples.

It was discovered at the time of sampling the 2021 ambient air sample that the laboratory provided SUMMA canisters had a faulty regulator, and the faulty regulator compromised the integrity of the SUMMA canister during shipment. Therefore, the 2021 ambient air sample was not analyzed.

4.1 SOIL GAS MONITORING PROGRAM RESULTS

Laboratory results for soil gas samples collected during the Phase VIII Extended Monitoring Program (December 2019 and 2020 and November 2021) are presented on Table 4-1. The TCE and PCE data for each soil gas well from 2015 through 2021 are plotted on Figures 4-1 through 4-4.

All of the locations show inconsistent seasonal variability. The TCE and PCE concentrations and trends tend to match each other with the exception of VMP-3. VMP-3 typically has the highest soil gas TCE concentrations since it is near IW-6, which has the highest TCE groundwater concentrations, but the PCE groundwater concentrations are significantly less, well below the MCL. The NAE program does not appear to have had a lasting effect on the soil gas concentrations. New York State currently does not have any standards, criteria or guidance values for concentrations of compounds in soil vapor. As there are no structures remaining at the Site, the soil gas concentrations do not represent a risk.

5.0 PHASE VIII EXTENDED GROUNDWATER MONITORING PROGRAM FINDINGS

5.1 OVERALL TRENDS IN GROUNDWATER MONITORING DATA

The following sections describe various factors that may be influencing VOC concentrations within the groundwater.

5.1.1 Groundwater Plume Behavior

While concentrations in individual wells have tended to fluctuate over time and in certain cases, have increased for the reasons discussed below, the plume itself has remained stable with no downgradient migration. Review of the trends in the downgradient wells indicate a steady decline in concentration over time. Overall, the plume behavior is demonstrative of natural attenuation in that the plume has not expanded over the ten years that the current well network has been in place. Natural attenuation processes are keeping pace with the slow dissolution of residual contamination that has adhered to soil particles. This behavior is consistent with the selected remedy for the groundwater, even though the observed natural attenuation is occurring at a slower rate than what was anticipated at the time that the remedy was selected.

5.1.2 Water Table Fluctuations Effect on VOC Concentrations

While specific source areas have not been identified, the presence of VOCs in the unsaturated zone and the groundwater indicate that past operations at the Site released VOCs to the subsurface, which eventually reached the groundwater table below. A portion of the VOCs adhered to soil particles within the vadose zone as evidenced by the low concentrations of VOC measured in soil samples above the water table. As the water table rises and falls within the soil column and residually impacted soils are washed, VOCs which had previously been adsorbed to soil particles are dissolved into the groundwater. This effect is confirmed by the moderate to strong positive correlations between TCE concentrations and groundwater elevations at several of the monitoring wells as discussed further below. While long term trends for TCE concentrations have overall been declining in most wells, it is expected that TCE concentrations will continue to fluctuate in response to changing water table elevations. Those fluctuations may periodically result in short term increases in VOC concentrations in the groundwater.

5.1.3 Precipitation and Effects on VOC Concentrations

Amounts and rates of precipitation can affect VOC concentrations in groundwater. The mechanism of surface water (rain and snow) percolating through overburden soil acts to move VOCs adsorbed onto soil particles into the dissolved phase and into the groundwater. Similar to how a fluctuating groundwater table can wash soils in the capillary zone, percolation works to flush VOCs from shallow soils down to deeper zones.

Precipitation records from nearby West Point, NY over the 30-year interval of 1991 through 2021 show the amount of precipitation at the Site can be described as abundant and evenly distributed throughout the year (see Appendix D[2]). Mean annual precipitation is 51.47 inches. October with an average of 5.29 inches of precipitation is typically the wettest month, while February, with an average of 2.95 inches, is the driest. However, it should be noted that the National Oceanic and Atmospheric Administration (NOAA) ranked New York State in 2018 as the 117th wettest year out of 124 years of precipitation records (see Appendix D[2]). In 2018, West Point recorded a total of 69.16 inches of precipitation for the calendar year. This amount of precipitation ranks above the 90th percentile and coincided with the Phase VII Ozone Study. Groundwater VOC concentrations were likely influenced by the above average rates of precipitation thereby increasing levels of dissolved VOCs in the groundwater within the vicinity of the historic VOC releases.

5.1.4 Seasonal Changes in VOC Concentrations

As described above, VOC concentrations in groundwater can be influenced by groundwater table elevation changes, and/or by changes in the amount of precipitation that occur. Most times, these changes act in concert with seasonal weather patterns. However, snow and frozen ground during winter can delay infiltration, and temporarily disrupt the influence that precipitation has upon groundwater. The results of the two-year quarterly extended monitoring program demonstrate that the Site wells do not exhibit a strong or consistent seasonal influence.

[2] Data source NOAA National Weather Service NOWdata.

5.2 WELL-SPECIFIC OBSERVATIONS

Monitoring Wells within the NAE Treatment Zone

- Well ASMP-1 was sampled during Phases II through VIII (see Figure 5-1). This well is located in close proximity to both injection wells AS-4 and AS-5. The ozone injection appeared to have halted the gradual and steady TCE concentration increase that had occurred during Phase V and VI. While PCE concentrations remained stable during the Phase VIII extended monitoring at a level above the MCL, TCE has decreased and continues to decline since the ozone treatment during Phase VII was terminated. TCE trends in samples collected during Phase VIII extended monitoring have shown a moderate correlation (R^2=0.33) between TCE concentrations and groundwater elevation. Overall, the NAE program has resulted in approximately a 60% reduction in both PCE and TCE concentrations in ASMP-1. TCE trends since the end of Phase VI through the period of Phase VIII extended monitoring shows that concentrations in ASMP-1 are projected to meet the MCL no sooner than 2030.

- Well IW-6 has been sampled since the NAE program Phase IV activities (see Figure 5-2). IW-6 is located between injection wells AS-3, AS-7 and AS-8. TCE concentrations initially decreased during Phase VII effort by approximately 50% compared to the Phase VI concentrations. However, the TCE concentrations partially rebounded during the second half of Phase VII as the ozone injection activities were focused more in zones further away from this well. TCE concentrations have not shown any correlation (R^2 of 0.02) with groundwater elevations since the beginning of the Phase VIII monitoring. TCE concentrations during Phase VIII are slightly higher than TCE concentrations at the end of Phase VII, but less than Phases V and VI, and overall appear to be stable. The Phase VIII extended monitoring TCE concentrations appear to demonstrate that the NAE efforts have reduced the TCE concentrations below the target treatment concentration of 100 µg/L. Analysis of the TCE trends cannot reliably predict when

the MCL would be met at this location. PCE concentrations have remained below the MCL throughout the NAE program.

- Well IW-7 is located just outside the footprint of the former solvent shed between injection wells AS-1 and AS-3 and has been sampled during all eight (8) phases of the NAE program (see Figure 5-3). TCE concentrations in this well responded strongly to Phases I/II and IV NAE efforts and remained stable since the initiation of Phase VII. TCE trends in samples collected during Phase VIII extended monitoring have shown no correlation (R^2=0.03) between TCE concentrations and groundwater elevation. Overall, the NAE program has resulted in approximately a 70% reduction in TCE concentrations in IW-7 to well below the target treatment concentration of 100 µg/L. Analysis of the TCE trends cannot reliably predict when the MCL would be met at this location. PCE concentrations have remained below the MCL throughout the NAE program.

- Well IW-8 has been sampled since 2006, including during all eight (8) phases of the NAE program (see Figure 5-4). IW-8 is located within the footprint of the former solvent storage shed in close proximity to injection wells AS-1 and AS-6. TCE concentrations decreased strongly in response to Phases I/II and IV NAE efforts to less than 25% of the pre-NAE levels. Further reductions observed during the Phase VII treatment appear temporary as the TCE concentrations have rebounded somewhat to a level below the pre-NAE concentrations. There is no correlation (R^2 = 0.01) between the groundwater table elevation and TCE concentrations since the beginning of Phase VIII. PCE concentrations were variable around the MCL during the extended monitoring period with four out of the eight quarterly results below the MCL. Overall, the NAE program has resulted in approximately a 70% reduction in PCE and TCE concentrations in IW-8. Analysis of the TCE trends cannot reliably predict when the TCE MCL would be met at this location. The PCE trends indicate that the groundwater is approaching the PCE MCL at IW-8.

- Well IW-9 was sampled during all eight (8) phases of the NAE program (see Figure 5-5). IW-9 is located in close proximity to injection wells AS-1 and AS-6. TCE and PCE concentrations decreased strongly during Phase IV NAE program but rebounded to a concentration about 75% of the pre-NAE concentration. Well IW-9 did not indicate a clear increase or decrease in TCE and PCE concentrations during the Phase VII program; however, the ozone injection does appear to have halted the rebound that occurred after the earlier NAE efforts. TCE trends in samples collected during Phase VIII extended monitoring have a moderate correlation (R^2=0.56) between TCE concentrations and groundwater elevation. The TCE concentrations have shown an overall decreasing trend through the Phase VIII extended monitoring period and are predicted to reach the MCL by 2053. Overall, the NAE program has resulted in an approximately 25% reduction in TCE concentrations at IW-9. PCE concentrations have consistently remained slightly above the MCL throughout the extended monitoring period with only temporary reductions due to NAE efforts.

- Well VP-10 has been sampled throughout the NAE program (see Figure 5-6). VP-10 is located approximately 16 feet from the nearest injection well AS-5 and may be on the upgradient edge of the treatment zone although a strong response has not been observed. TCE concentrations in this well have exhibited a strong correlation (R^2 = 0.69) with groundwater elevation. The TCE concentrations trend through the Phase VIII extended monitoring period are predicted to reach the MCL by 2039; however, the correlation is weak. Overall, the NAE program has resulted in approximately a 50% reduction in TCE concentrations when compared to the highest concentrations observed in 2012. PCE concentrations have remained below the MCL throughout the NAE program.

Monitoring Wells Outside the NAE Treatment Zone

- The data from the remaining onsite wells upgradient and well outside of the NAE radius of influence (i.e., VP-3, VP-7, VP-8, VP-9 and VP 11) are provided in Figures 5-7 through 5-11. During the Phase VIII extended monitoring period, wells VP-3, VP-7, VP-8 and VP-9 all showed moderate to strong correlations between TCE concentrations and groundwater elevation (R^2 values between 0.55 and 0.94). There is no correlation between TCE and groundwater elevation for VP-11.

  Of these wells, TCE concentrations at VP-9 located northeast of the former solvent shed are typically observed to be the lowest and stable around the MCL. TCE concentrations at VP-7 and VP-8 are variable, ranging from 10 µg/l to 32 µg/l, and 7 µg/l to 11 µg/l, respectively. TCE at VP-11 is relatively stable with an average concentration of approximately 30 µg/l. TCE concentrations at VP-3 continued to fluctuate during the Phase VIII extended monitoring program with the groundwater elevation, and ranged between 45 µg/l and 90 µg/l. The TCE concentrations and correlation to groundwater elevation observed at VP-3 indicate a minor source area of VOCs most likely associated with the former process trenches within the former plant building. Analysis of the TCE trends cannot reliably predict when the TCE MCL would be met at these locations.

  PCE concentrations at these wells are generally stable, being slightly above the MCL at VP-3 and VP-11, and below the MCL at VP-7, VP-8 and VP-9 throughout the NAE program. Due to their locations being outside the treatment zones, any concentration changes in these wells is unlikely to be due to the NAE program.

Downgradient Monitoring Wells

- On-site, long-term monitoring well MB-3 has historically (1996 – 2011) exhibited concentration variations with TCE ranging from 14 to 71 µg/L and an average of 47 ug/L before the start of the NAE program (see Figure 5-12). There is no correlation between TCE and groundwater elevation for MB-3. Overall, the NAE

program has resulted in approximately a 50% reduction in TCE concentrations in MB-3. The TCE concentrations continued to decrease through the Phase VIII extended monitoring period and are predicted to reach the MCL no sooner than 2029. PCE concentrations remained below the MCL throughout the NAE program.

- On-site, long-term monitoring well MW-7S has historically (1996 – 2011) exhibited a decreasing trend in TCE concentrations (see Figure 5-13) that continued through the extended monitoring period. There is no statistically significant correlation between TCE and groundwater elevation for MW-7S during the extended monitoring period. Current TCE concentrations are about 50% of the initial concentrations and are predicted to reach the MCL no sooner than 2044. PCE concentrations continue to be relatively stable at or slightly below the MCL.

- On-site, downgradient well MW-4 has historically (Pre-Phase I: 2005 – 2011) exhibited a high degree of variation with TCE ranging from 22 to 110 µg/L with an average concentration of 60 µg/L (see Figure 5-14). There is no statistically significant correlation between TCE and groundwater elevation for MW-4 during the extended monitoring period. Since initiating the NAE efforts, the TCE concentrations have been less variable and are showing a steady decline for an approximately 40% reduction since monitoring began. TCE concentrations are predicted to reach the MCL no sooner than 2030. Since MW-4 was installed, PCE concentrations have remained below the MCL.

- Offsite well OSMW-3 has shown varying TCE concentrations since it was installed in 2009 (see Figure 5-15) ranging from 4.6 up to 17 µg/l. Overall, TCE concentrations at this well have decreased and are predicted to reach the MCL by 2041; however, the correlation is weak. PCE concentrations have remained below the MCL throughout the NAE program. The other two offsite wells, OSMW-1 and OSMW-2, have not had detectable concentrations of either TCE or PCE.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

Natural attenuation/long-term monitoring was the groundwater remedy selected in the Record of Decision. Groundwater is not used as a potable water source at the Site. The primary purpose of the NAE program was to reduce VOC mass in the former solvent shed storage area to enhance the rate of natural attenuation and to generate data to assess the possibility of shortening the ultimate time to achieve MCLs. An evaluation of the overall NAE program performance indicates the following:

- Monitoring wells located within the treatment zones (ASMP-1, IW-7, IW-8 and IW-9) achieved TCE concentration reductions of 25 % to 70%. TCE concentrations in monitoring well IW-6, which is also within the treatment zone, did not show a significant reduction, but have remained below the target treatment concentration of 100 µg/L since 2016.

- Monitoring wells MW-4 and MB-3, downgradient of the treatment area, achieved TCE concentration reductions of approximately 40% to 50%, respectively.

- Phase VIII extended groundwater monitoring results from off-site monitoring well OSMW-3 showed TCE concentration reductions of approximately 30% when compared to elevated results observed in 2016 and 2017.

- Monitoring wells VP-3, VP-7, VP-8, VP-9, V-10, VP-11 and MW-7S, located upgradient of the former solvent shed, were not impacted by the NAE program. TCE concentrations at these monitoring wells are generally stable within the range of historically observed concentrations, with fluctuations likely a result of seasonality and variations in the groundwater table.

- The NAE program has included three phases of sustained, active remediation of increasing duration and scope each time. The NAE program has met its initial

objective of treating all areas with TCE groundwater concentrations above 100 µg/L.

- Analysis of the data trends indicate that the timeframe to meet the MCL for TCE and PCE within the plume area cannot be reliably predicted. At the downgradient wells, MB-3, MW-4 and MW-7S and off-site monitoring well OSMW-3, the data suggest that the MCLs will be met in 10 to 20 years.

- There are no complete human or ecological pathways to the VOC contaminated groundwater since it is not being used for potable or municipal purposes, and it discharges into Foundry Cove and the Hudson River at insignificant quantities. The selected remedy for the groundwater of long-term monitoring continues to be protective of human health and the environment both on and offsite.

6.2 RECOMMENDATIONS FOR FUTURE MONITORING

- The current Long-Term Monitoring Plan calls for annual monitoring of wells MW-7S and MB-3. We recommend that MW-4 and OSMW-03 be added to the annual monitoring event to monitor downgradient conditions.

- In addition, we recommend that wells IW-6, IW-8, VP-2, VP-3, VP-7, VP-8. VP-9 and VP-10 be sampled every five years in the year prior to the Five Year Review to monitor conditions within the plume and plume limits.

- The remaining wells should be decommissioned in accordance with New York State regulations.

TABLES

TABLE 1-1
WELL AND PIEZOMETER CONSTRUCTION SUMMARY TABLE
Marathon Remediation Site Cold Spring, New York

Well ID	Date Installed	Northing	Easting	Latitude	Longitude	Surveyed TOIC	Ground Surface Elevation (FT.MSL)	Well Construction Depth To Bottom (feet)	Well Construction (F or S)	Casing/ Screen Diameter (inches)	Casing Material	Screen Slot Size (inches)	Screen Length (feet)	Screened Interval (feet)	Screen Material	Sand Pack Length (feet)	Bentonite Seal Length (feet)	Drilling Method
MB-3	Pre 1988	515926.21	604091.16	41.415630713	73.953424967	34.70	32.6	401	S	2	PVC	0.010 [2]	10	30-40	PVC	Unknown		
MW-4	1/14/2005	515955.20	603978.90	41.415711625	73.953833782	32.73	31.4	42	S	2	PVC	0.010	10	29-39	PVC	15	2	HSA
MW-7SA	3/20/1987	516029.91	603878.73	41.415917869	73.954197790	31.70	29.3	40	S	2	SS	0.020	10	29-39	SS	14	2	HSA
IW-1	1/31/2005	515937.92	604104.47	41.415662691	73.953376254	33.58	32.1	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-2	1/31/2005	515941.74	604083.54	41.415673426	73.953452500	32.09	30.5	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-3	1/26/2005	515954.72	604068.75	41.415709228	73.953506214	29.98	28.6	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-4	1/25/2005	515960.30	604046.29	41.415724812	73.953588010	29.64	28.3	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-5	1/25/2005	515969.75	604030.75	41.415750934	73.953644514	28.68	27.8	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-6	1/20/2005	515975.24	604011.11	41.415766238	73.953716030	28.67	28.1	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-7	1/20/2005	515990.66	603993.81	41.415808766	73.953778857	29.13	28.0	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-8	1/20/2005	515993.60	603973.72	41.415817076	73.953852054	29.82	28.3	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-9	1/19/2005	516007.48	603958.68	41.415855350	73.953906665	29.59	28.2	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-10	1/19/2005	516011.36	603939.34	41.415866231	73.953977114	30.06	28.6	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-11	1/19/2005	516025.21	603923.04	41.415904438	73.954036319	30.07	28.7	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-12	2/1/2005	516028.88	603903.89	41.415914740	73.954106078	30.98	29.1	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-13	2/1/2005	516042.19	603885.81	41.415951487	73.954171782	30.46	29.1	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
IW-14	2/1/2005	516045.67	603866.59	41.415961268	73.954241799	31.61	29.6	35	S	2	PVC	0.060	10	25-35	PVC	12	2	HSA
OSMW-1	8/3/2009	515838.26	604109.66	41.415389112	73.953358926	52.88	53.1	57	F	2	PVC	0.010	10	47-57	PVC	12	3	HSA
OSMW-2	8/3/2009	515810.86	603992.64	41.415315321	73.953785994	55.12	55.4	59	F	2	PVC	0.010	10	49-59	PVC	13	2.6	HSA
OSMW-3	7/29/2009	515866.08	603858.09	41.415468487	73.954275653	54.41	54.8	58	F	2	PVC	0.010	10	48-58	PVC	12	2	HSA
VP-1	8/11/2009	516199.65	603641.92	41.416386559	73.955058455	29.39	29.7	32	F	1	PVC	0.010	10	22-32	PVC	12	2	HSA
VP-2	8/11/2009	516284.21	603709.59	41.416617822	73.954810393	27.83	28.3	30	F	1	PVC	0.010	10	20-30	PVC	12	2	HSA
VP-3	8/12/2009	516167.40	603824.50	41.416295860	73.954393311	27.75	28.1	32	F	1	PVC	0.010	10	22-32	PVC	12	2	HSA
VP-7	7/20/2011	516233.13	603862.52	41.416475799	73.954253647	26.85	27.1	29	F	1	PVC	0.010	10	19-29	PVC	13	2	HSA
VP-8	7/19/2011	516134.26	603956.53	41.416203322	73.953912480	25.81	26.2	30	F	1	PVC	0.010	10	20-30	PVC	12	2	HSA
VP-9	7/18/2011	516044.15	604060.82	41.415955705	73.953819492	25.41	25.7	30	F	1	PVC	0.010	10	20-30	PVC	12	2	HSA
VP-10	7/19/2011	516048.48	603982.43	41.415967589	73.953819423	26.78	27.1	30	F	1	PVC	0.010	10	20-30	PVC	12	2	HSA
VP-11	7/20/2011	516101.31	603887.46	41.416113721	73.954164823	27.62	28.2	32	F	1	PVC	0.010	10	22-32	PVC	12	2	HSA
SVE-1	12/16/2011	515988.71	603973.37	41.415803660	73.953853408	30.07	28.4	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
AS-1	12/21/2011	516003.98	603979.28	41.415845497	73.953831618	29.58	27.8	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-2	3/6/2012	515972.24	603980.03	41.415758378	73.953829390	30.60	29.2	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-3	3/7/2012	515987.05	604011.38	41.415798647	73.953714857	28.85	27.5	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-4	4/30/2013	516018.11	604001.06	41.415884014	73.953751986	28.06	27.1	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-5	4/29/2013	516034.05	603975.48	41.415928069	73.953844992	28.26	27.2	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-6	4/25/2013	516001.03	603952.43	41.415837722	73.953929556	29.69	28.4	50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-7	6/14/2017	Well Not Surveyed						50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
AS-8	6/13/2017	Well Not Surveyed						50	S	2	PVC	Microporous	2	48-50	PVC	5	5	HSA
ASMP-1	12/14/2011	516027.39	603983.06	41.415909700	73.953817462	28.80	27.3	32	S	1	PVC	0.010	10	22-32	PVC	13	5	HSA
VMP-1	12/15/2011	515995.95	603958.89	41.415823704	73.953906084	29.94	28.4	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-2	12/19/2011	515975.02	603987.63	41.415765916	73.953801637	30.44	28.6	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-3	12/21/2011	515954.44	604021.10	41.415709032	73.953679941	30.63	28.9	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-4	12/12/2011	516008.16	603927.45	41.415857592	73.954020513	30.80	29.2	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-5	12/15/2011	516016.39	603980.66	41.415879539	73.953826388	29.04	27.5	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-6	4/23/2013	515986.34	603922.00	41.415797772	73.954040731	35.66	33.7	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-7	4/23/2013	515935.95	604006.16	41.415658467	73.953734706	35.70	34.0	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA
VMP-8	4/22/2013	515960.36	603964.16	41.415725964	73.953887439	34.75	32.4	23	S	2	PVC	0.010	13	10-23	PVC	15	5	HSA

F -Flush mounted protective casing
S- Stick-up with protective casing.
PVC - Polyvinyl Chlorate
SS - Stainless Steel
msl - Mean Sea Level.
TOIC - Top of Inner Casing
HSA - Hollow Stem Auger
1 - Construction depth estimated from current field depth to bottom measurements.
2 - Screen slot size unknown, assumed to be 0.010 as industry normal.
MW-7S was accidentally damaged on 3/19/87. Replacement well MW-7SA was installed on 3/20/87 adjacent to original MW-7S.

TABLE 3-1
GROUNDWATER PCE AND TCE CONCENTRATION RANGES
December 2019 through September 2021 Quarterly Sample Events
Marathon Remediation Site Cold Spring, New York

Well ID	PCE range (ug/L)		
ASMP-1	9.3	-	12
IW-6	0.95	-	1.2
IW-7	0.35	-	1
IW-8	3.2	-	7.8
IW-9	6.3	-	8.8
MB-3	1.4	-	3.3
MW-4	1.2	-	2.2
MW-7S	1.9	-	4.4
VP-1	ND	-	ND
VP-2	ND	-	ND
VP-3	13	-	20
VP-7	1.6	-	2.9
VP-8	0.96	-	2.1
VP-9	0.44	-	0.64
VP-10	0.37	-	0.98
VP-11	6.1	-	8.6
OSMW-01	ND	-	ND
OSMW-02	ND	-	ND
OSMW-03	0.34	-	0.64

Well ID	TCE range (ug/L)		
ASMP-1	46	-	52
IW-6	83	-	98
IW-7	22	-	34
IW-8	25	-	37
IW-9	38	-	45
MB-3	11	-	20
MW-4	22	-	34
MW-7S	26	-	54
VP-1	ND	-	ND
VP-2	2	-	5
VP-3	45	-	80
VP-7	10	-	32
VP-8	6.7	-	11
VP-9	4.3	-	5.8
VP-10	10	-	16
VP-11	28	-	33
OSMW-01	ND	-	ND
OSMW-02	ND	-	ND
OSMW-03	4.6	-	13

Notes:
ND - Not Detected
ug/L - microgram per liter

TABLE 3-2
PFAS and 1,4-DIOXANE GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location	NYSDECs Part 375 Remedial Programs January 2021		VP-1			MW-7S			MW-4			MW-4D			Equipment Blank			Field Blank			Trip Blank		
Lab ID - Alpha			L2150686-06			L2150686-05			L2150686-02			L2150686-03			L2150686-01			L2150686-04			L2150686-07		
Lab ID - Eurofins*			460-243573-05			460-243573-04			460-243573-02			460-243573-03			460-243573-01								
Sample Date			9/20/2021			9/20/2021			9/20/2021			9/20/2021			9/20/2021			9/20/2021			9/20/2021		
Matrix			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous			Aqueous		
Remarks			Upgradient			Midpoint			Downgradient			FD of MW-4											
Parameter		**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Perfluorinated Alkyl Acids by Isotope Dilution																							
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorobutanesulfonic Acid (PFBS)	0.1	ug/L	0.00213		0.002	0.002		0.002	0.002		0.002	0.002		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorobutanoic Acid (PFBA)	0.1	ug/L	0.00221		0.002	0.003		0.002	0.005		0.002	0.006		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorodecanesulfonic Acid (PFDS)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorodecanoic Acid (PFDA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorododecanoic Acid (PFDoA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluoroheptanesulfonic Acid (PFHpS)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluoroheptanoic Acid (PFHpA)	0.1	ug/L	0.000994	J	0.002	0.002		0.002	0.003		0.002	0.003		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorohexanesulfonic Acid (PFHxS)	0.1	ug/L	0.000795	J	0.002	8E-04	J	0.002	0.001	J	0.002	0.001	J	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorohexanoic Acid (PFHxA)	0.1	ug/L	0.00083	J	0.002	0.002		0.002	0.007		0.002	0.007		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorononanoic Acid (PFNA)	0.1	ug/L		U	0.002	3E-04	J	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorooctanesulfonamide (FOSA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorooctanesulfonic Acid (PFOS)	0.01	ug/L	0.00456		0.002	0.004		0.002	0.006		0.002	0.007		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorooctanoic Acid (PFOA)	0.01	ug/L	0.00497		0.002	0.006		0.002	0.009		0.002	0.009		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluoropentanoic Acid (PFPeA)	0.1	ug/L	0.000973	J	0.002	0.002		0.002	0.013		0.002	0.013		0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorotetradecanoic Acid (PFTA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluorotridecanoic Acid (PFTrDA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
Perfluoroundecanoic Acid (PFUnA)	0.1	ug/L		U	0.002		U	0.002		U	0.002		U	0.002		U	0.00185		U	0.0018		U	0.0017
PFOA/PFOS, Total	0.5	ug/L	0.00953		0.002	0.01		0.002	0.015		0.002	0.016		0.002		U	0.00185		U	0.0018		U	0.0017
Semivolatiles SIMs Isotope Dilution*																							
1,4-Dioxane		ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		NA			NA	

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate
NA - Not Analyzed

TABLE 4-1
SOIL GAS SAMPLING RESULTS
2019, 2020 2021 Annual Sample Events
Marathon Remediation Site Cold Spring, New York

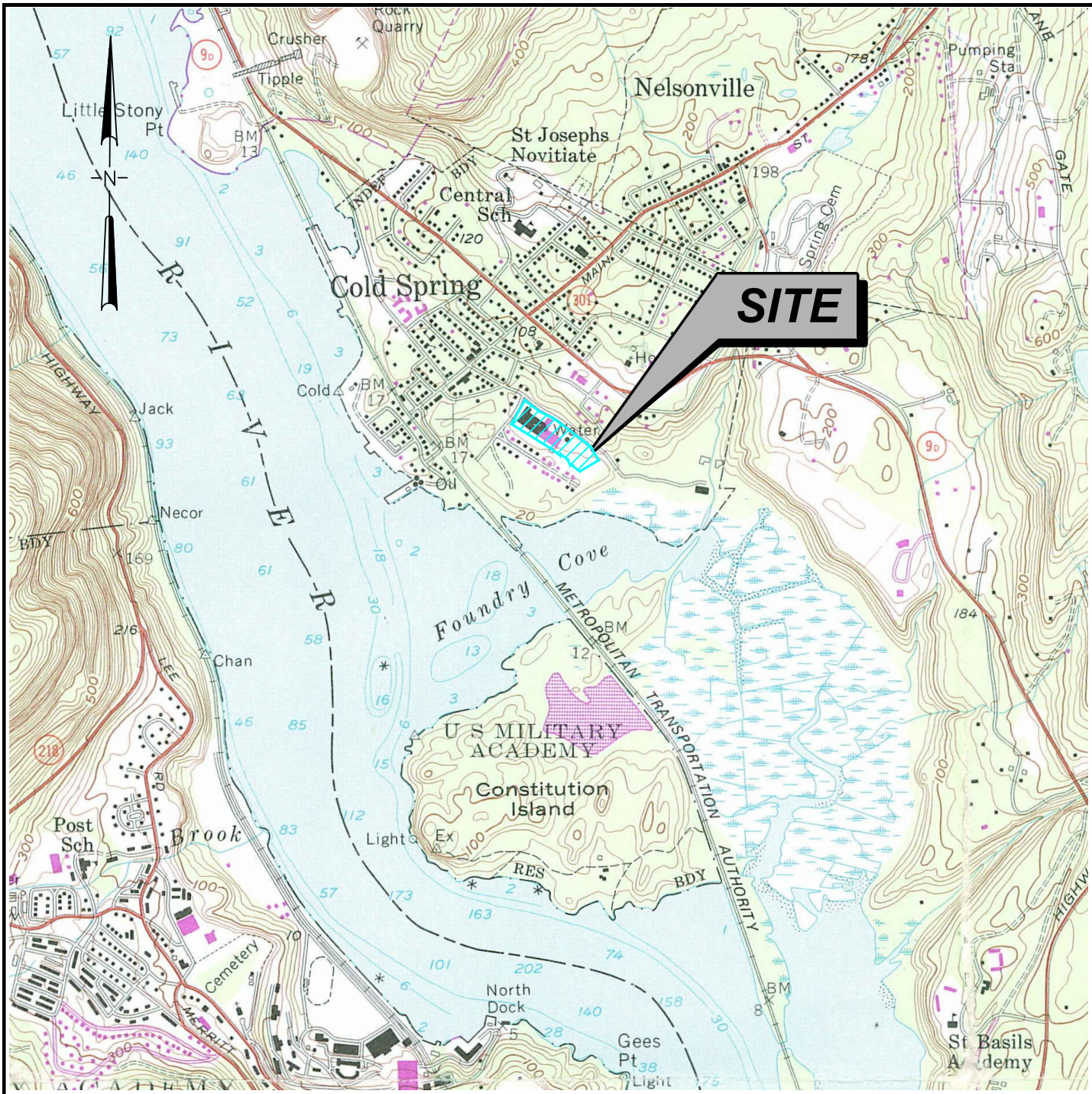
Sample Location		AMBIENT			AMBIENT			SVE-1			SVE-1			SVE-1			VMP-3			VMP-3			VMP-3			VMP-4			VMP-4			VMP-4			VMP-5			VMP-5			VMP-5		
Lab ID		200-56564-01			200-56564-01			200-51911-05			200-56564-05			200-61066-04			200-51911-02			200-56564-02			200-61066-01			200-51911-03			200-56564-03			200-61066-02			200-51911-04			200-56564-04			200-61066-03		
Sample Date		12/15/2019			12/15/2020			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021		
Matrix		Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air		
Remarks																																											
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatile																																											
1,1,1-Trichloroethane	ug/m3		U	1.1		U	1.1	5.8	J	11	24		11	190		11	9	J	11	200		33	440		19		U	11	3.9	J	11	63		11		U	11	210		35	220		11
1,1,2,2-Tetrachloroethane	ug/m3		U	1.4		U	1.4		U	14		U	14		U	14		U	14		U	41		U	23		U	14		UJ	14		U	14		U	14		U	44		U	14
1,1,2-Trichloroethane	ug/m3		U	1.1		U	1.1		U	11		U	11		U	11		U	11		U	33		U	19		U	11		UJ	11		U	11		U	11		U	35		U	11
1,1-Dichloroethane	ug/m3		U	0.81		U	0.81		U	8.1		U	8.1		U	8.1		U	8.1		U	24		U	14		U	8.1		UJ	8.1		U	8.1		U	8.1		U	26		U	8.1
1,1-Dichloroethene	ug/m3		U	0.79		U	0.79		U	7.9		U	7.9		U	7.9		U	7.9	13	J	24	32		14		U	7.9		UJ	7.9		U	7.9		U	7.9		U	25	4.3	J	7.9
1,2,4-Trichlorobenzene	ug/m3		U	3.7		U	3.7		U	37		U	37		U	37		U	37		U	110		U	63		U	37		UJ	37		U	37		U	37		U	120		U	37
1,2,4-Trimethylbenzene	ug/m3	0.36	J	0.98		U	0.98		U	9.8		U	9.8		U	9.8		U	9.8		U	29		U	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31		U	9.8
1,2-Dibromoethane	ug/m3		U	1.5		U	1.5		U	15		U	15		U	15		U	15		U	46		U	26		U	15		UJ	15		U	15		U	15		U	49		U	15
1,2-Dichlorobenzene	ug/m3		U	1.2		U	1.2		U	12		U	12		U	12		U	12		U	36		U	21		U	12		UJ	12		U	12		U	12		U	38		U	12
1,2-Dichloroethane	ug/m3		U	0.81		U	0.81		U	8.1		U	8.1		U	8.1		U	8.1		U	24		U	14		U	8.1		UJ	8.1		U	8.1		U	8.1		U	26		U	8.1
1,2-Dichloroethene, Total	ug/m3		U	1.6		U	1.6		U	16		U	16		U	16		U	16		U	48		U	27	6.3	J	16		UJ	16		U	16		U	16		U	51		U	16
1,2-Dichloropropane	ug/m3		U	0.92		U	0.92		U	9.2		U	9.2		U	9.2		U	9.2		U	28		U	16		U	9.2		UJ	9.2		U	9.2		U	9.2		U	30		U	9.2
1,2-Dichlorotetrafluoroethane	ug/m3		U	1.4		U	1.4		U	14		U	14		U	14		U	14		U	42		U	24		U	14		UJ	14		U	14		U	14		U	45		U	14
1,3,5-Trimethylbenzene	ug/m3		U	0.98		U	0.98		U	9.8		U	9.8		U	9.8		U	9.8		U	29		U	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31		U	9.8
1,3-Butadiene	ug/m3		U	0.44		U	0.44		U	4.4		U	4.4		U	4.4		U	4.4		U	13		U	7.6		U	4.4		UJ	4.4		U	4.4		U	4.4		U	14		U	4.4
1,3-Dichlorobenzene	ug/m3		U	1.2		U	1.2		U	12		U	12		U	12		U	12		U	36		U	21		U	12		UJ	12		U	12		U	12		U	38		U	12
1,4-Dichlorobenzene	ug/m3		U	1.2		U	1.2		U	12		U	12		U	12		U	12		U	36		U	21		U	12		UJ	12		U	12		U	12		U	38		U	12
1,4-Dioxane	ug/m3		U	18		U	18		U	180		U	180		U	180		U	180		U	540		U	310		U	180		UJ	180		U	180		U	180		U	580		U	180
2,2,4-Trimethylpentane	ug/m3		U	0.93		U	0.93		U	9.3		U	9.3		U	9.3	2.4	J	9.3		U	28		U	16	2.4	J	9.3		UJ	9.3		U	9.3	7.5	J	9.3		U	30		U	9.3
2-Chlorotoluene	ug/m3		U	1		U	1		U	10		U	10		U	10		U	10		U	31		U	18		U	10		UJ	10		U	10		U	10		U	33		U	10
3-Chloropropene	ug/m3		U	1.6		U	1.6		U	16		U	16		U	16		U	16		U	47		U	27		U	16		UJ	16		U	16		U	16		U	50		U	16
4-Ethyltoluene	ug/m3		U	0.98		U	0.98		U	9.8		U	9.8		U	9.8		U	9.8		U	29		U	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31		U	9.8
4-Isopropyltoluene	ug/m3		U	1.1		U	1.1		U	11		U	11		U	11		U	11		U	33		U	19		U	11		UJ	11		U	11		U	11		U	35		U	11
Acetone	ug/m3		U	12	3	J	12		U	120		U	120		U	120		U	120		U	360		U	200		U	120		UJ	120		U	120		U	120		U	380		U	120
Benzene	ug/m3	0.38	J	0.64	0.3	J	0.64		U	6.4		U	6.4		U	6.4		U	6.4		U	19		U	11		U	6.4		UJ	6.4		U	6.4	3	J	6.4		U	20		U	6.4
Benzyl chloride	ug/m3		U	1		U	1		U	10		U	10		U	10		U	10		U	31		U	18		U	10		UJ	10		U	10		U	10		U	33		U	10
Bromodichloromethane	ug/m3		U	1.3		U	1.3		U	13		U	13		U	13		U	13		U	40		U	23		U	13		UJ	13		U	13		U	13		U	43		U	13
Bromoethene(Vinyl Bromide)	ug/m3		U	0.87		U	0.87		U	8.7		U	8.7		U	8.7		U	8.7		U	26		U	15		U	8.7		UJ	8.7		U	8.7		U	8.7		U	28		U	8.7
Bromoform	ug/m3		U	2.1		U	2.1		U	21		U	21		U	21		U	21		U	62		U	35		U	21		UJ	21		U	21		U	21		U	66		U	21
Bromomethane	ug/m3		U	0.78		U	0.78		U	7.8		U	7.8		U	7.8		U	7.8		U	23		U	13		U	7.8		UJ	7.8		U	7.8		U	7.8		U	25		U	7.8
Carbon disulfide	ug/m3		U	1.6		U	1.6		U	16		U	16	40		16		U	16		U	47	17	J	27		U	16		UJ	16		U	16		U	16		U	50		U	16
Carbon tetrachloride	ug/m3	0.4	J	1.3	0.35	J	1.3		U	13		U	13		U	13		U	13		U	38	5	J	22		U	13		UJ	13		U	13		U	13		U	40	2.1	J	13
Chlorobenzene	ug/m3		U	0.92		U	0.92		U	9.2		U	9.2		U	9.2		U	9.2		U	28		U	16		U	9.2		UJ	9.2		U	9.2		U	9.2		U	29		U	9.2
Chloroethane	ug/m3		U	1.3		U	1.3		U	13		U	13		U	13		U	13		U	40		U	23		U	13		UJ	13		U	13		U	13		U	42		U	13
Chloroform	ug/m3		U	0.98		U	0.98		U	9.8		U	9.8	4.2	J	9.8		U	9.8		U	29	7.3	J	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31	4.6	J	9.8
Chloromethane	ug/m3	1.1		1	1.2		1		U	10		U	10		U	10		U	10		U	31		U	18		U	10		UJ	10		U	10		U	10		U	33		U	10
cis-1,2-Dichloroethene	ug/m3		U	0.79		U	0.79		U	7.9		U	7.9		U	7.9		U	7.9		U	24	4.2	J	14	6.2	J	7.9		UJ	7.9	6.8	J	7.9		U	7.9		U	25	6.9	J	7.9
cis-1,3-Dichloropropene	ug/m3		U	0.91		U	0.91		U	9.1		U	9.1		U	9.1		U	9.1		U	27		U	16		U	9.1		UJ	9.1		U	9.1		U	9.1		U	29		U	9.1
Cumene	ug/m3		U	0.98		U	0.98		U	9.8		U	9.8		U	9.8		U	9.8		U	29		U	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31		U	9.8
Cyclohexane	ug/m3		U	0.69		U	0.69		U	6.9		U	6.9		U	6.9		U	6.9		U	21		U	12		U	6.9		UJ	6.9		U	6.9		U	6.9		U	22		U	6.9
Dibromochloromethane	ug/m3		U	1.7		U	1.7		U	17		U	17		U	17		U	17		U	51		U	29		U	17		UJ	17		U	17		U	17		U	55		U	17
Dichlorodifluoromethane	ug/m3	2.7		2.5	2.1	J	2.5		U	25		U	25		U	25		U	25		U	74		U	42		U	25		UJ	25		U	25		U	25		U	79		U	25
Ethylbenzene	ug/m3		U	0.87		U	0.87		U	8.7		U	8.7		U	8.7		U	8.7		U	26		U	15		U	8.7		UJ	8.7		U	8.7		U	8.7		U	28		U	8.7
Freon 22	ug/m3	1.1	J	1.8	0.96	J	1.8		U	18		U	18		U	18		U	18		U	53		U	30		U	18		UJ	18		U	18		U	18		U	57		U	18
Freon TF	ug/m3	0.51	J	1.5	0.51	J	1.5		U	15		U	15		U	15		U	15		U	46		U	26		U	15		UJ	15		U	15		U	15		U	49		U	15
Hexachlorobutadiene	ug/m3		U	2.1		U	2.1		U	21	8.7	J	21		U	21		U	21		U	64		U	36		U	21		UJ	21		U	21		U	21		U	68		U	21
Isopropyl alcohol	ug/m3	1.6	J	12		U	12	15	J	120		U	120		U	120	17	J	120		U	370		U	210	21	J	120		UJ	120		U	120	37	J	120		U	390		U	120
m,p-Xylene	ug/m3	0.66	J	2.2		U	2.2		U	22		U	22		U	22		U	22		U	65		U	37		U	22		UJ	22		U	22		U	22		U	69		U	22
Methyl Butyl Ketone (2-Hexanone)	ug/m3		U	2		U	2		U	20		U	20		U	20		U	20		U	61		U	35		U	20		UJ	20		U	20		U	20		U	66		U	20
Methyl Ethyl Ketone	ug/m3	0.4	J	1.5		U	1.5		U	15		U	15		U	15		U	15		U	44		U	25		U	15		UJ	15		U	15		U	15		U	47		U	15

TABLE 4-1
SOIL GAS SAMPLING RESULTS
2019, 2020 2021 Annual Sample Events
Marathon Remediation Site Cold Spring, New York

Sample Location		AMBIENT			AMBIENT			SVE-1			SVE-1			SVE-1			VMP-3			VMP-3			VMP-3			VMP-4			VMP-4			VMP-4			VMP-5			VMP-5			VMP-5		
Lab ID		200-56564-01			200-56564-01			200-51911-05			200-56564-05			200-61066-04			200-51911-02			200-56564-02			200-61066-01			200-51911-03			200-56564-03			200-61066-02			200-51911-04			200-56564-04			200-61066-03		
Sample Date		12/15/2019			12/15/2020			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021			12/15/2019			12/15/2020			11/18/2021		
Matrix		Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air			Air		
Remarks																																											
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatile																																											
methyl isobutyl ketone	ug/m3		U	2		U	2		U	20		U	20		U	20		U	20		U	61		U	35		U	20		UJ	20		U	20		U	20		U	66		U	20
Methyl methacrylate	ug/m3		U	2		U	2		U	20		U	20		U	20		U	20		U	61		U	35		U	20		UJ	20		U	20		U	20		U	66		U	20
Methyl tert-butyl ether	ug/m3		U	0.72		U	0.72		U	7.2		U	7.2		U	7.2		U	7.2		U	22		U	12		U	7.2		UJ	7.2		U	7.2		U	7.2		U	23		U	7.2
Methylene Chloride	ug/m3		U	1.7		U	1.7		U	17		U	17		U	17		U	17		U	52		U	30		U	17		UJ	17		U	17		U	17		U	56		U	17
Naphthalene	ug/m3		U	2.6		U	2.6		U	26		U	26		U	26		U	26		U	79		U	45		U	26		UJ	26		U	26		U	26		U	84		U	26
n-Butane	ug/m3	2.6		1.2	1.4		1.2	22		12	3.2	J	12		U	12	26		12		U	36		U	20	28		12	2.9	J	12		U	12	81		12		U	38		U	12
n-Butylbenzene	ug/m3		U	1.1		U	1.1		U	11		U	11		U	11		U	11		U	33		U	19		U	11		UJ	11		U	11		U	11		U	35		U	11
n-Heptane	ug/m3		U	0.82		U	0.82		U	8.2		U	8.2		U	8.2		U	8.2		U	25		U	14		U	8.2		UJ	8.2		U	8.2	2.7	J	8.2		U	26		U	8.2
n-Hexane	ug/m3		U	0.7		U	0.7		U	7		U	7		U	18		U	7		U	21		U	30		U	7		UJ	7		U	18	14		7		U	23		U	18
n-Propylbenzene	ug/m3		U	0.98		U	0.98		U	9.8		U	9.8		U	9.8		U	9.8		U	29		U	17		U	9.8		UJ	9.8		U	9.8		U	9.8		U	31		U	9.8
sec-Butylbenzene	ug/m3		U	1.1		U	1.1		U	11		U	11		U	11		U	11		U	33		U	19		U	11		UJ	11		U	11		U	11		U	35		U	11
Styrene	ug/m3		U	0.85		U	0.85		U	8.5		U	8.5		U	8.5		U	8.5		U	26		U	15		U	8.5		UJ	8.5		U	8.5		U	8.5		U	27		U	8.5
tert-Butyl alcohol	ug/m3		U	15		U	15		U	150		U	150		U	150		U	150		U	450		U	260		U	150		UJ	150		U	150		U	150		U	490		U	150
tert-Butylbenzene	ug/m3		U	1.1		U	1.1		U	11		U	11		U	11		U	11		U	33		U	19		U	11		UJ	11		U	11		U	11		U	35		U	11
Tetrachloroethene	ug/m3		U	1.4		U	1.4	81		14	470		14	1600		14	13	J	14	81		41	87		23	4.6	J	14	140	J	14	1900		14	3.9	J	14	2600		43	2400		14
Tetrahydrofuran	ug/m3		U	15		U	15		U	150		U	150		U	150		U	150		U	440		U	250		U	150		UJ	150		U	150		U	150		U	470		U	150
Toluene	ug/m3	0.64	J	0.75		U	0.75		U	7.5		U	7.5		U	7.5	6.6	J	7.5		U	23		U	13	6	J	7.5		UJ	7.5		U	7.5	12		7.5		U	24		U	7.5
trans-1,2-Dichloroethene	ug/m3		U	0.79		U	0.79		U	7.9		U	7.9		U	7.9		U	7.9		U	24		U	14		U	7.9		UJ	7.9		U	7.9		U	7.9		U	25		U	7.9
trans-1,3-Dichloropropene	ug/m3		U	0.91		U	0.91		U	9.1		U	9.1		U	9.1		U	9.1		U	27		U	16		U	9.1		UJ	9.1		U	9.1		U	9.1		U	29		U	9.1
Trichloroethene	ug/m3		U	1.1		U	1.1	140		11	750		11	2000		11	230		11	4200		32	6800		93	7.8	J	11	220	J	11	2300		43	11		11	4900		34	4500		43
Trichlorofluoromethane	ug/m3	1.2		1.1	1.2		1.1		U	11		U	11		U	11		U	11		U	34		U	19		U	11		UJ	11		U	11		U	11		U	36		U	11
Vinyl chloride	ug/m3		U	0.51		U	0.51		U	5.1		U	5.1		U	5.1		U	5.1		U	15		U	8.7		U	5.1		UJ	5.1		U	5.1		U	5.1		U	16		U	5.1
Xylene (total)	ug/m3	0.88	J	3		U	3		U	30		U	30		U	30		U	30		U	91		U	52		U	30		UJ	30		U	30		U	30		U	97		U	30
Xylene, o-	ug/m3	0.23	J	0.87		U	0.87		U	8.7		U	8.7		U	8.7		U	8.7		U	26		U	15		U	8.7		UJ	8.7		U	8.7		U	8.7		U	28		U	8.7

Notes:
RL - Reporting Limit
U - Not Detected
Q - Qualifier
ug/m^3 - micrograms per cubic meter
UJ - Estimated Not Detected
J - Estimated

FIGURES



SOURCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP OF WEST POINT, NY DATED 1957, REVISED 1981

2000 0 2000 4000

SCALE IN FEET

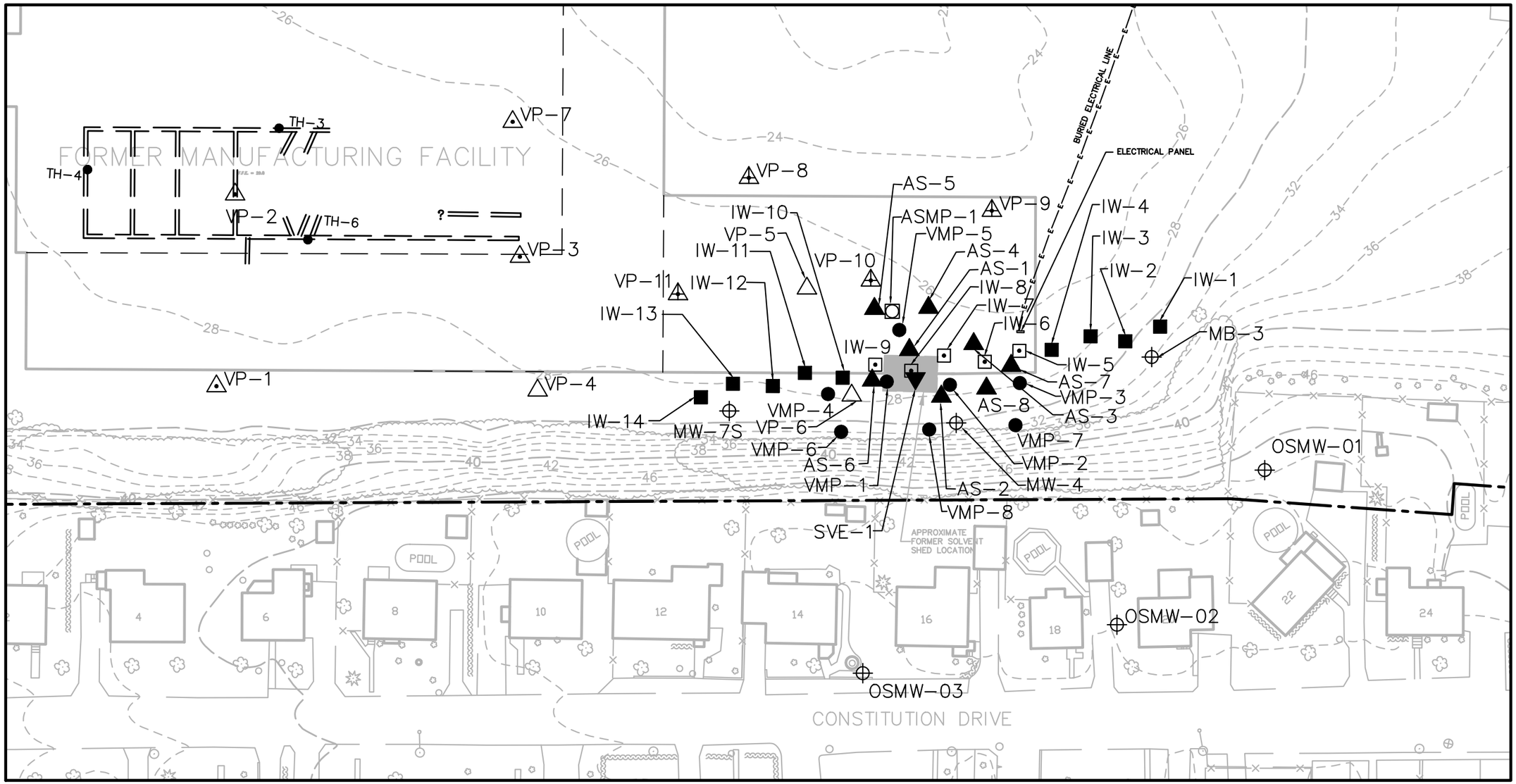
MONTROSE
Engineering & Geology, P.C.

1055 ANDREW DRIVE, SUITE A
WEST CHESTER, PENNSYLVANIA 19380
Tel: 610.840.9100 Fax: 610.840.9199 Web: montrose-env.com

SITE LOCATION MAP

MARATHON REMEDIATION SITE
Cold Spring, New York

PROJECT ENGINEER: B.L.F.	SCALE: 1" = 2000'		
CHECKED BY: M.J.P.	PROJECT NUMBER: NY95-219		
DRAWN BY: C.E.P.	DATE:	FIGURE: 1-1	



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line

OSMW-03 — Existing Monitoring Well

IW-1 — Existing Injection Well

IW-8 — Existing Injection Well Converted to Monitoring Well

VP-1 — Vertical Profiling Location

VP-8 — Converted to Piezometer

VP-4 — Existing Piezometer

Abandoned Vertical Profiling Location

Approx. Location of Former Process Trench

TH-1 — Test Hole Location

ASMP-1 — Air Sparge Monitoring Probe

VMP-1 — Vadose Zone Monitoring Probe

AS-1 — Air Sparge/Ozone Injection Well

SVE-1 — Soil Vapor Extraction Well

Note: Air Sparge/Ozone Injection wells AS-7 and AS-8 have not yet been surveyed. The presented locations are approximate.

60 0 60 120

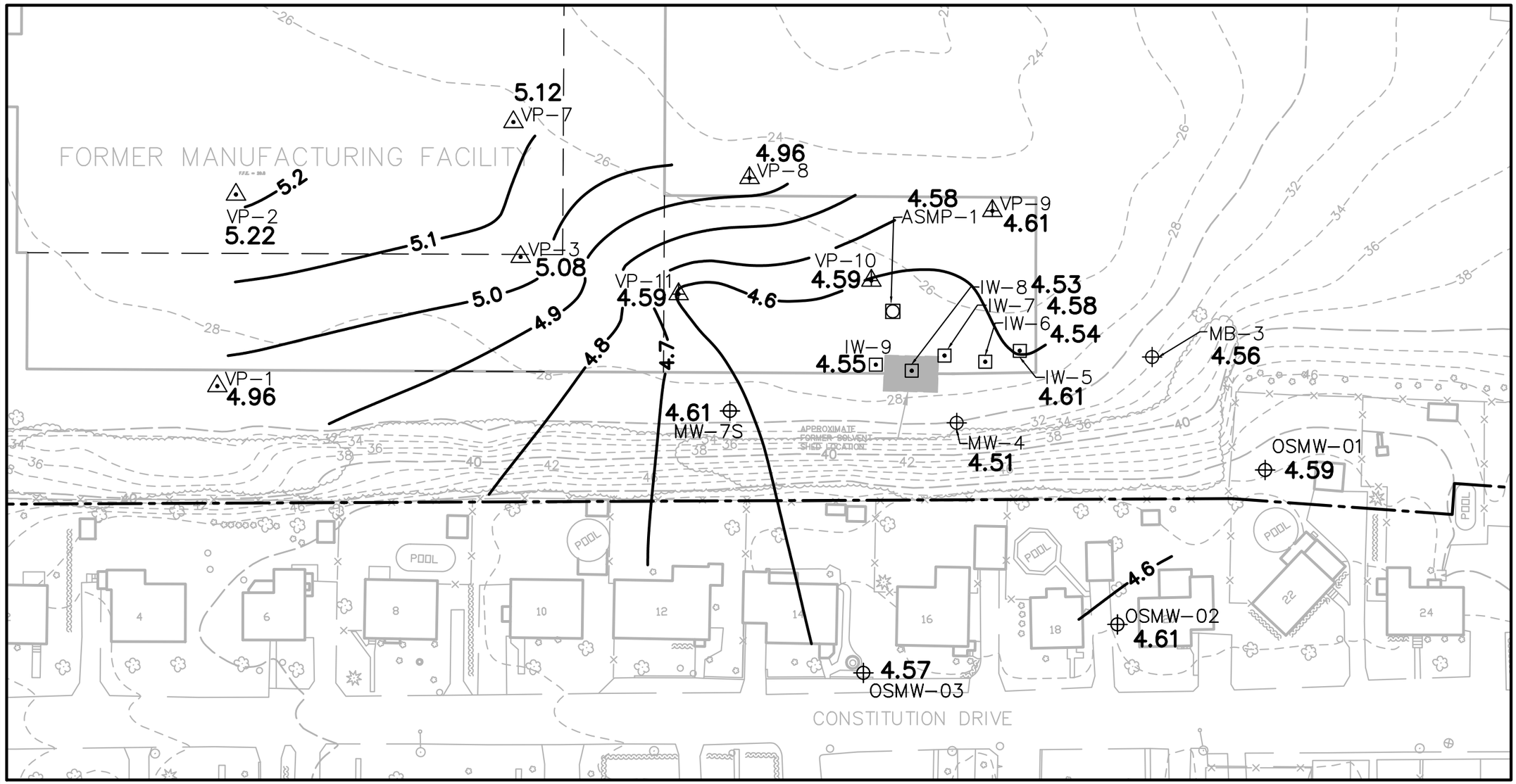
SCALE IN FEET

MONTROSE
Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A
WEST CHESTER, PENNSYLVANIA 19380
Tel: 610.840.9100 Fax: 610.840.9199 Web: montrose-env.com

SITE WELL LOCATION MAP
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

1-2



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- VP-8 — Existing Piezometer
- ASMP-1 — Air Sparge Monitoring Probe
- — 4 — Groundwater Contour Line (ft msl)

Notes:
1) ALL GROUNDWATER ELEVATIONS PRESENTED AS FEET MEAN SEA LEVEL
2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

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1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER POTENTIOMETRIC MAP SEPTEMBER 20, 2021

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

3-1

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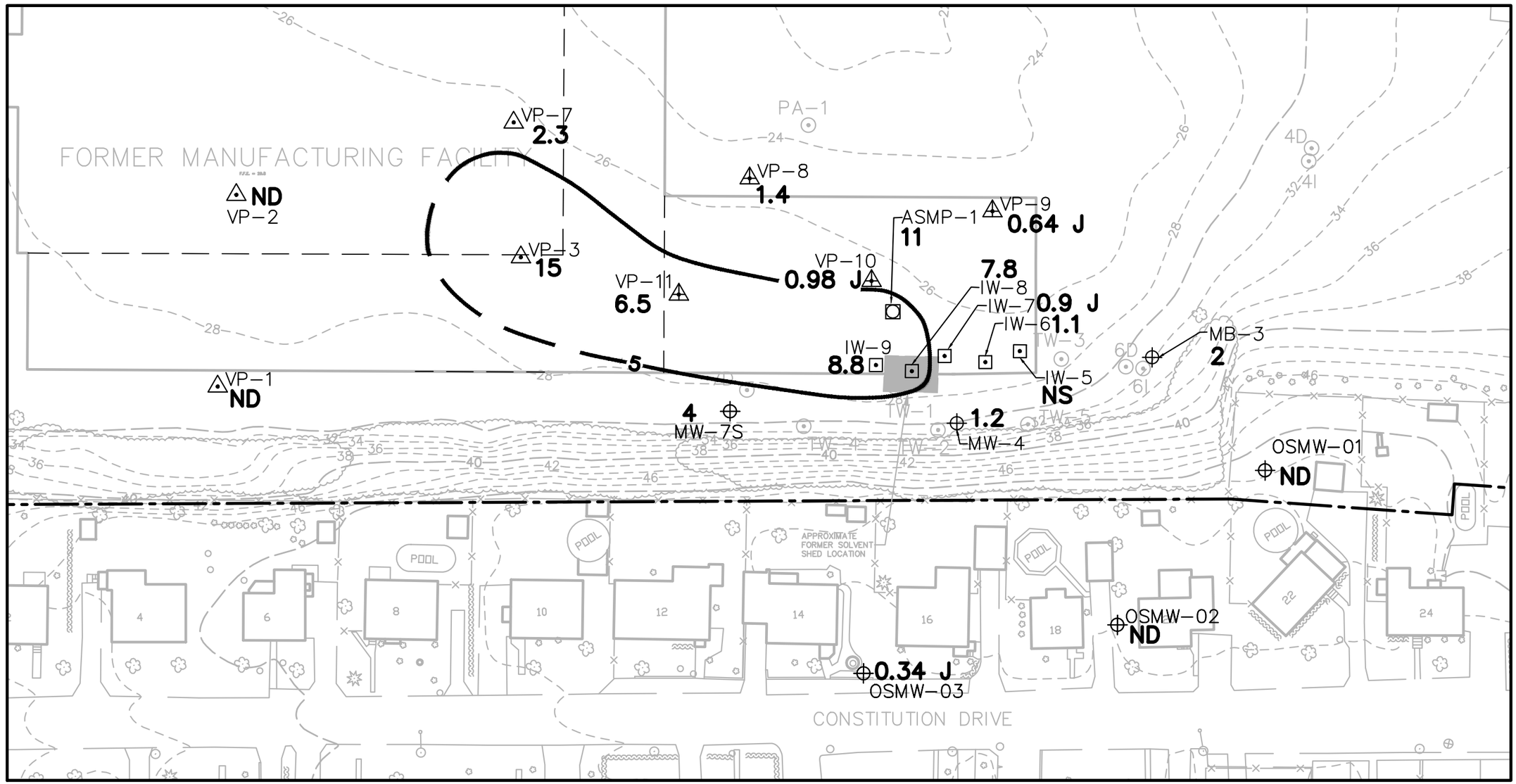

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP-8 — Existing Piezometer
- NS — Not Sampled
- ND — Not Detected
- PA-1 — Abandoned Historic Groundwater Monitoring Well

60 0 60 120

SCALE IN FEET

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Engineering & Geology, P.C.
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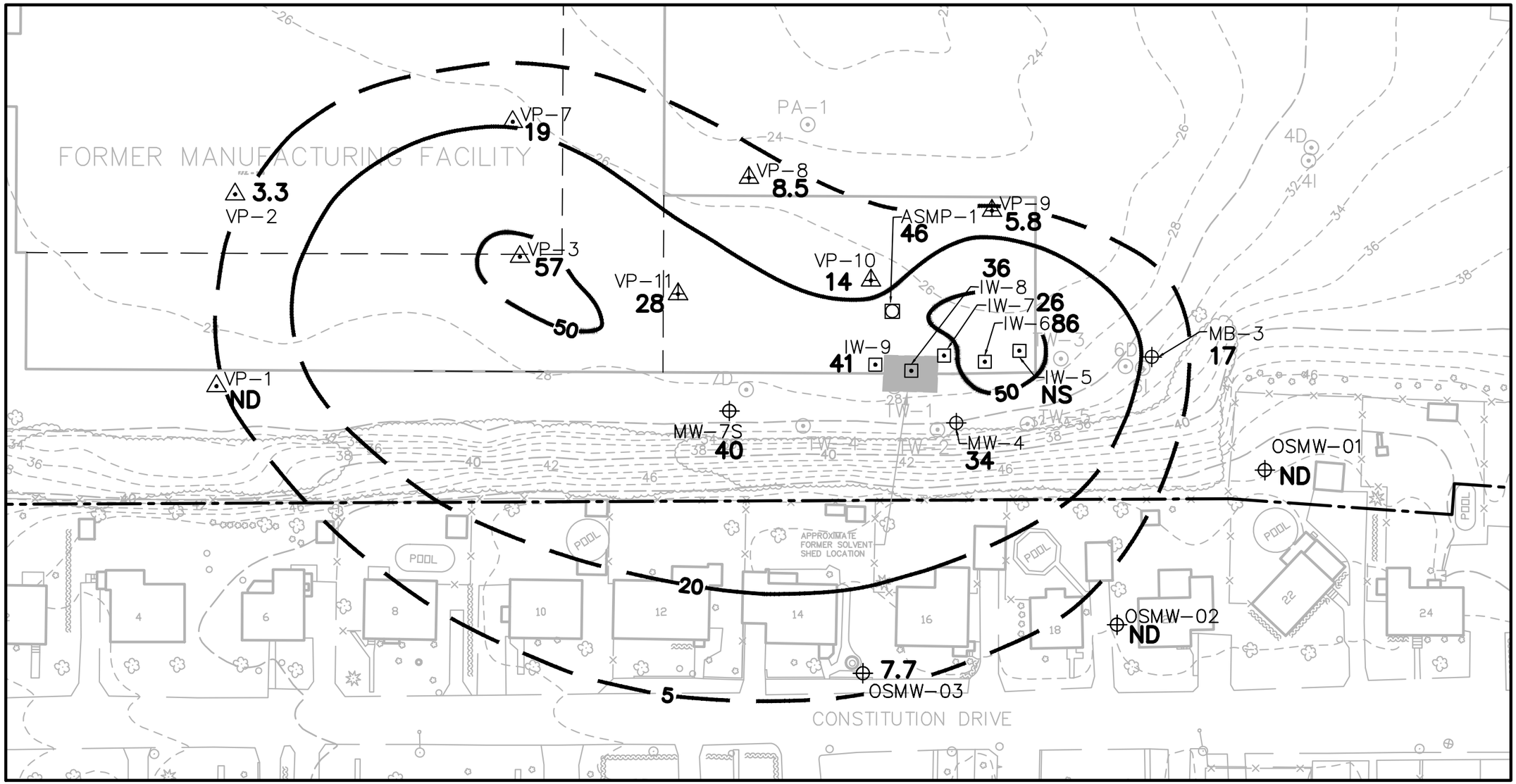
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER PCE ISOCONCENTRATION SEPTEMBER 2021
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

3-2



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
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- VP-8 — Existing Piezometer
- **NS** Not Sampled
- **ND** Not Detected
- PA-1 — Abandoned Historic Groundwater Monitoring Well

60 0 60 120

SCALE IN FEET

It is a violation of the New York Education Article 145 - Engineering and Land Surveying, Section 7209 (2) law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

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GROUNDWATER TCE ISOCONCENTRATION SEPTEMBER 2021

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

3-3

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FIGURE 4-1
SOIL GAS VOC CONCENTRATION TRENDS IN SVE-1
Marathon Remediation Site
Cold Spring, New York

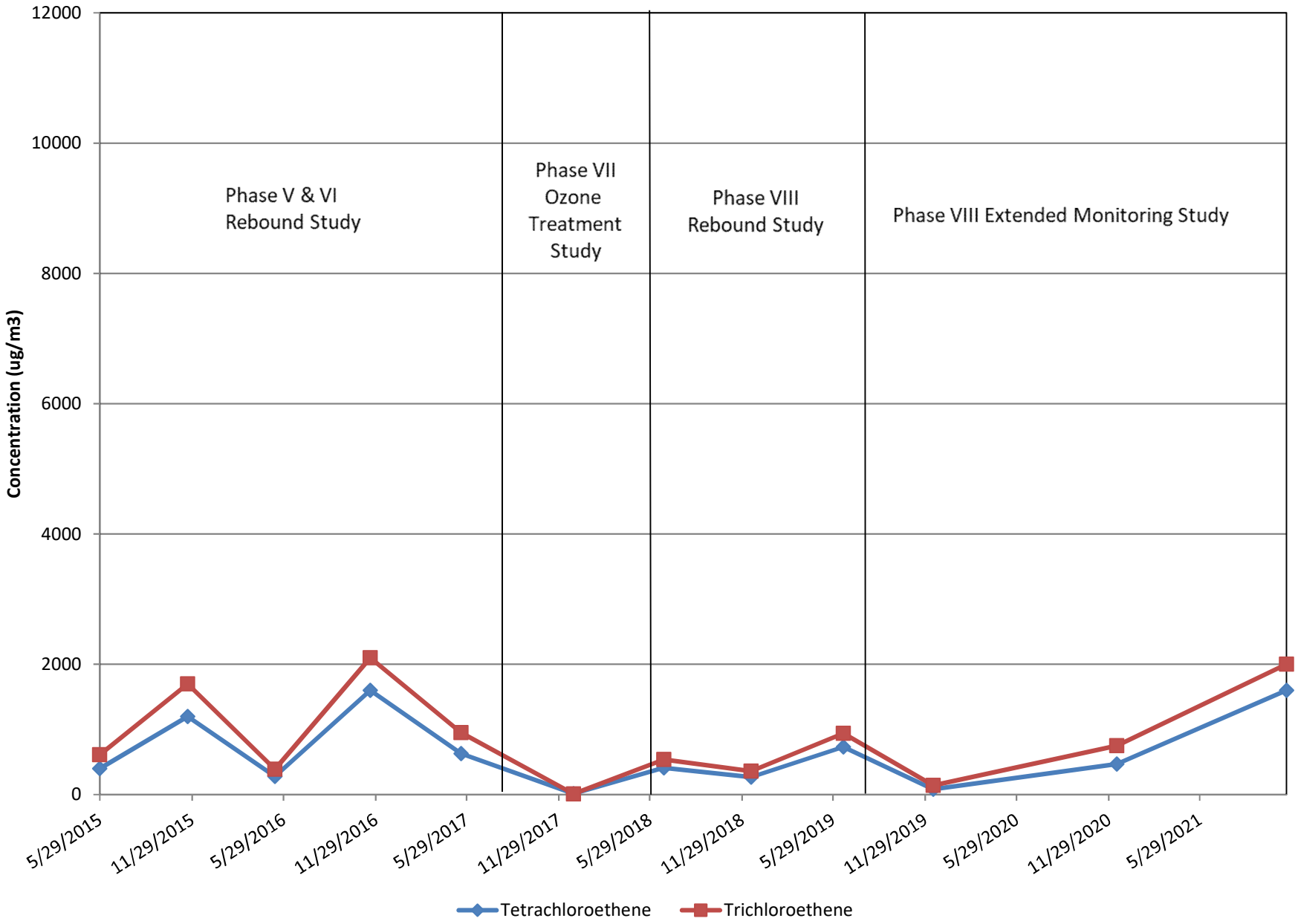
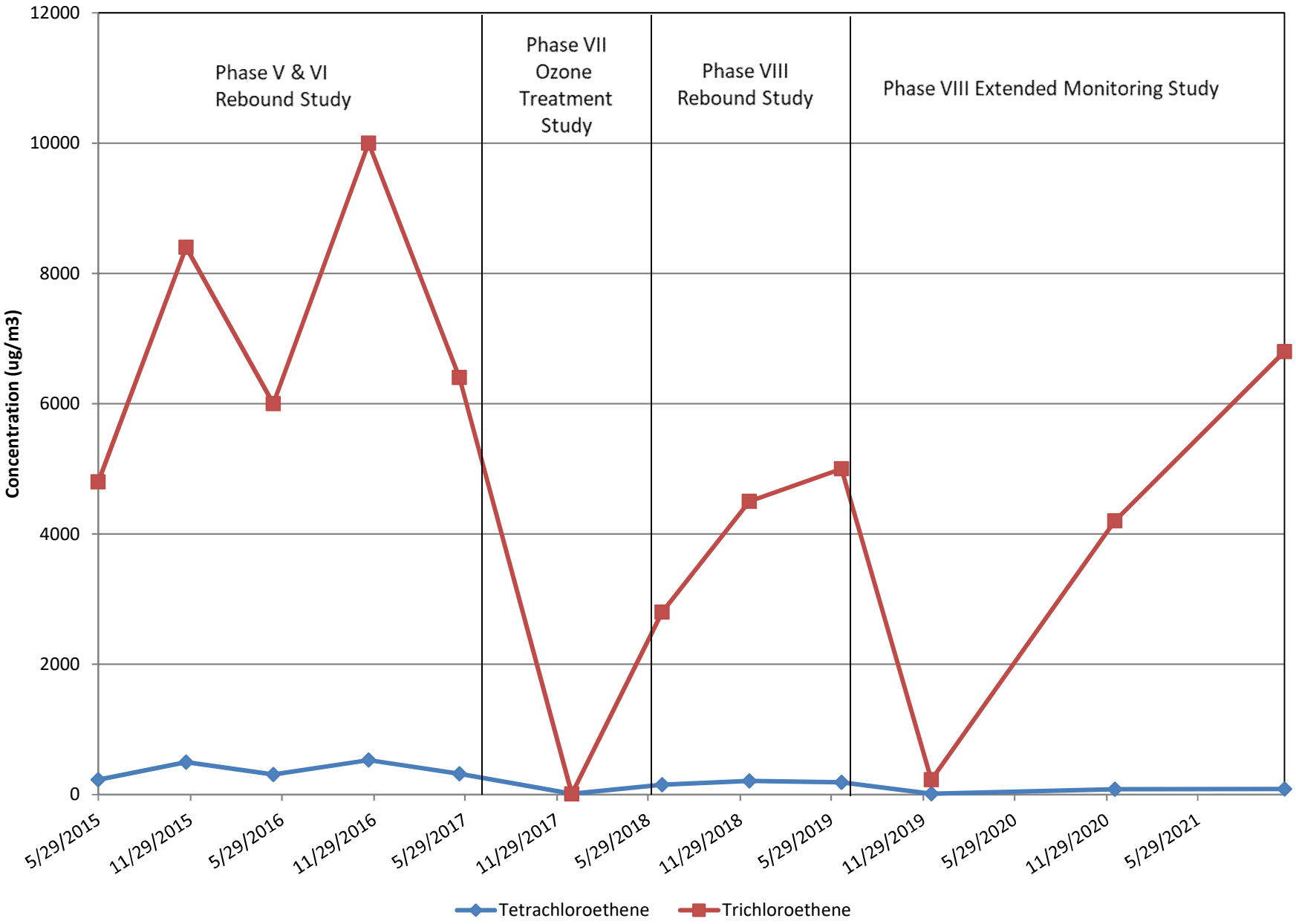


FIGURE 4-2
SOIL GAS VOC CONCENTRATION TRENDS IN VMP-3
Marathon Remediation Site
Cold Spring, New York



G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\Groundwater Sampling NAE Quarterly Events\Phase VIII Extended Monitoring Report\Figures\Figure 4-1 through 4-4 Air Trend Graphs

FIGURE 4-3
SOIL GAS VOC CONCENTRATION TRENDS IN VMP-4
Marathon Remediation Site
Cold Spring, New York

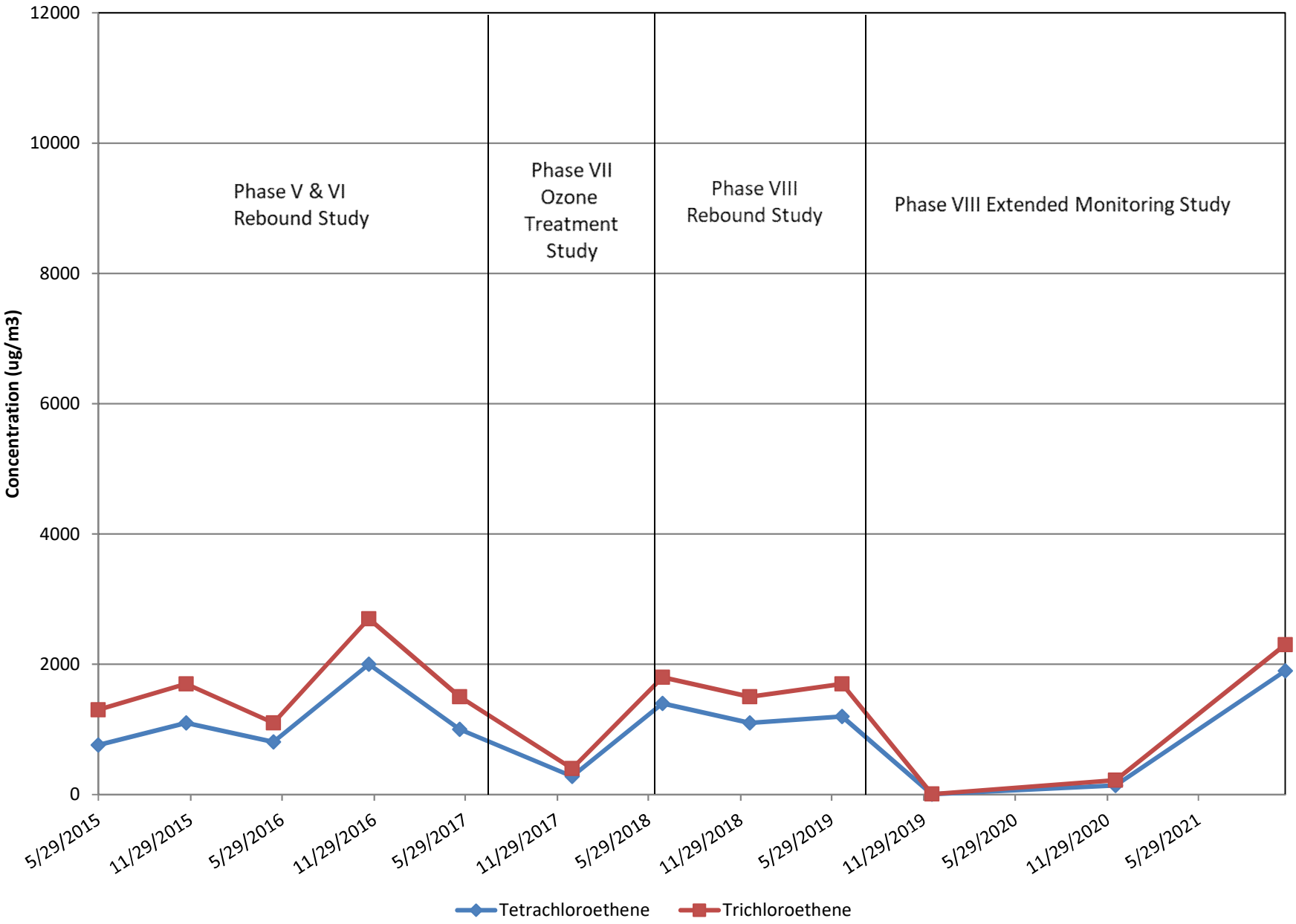


FIGURE 4-4
SOIL GAS VOC CONCENTRATION TRENDS IN VMP-5
Marathon Remediation Site
Cold Spring, New York

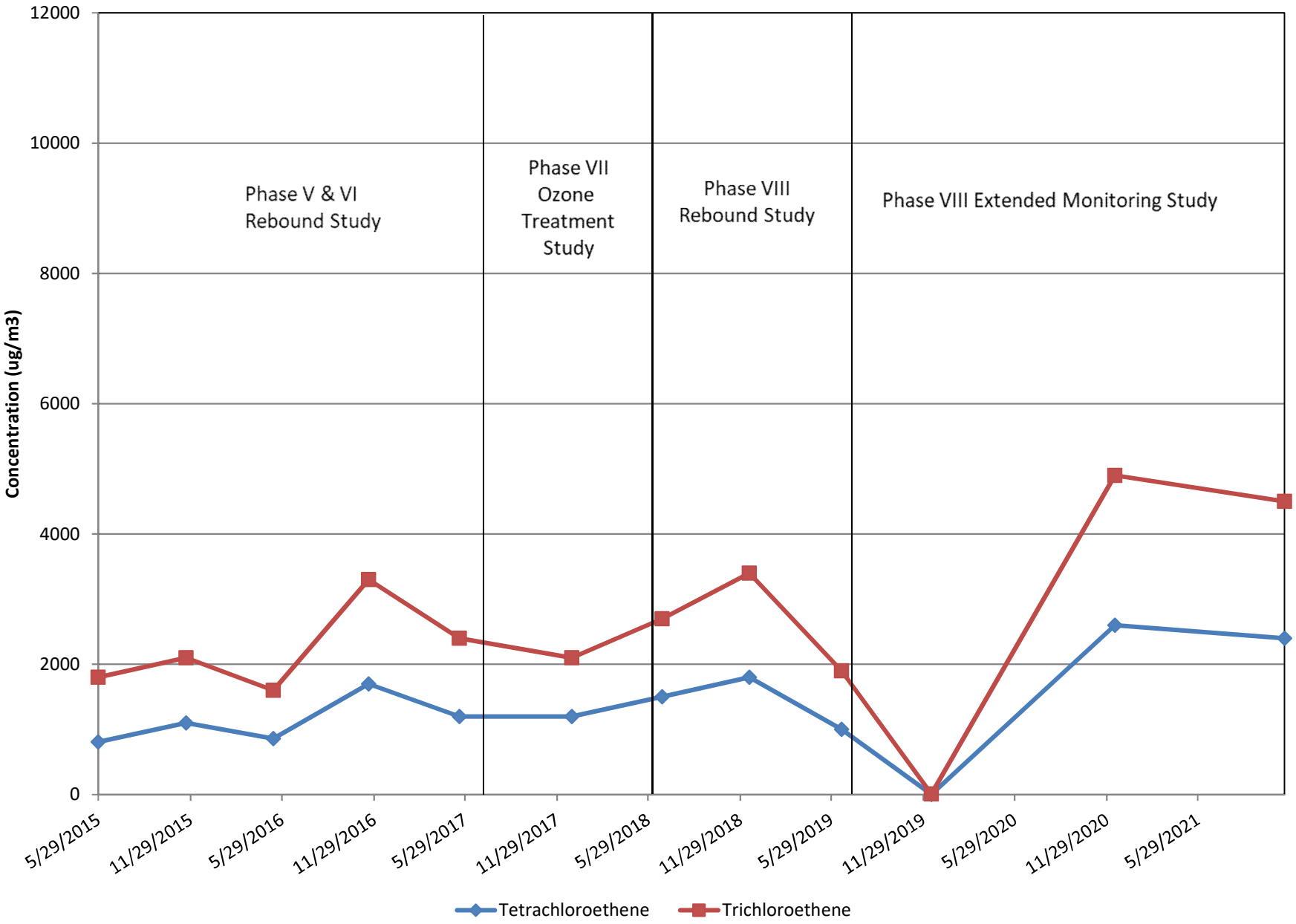


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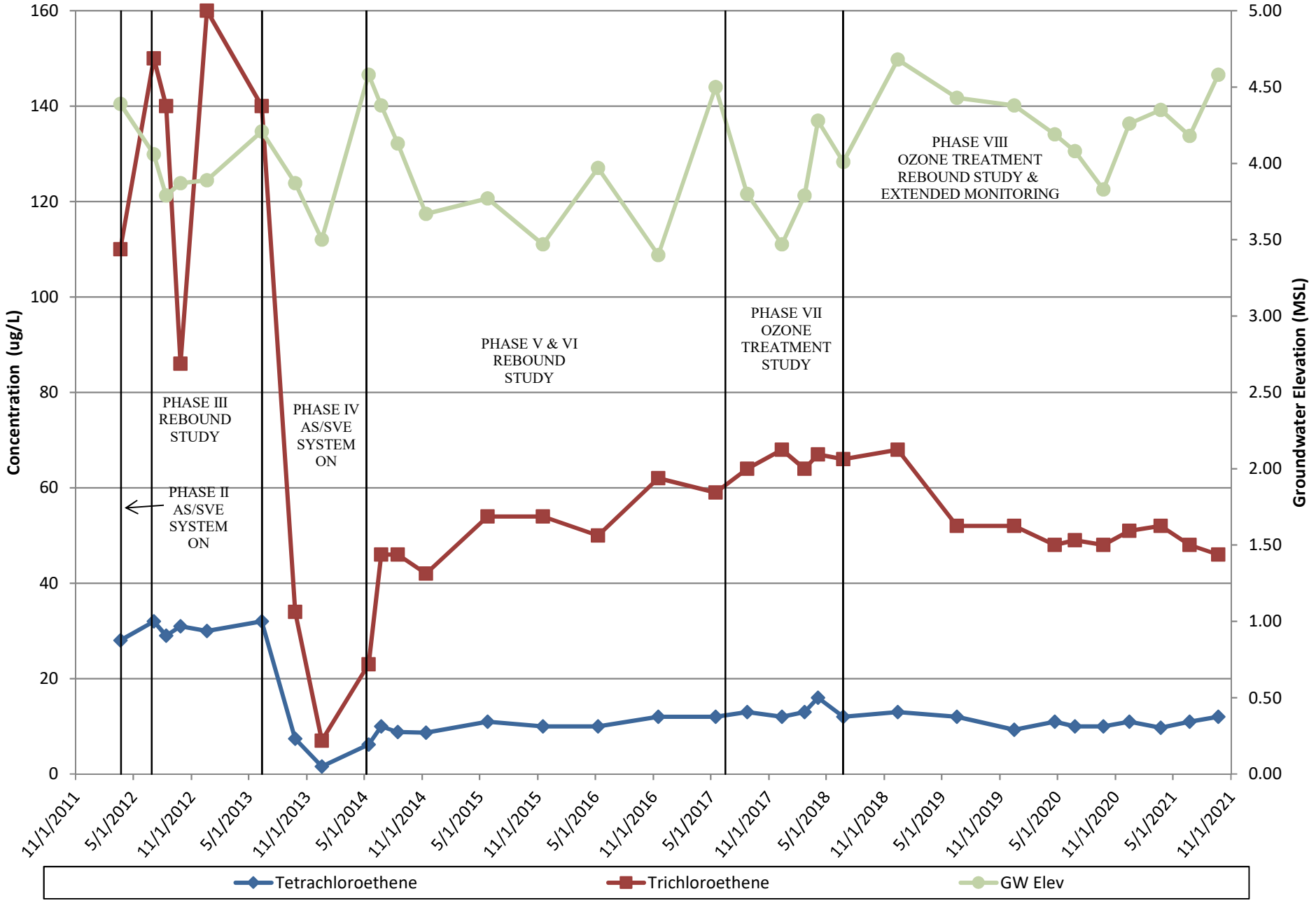
FIGURE 5-1
VOC CONCENTRATION TRENDS IN ASMP-1 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York



G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\Groundwater Sampling NAE Quarterly Events\Phase VIII Extended Monitoring Report\Figures\Figure 5-1 through 5-15_GW Trend Graphs Rev final

FIGURE 5-2
VOC CONCENTRATION TRENDS IN IW-6 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

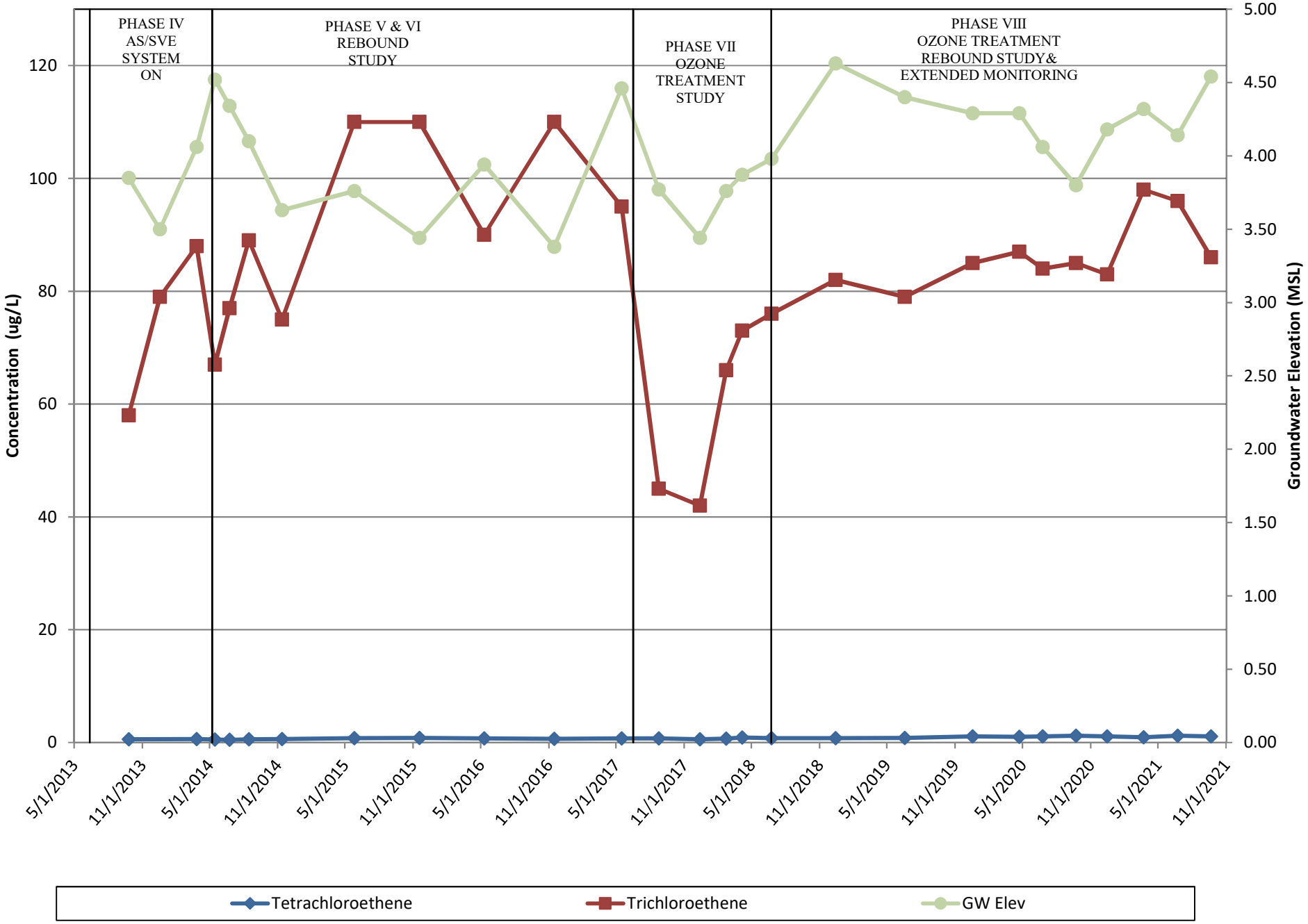


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FIGURE 5-3
VOC CONCENTRATION TRENDS IN IW-7 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

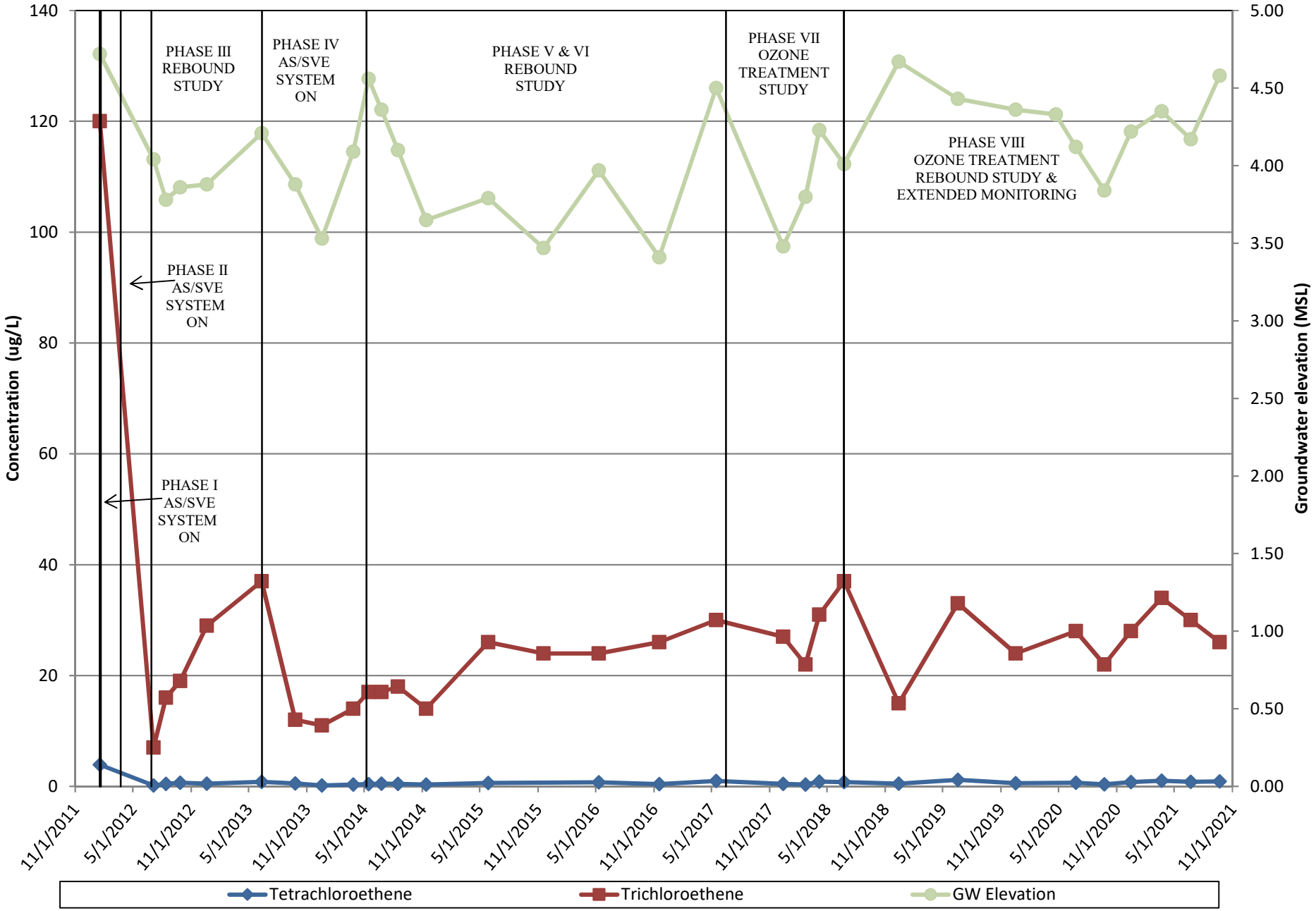

FIGURE 5-4
VOC CONCENTRATION TRENDS IN IW-8 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

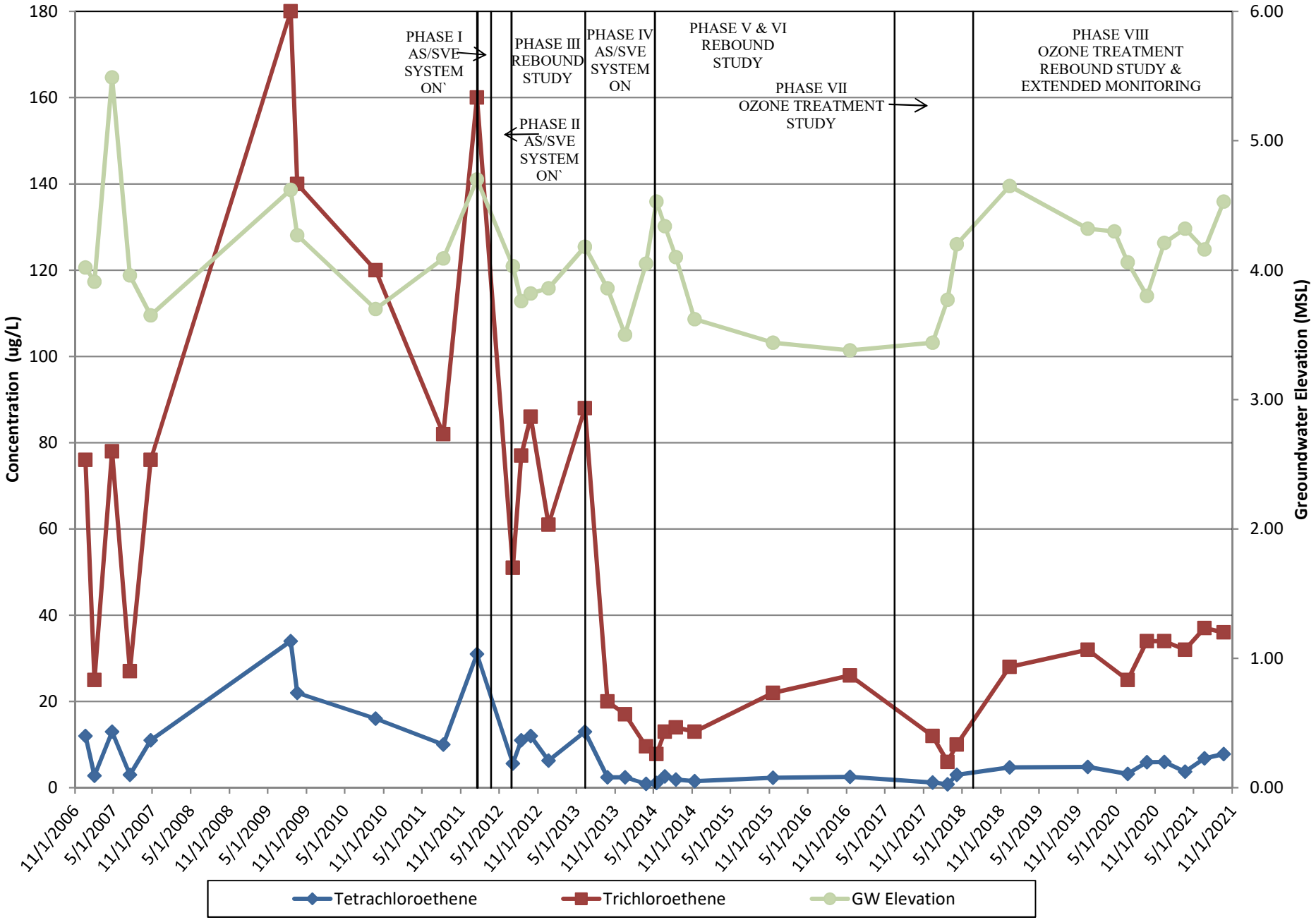

FIGURE 5-5
VOC CONCENTRATION TRENDS IN IW-9 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

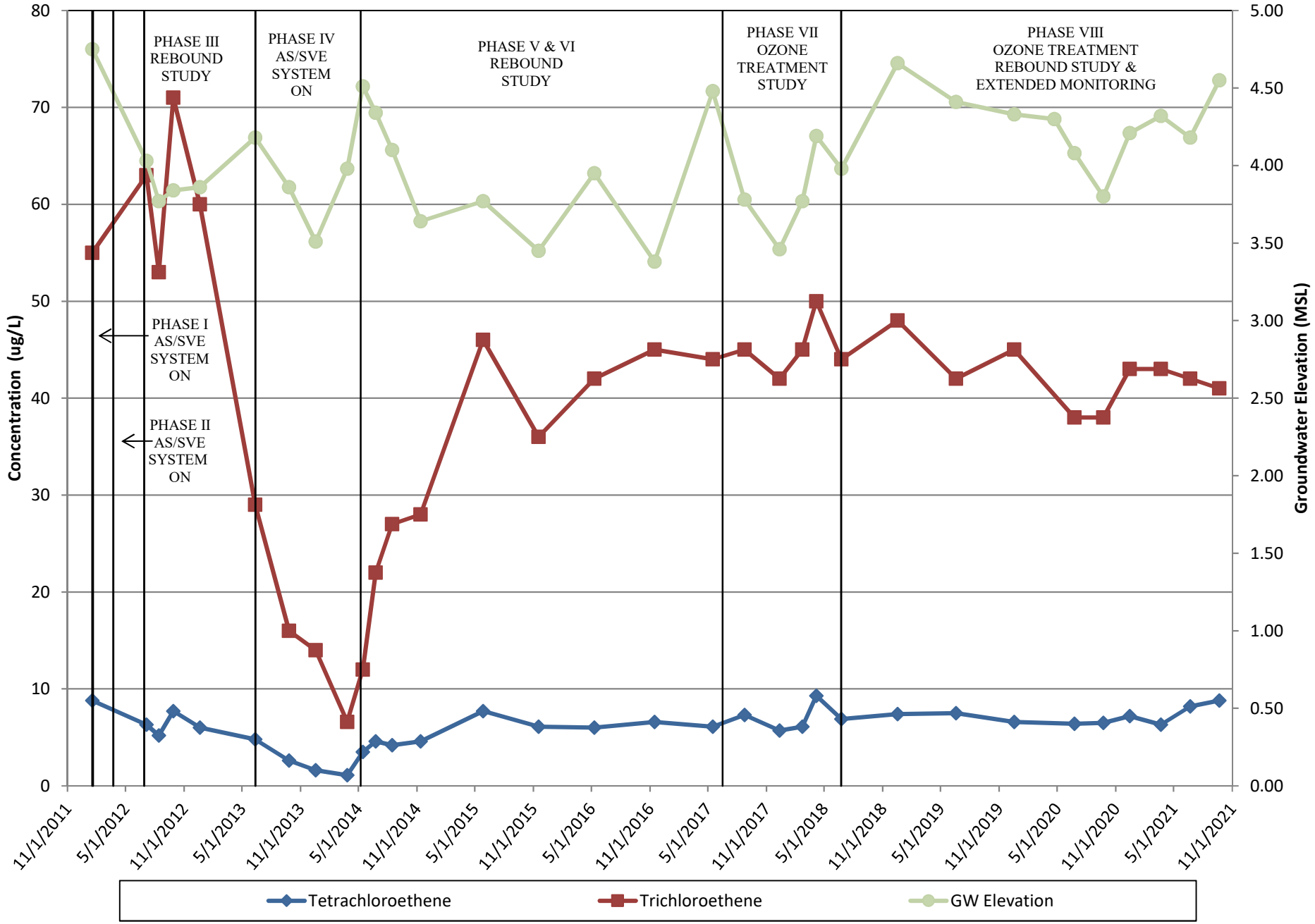

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FIGURE 5-6
VOC CONCENTRATION TRENDS IN VP-10 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

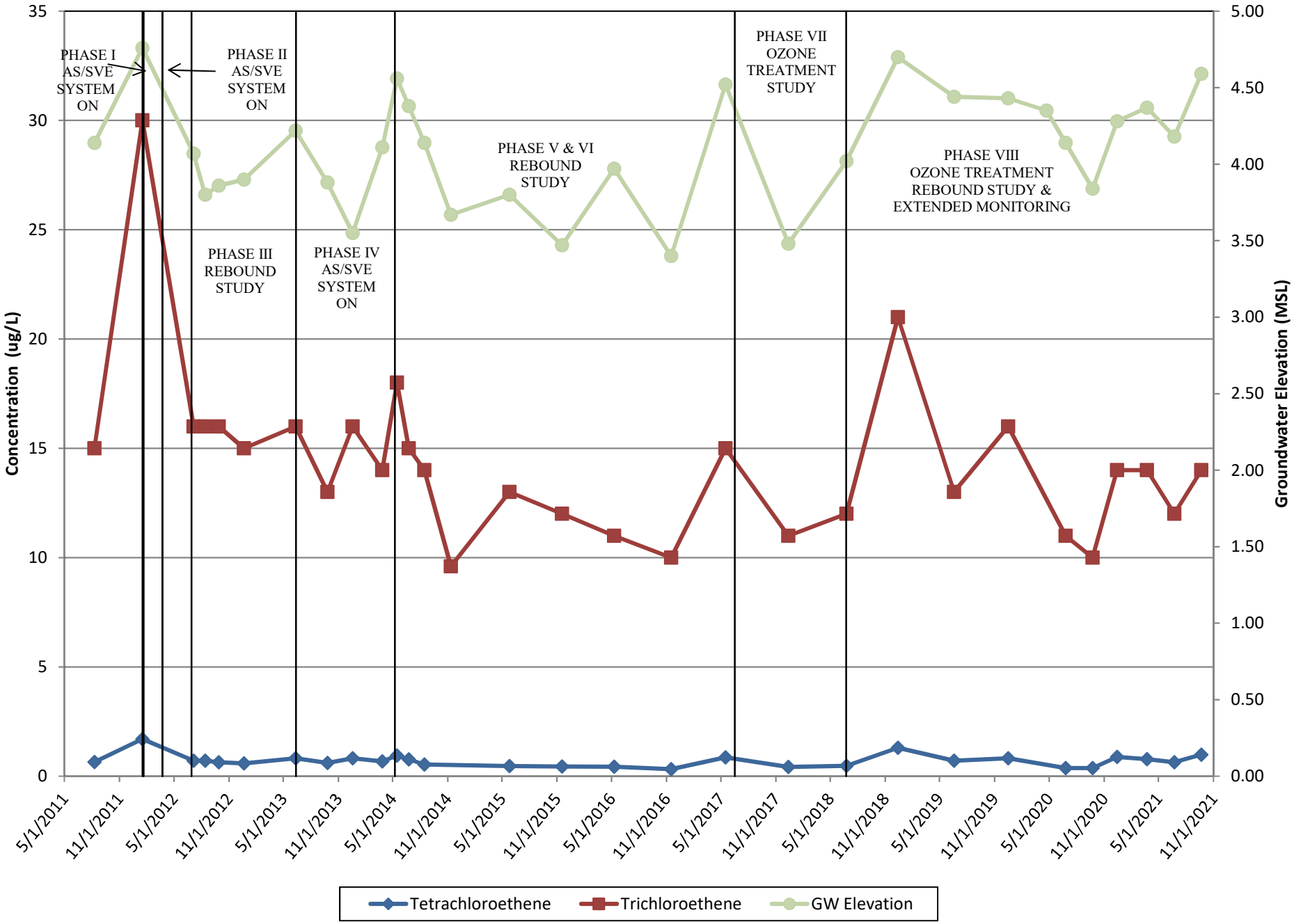

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FIGURE 5-7
VOC CONCENTRATION TRENDS IN VP-3 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

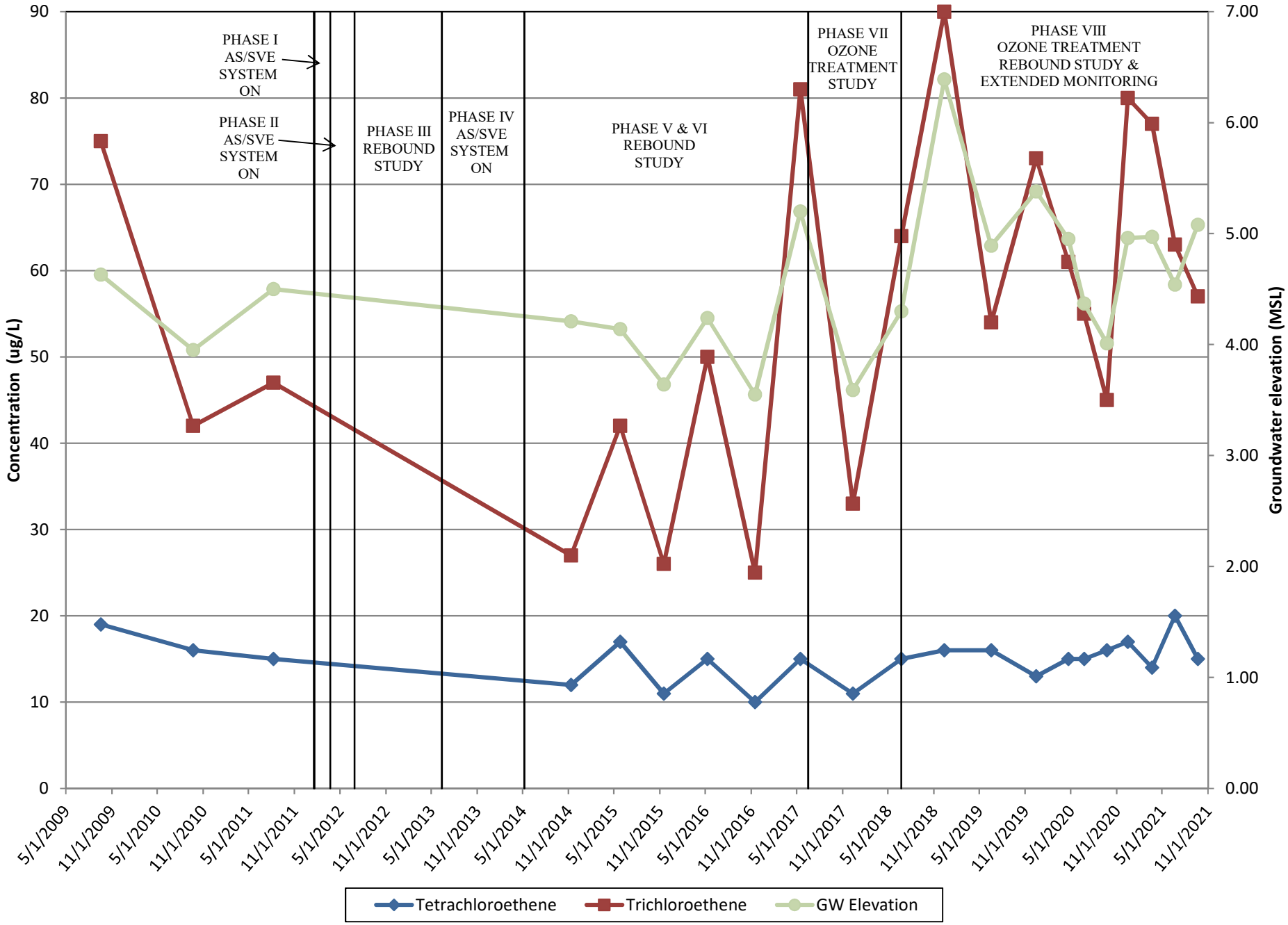

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FIGURE 5-8
VOC CONCENTRATION TRENDS IN VP-7 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

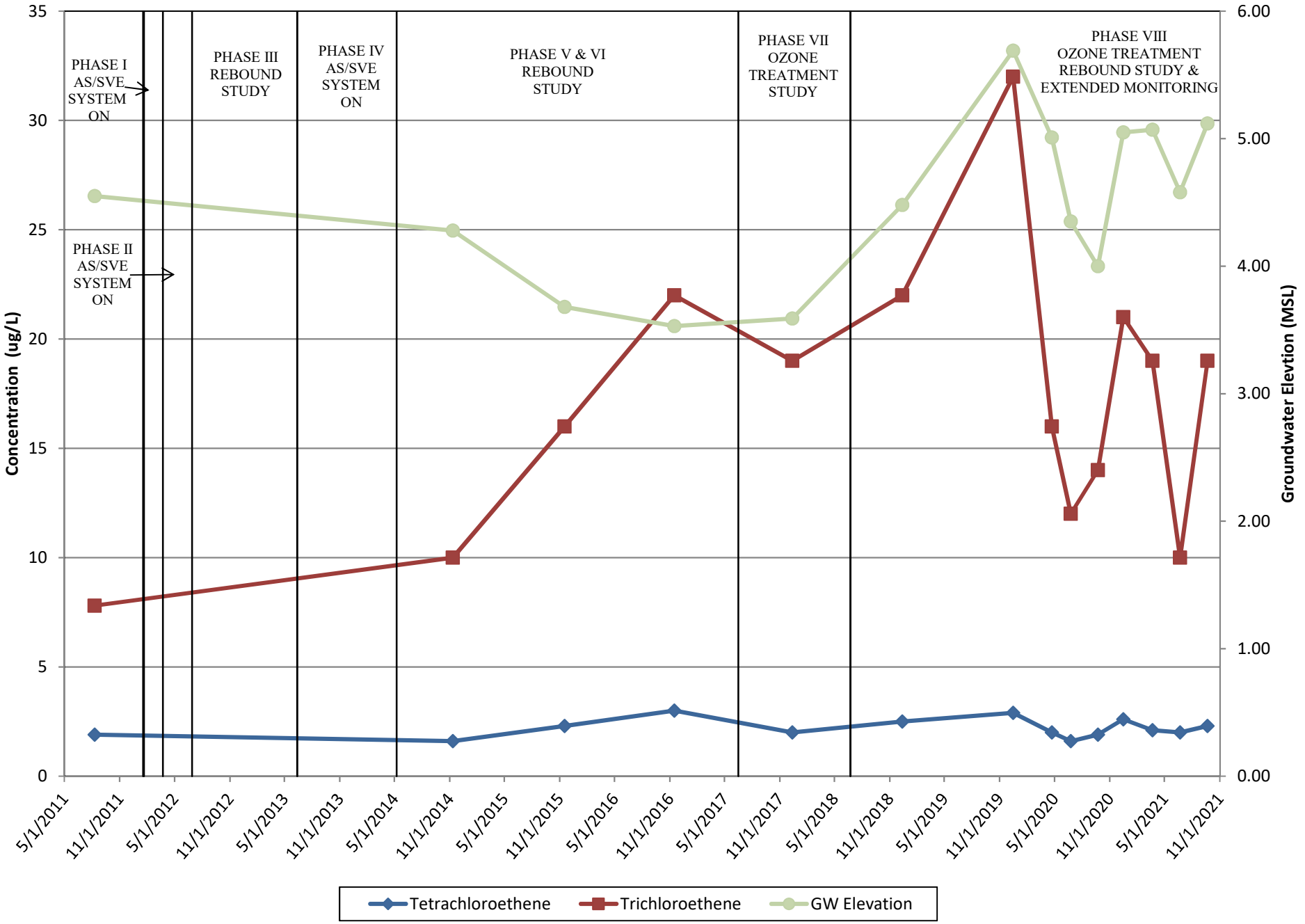

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FIGURE 5-9
VOC CONCENTRATION TRENDS IN VP-8 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

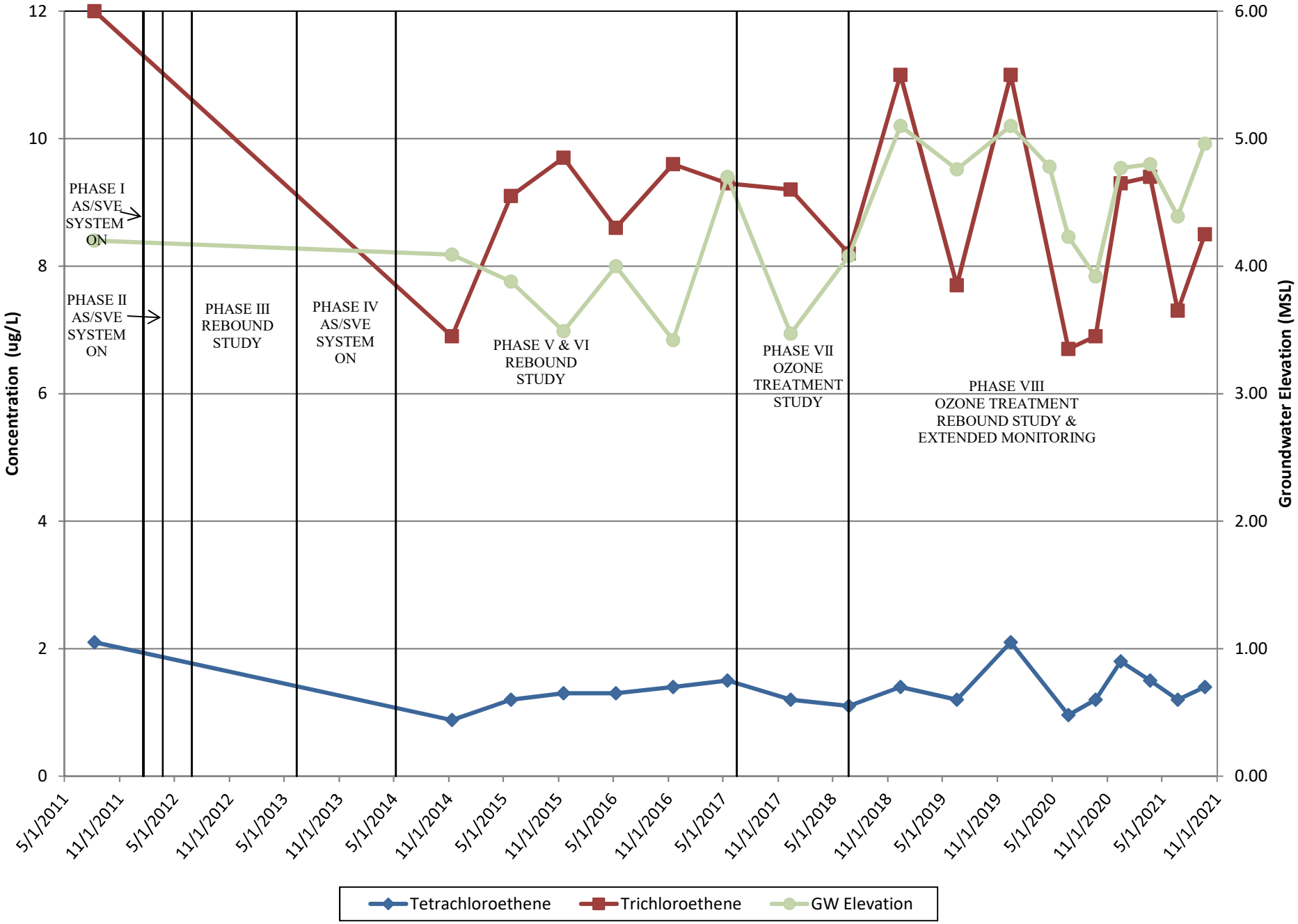

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FIGURE 5-10
VOC CONCENTRATION TRENDS IN VP-9 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

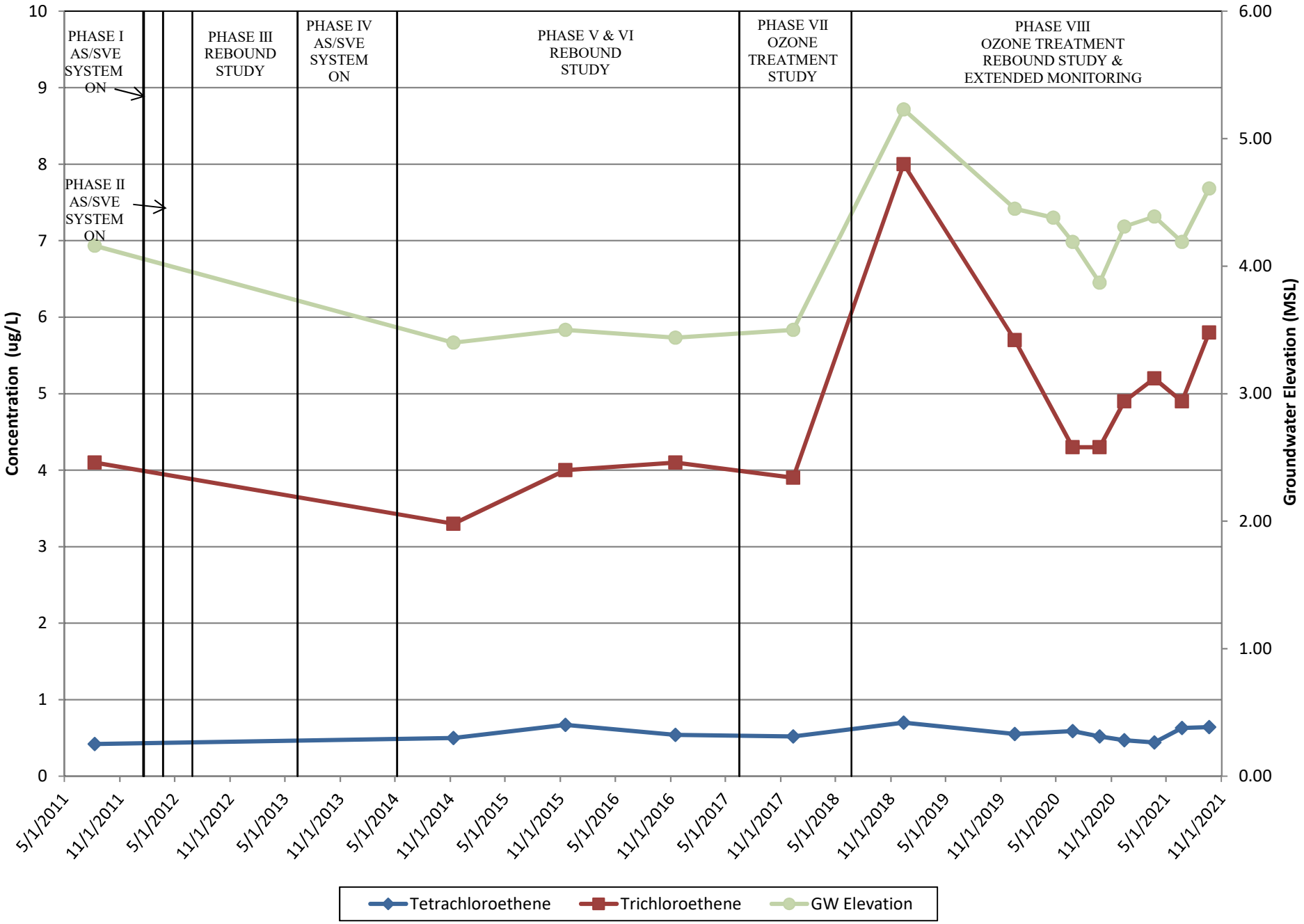

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FIGURE 5-11
VOC CONCENTRATION TRENDS IN VP-11 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

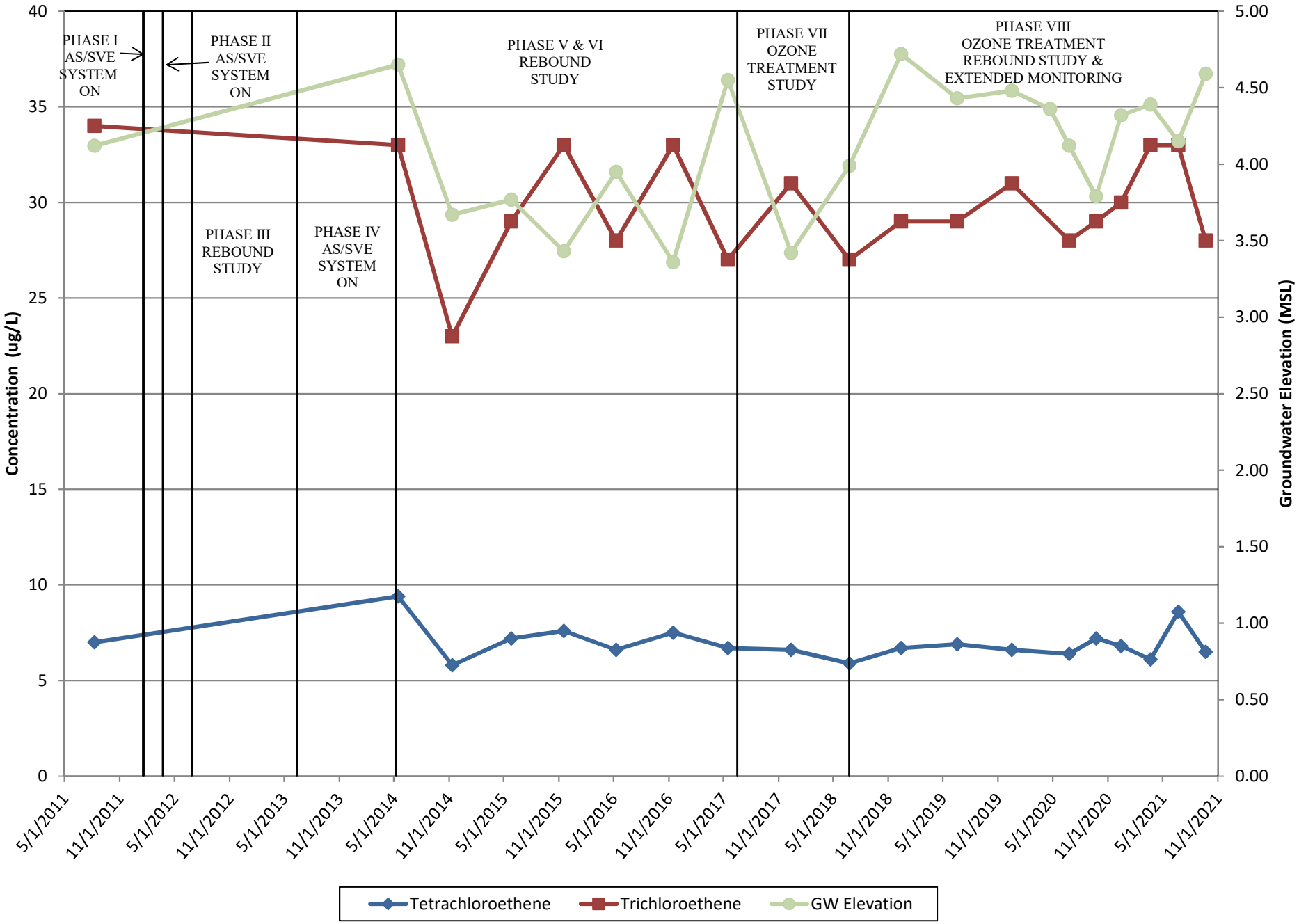

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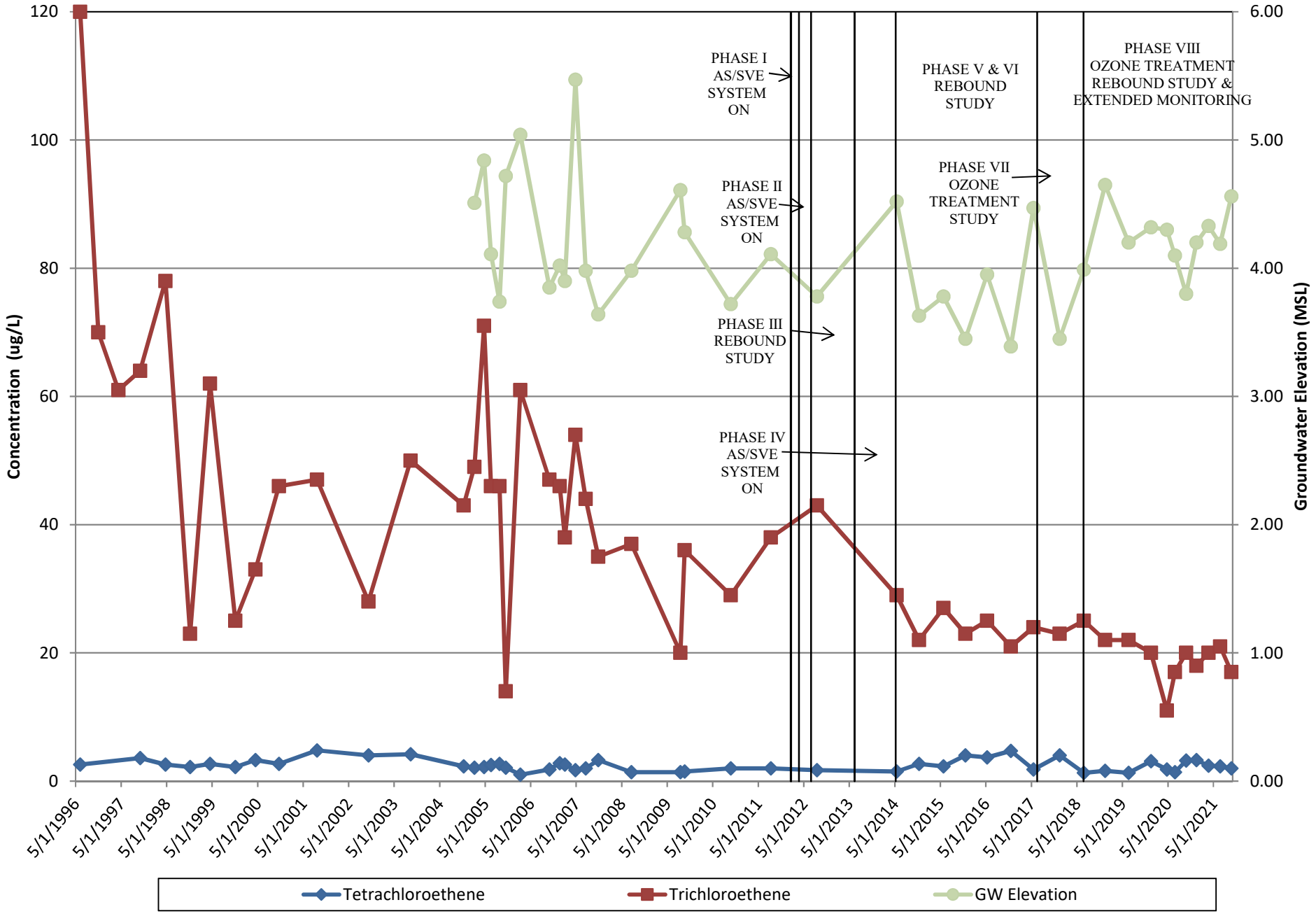
FIGURE 5-12
VOC CONCENTRATION TRENDS IN MB-3 - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York



G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\Groundwater Sampling NAE Quarterly Events\Phase VIII Extended Monitoring Report\Figures\Figure 5-1 through 5-15_GW Trend Graphs Rev final

FIGURE 5-13
VOC CONCENTRATION TRENDS IN MW-7S - OUTSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

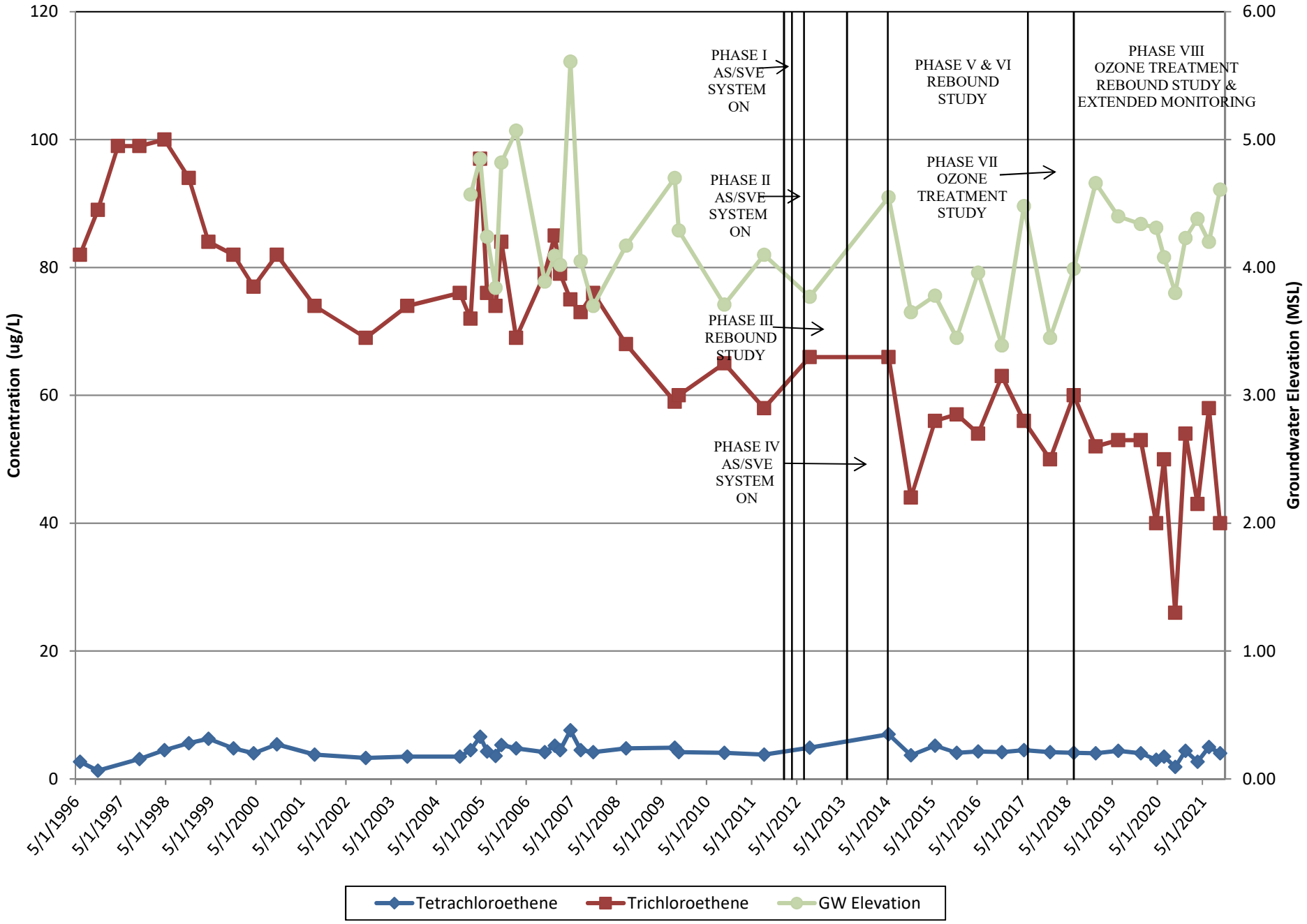


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FIGURE 5-14
VOC CONCENTRATION TRENDS IN MW-4 - INSIDE TREATMENT AREA
Marathon Remediation Site
Cold Spring, New York

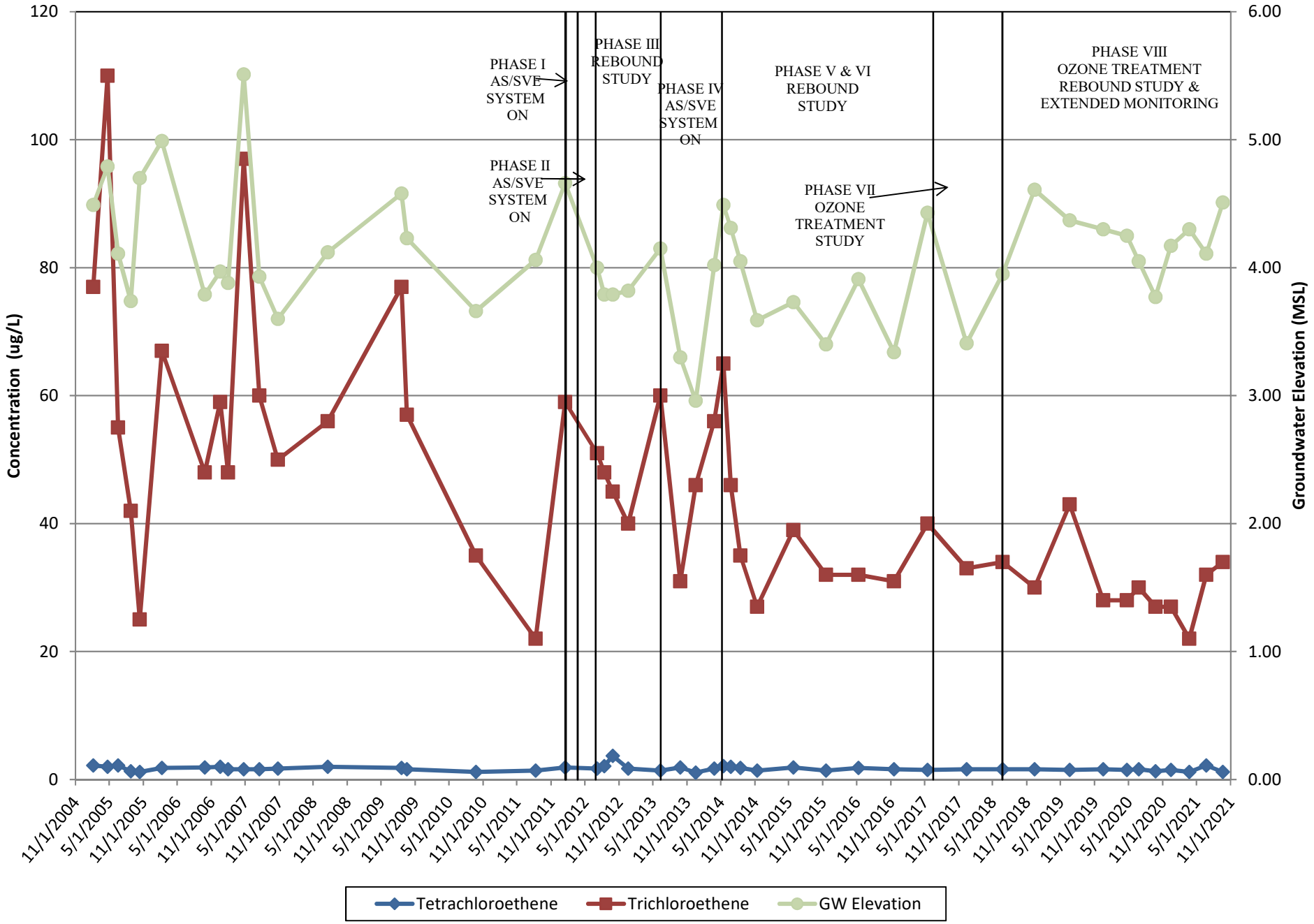

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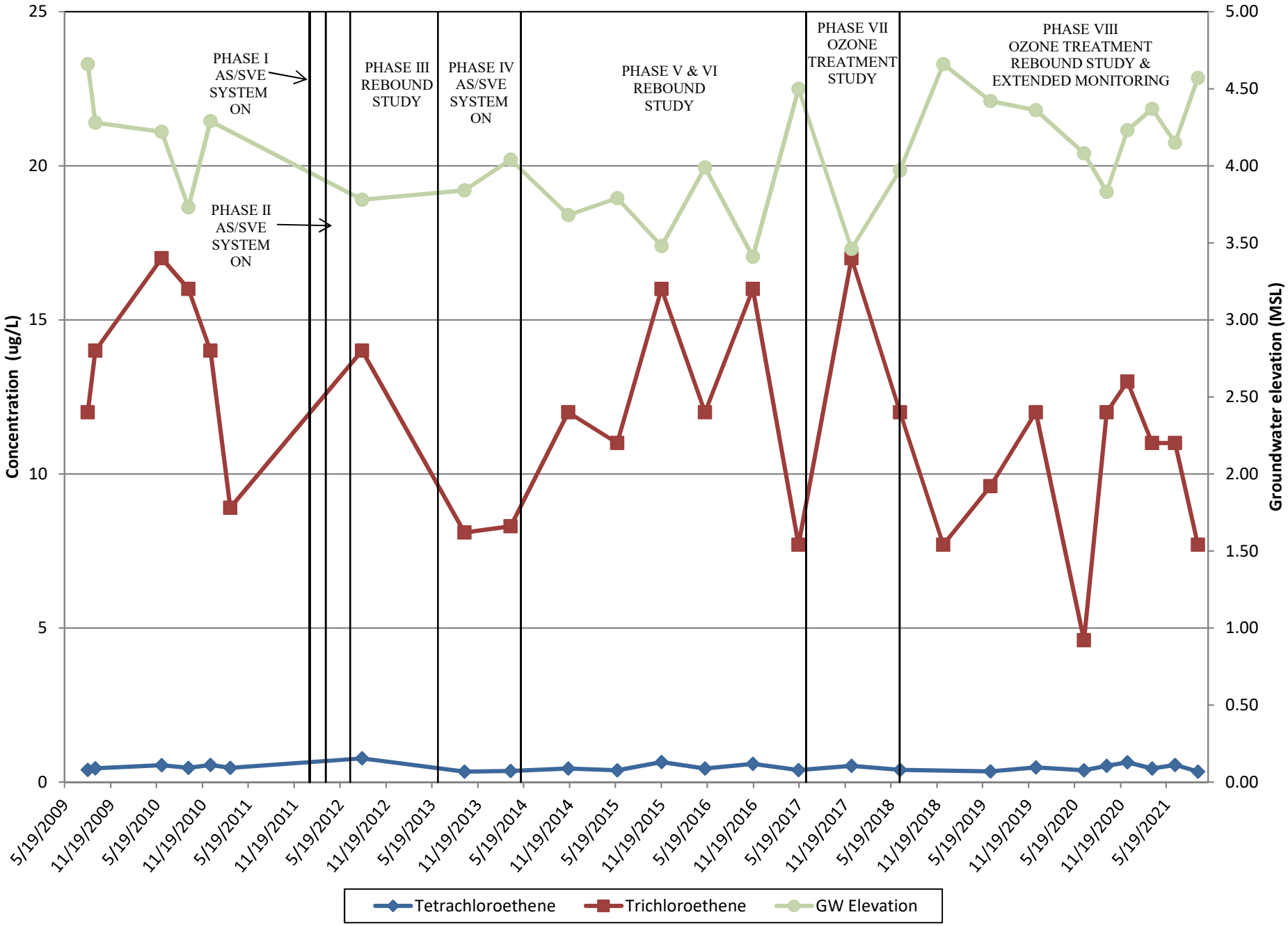
FIGURE 5-15
VOC CONCENTRATION TRENDS IN OSMW-3 - OFFSITE WELL
Marathon Remediation Site
Cold Spring, New York



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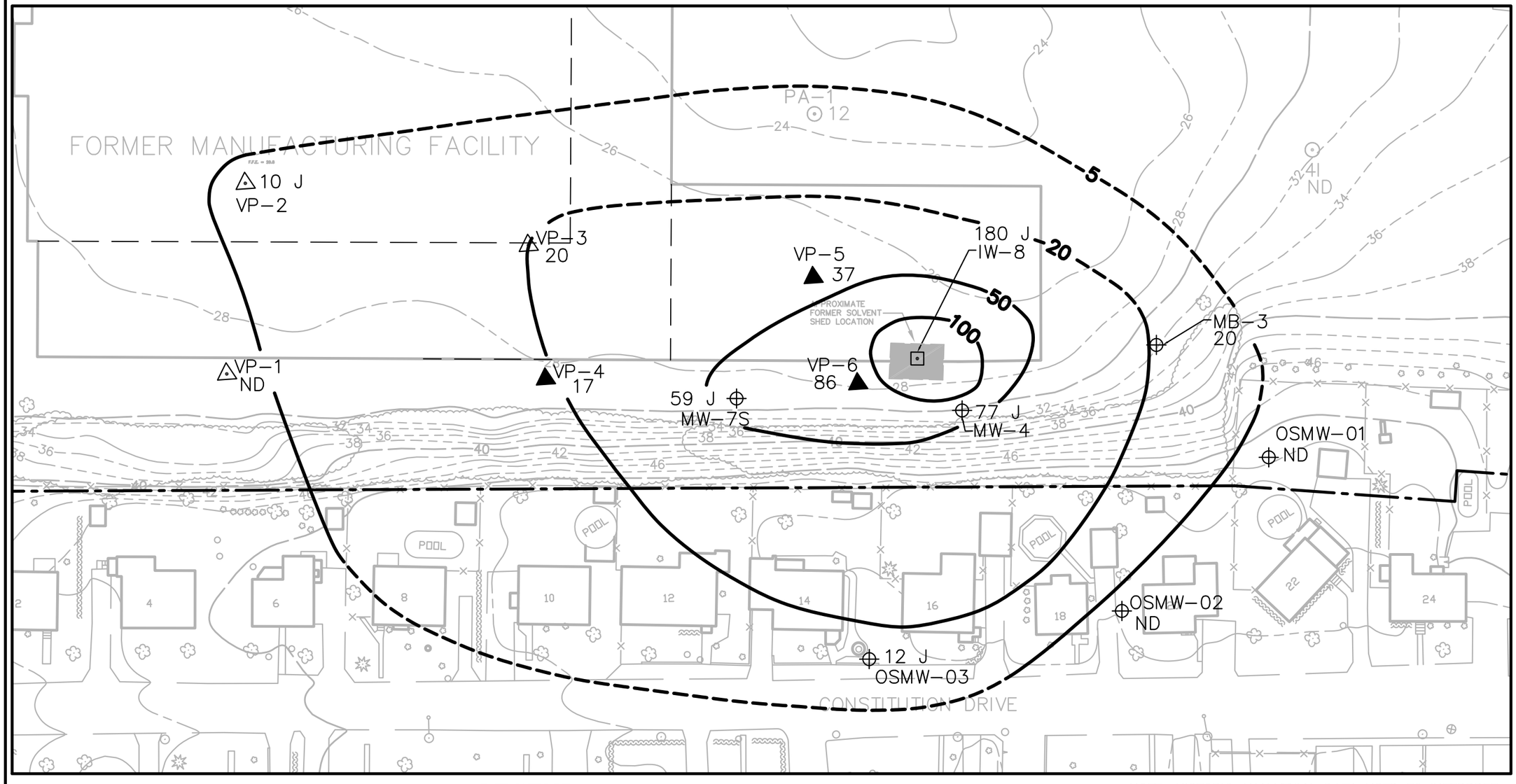
APPENDIX A

Historic 2009 Groundwater Isoconcentration Maps



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line

OSMW–03 — Existing Monitoring Well

IW–8 — Existing Injection Well Converted to Monitoring Well

Approx. Location of Former Process Trench

VP–1 — Vertical Profiling Location Converted to Piezometer

20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred

TH–1 — Test Hole Location

VP–5 — Vertical Profiling Location Abandoned at Completion

PA–1 — Abandoned Historic Groundwater Monitoring Well

NOTE: HISTORIC ANALYTICAL DATA USED TO INTERPRET LOCATION OF INFERRED ISOCONCENTRATION LINES. HISTORICAL DATA FOR LOCATION 41 WAS COLLECTED DURING SEPTEMBER 2003. HISTORICAL DATA FOR LOCATION PA–1 WAS COLLECTED DURING OCTOBER 1996.

60 0 60 120

SCALE IN FEET

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tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

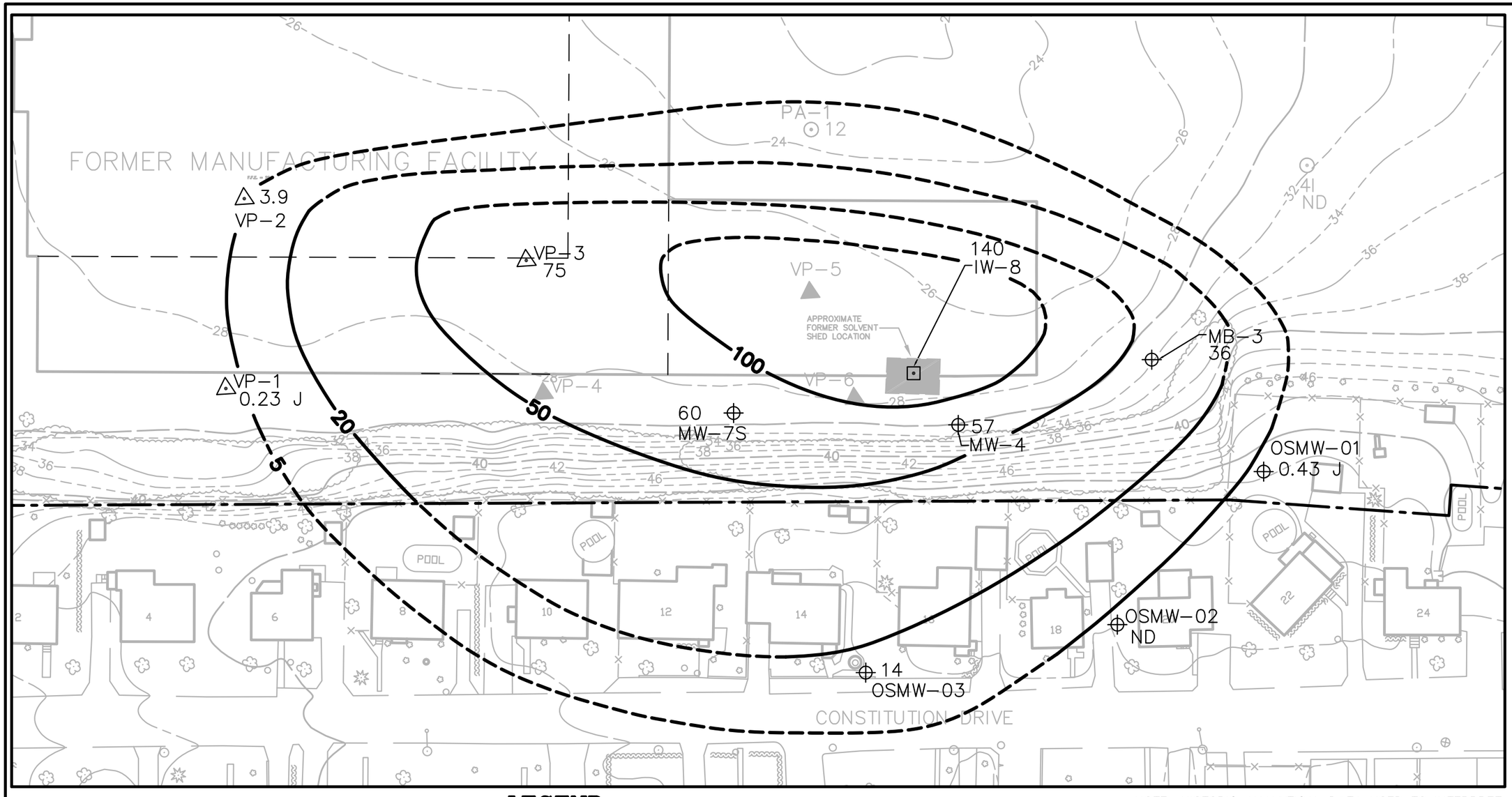
GROUNDWATER TCE ISOCONCENTRATION, AUGUST 2009

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	1/08/10

9



LEGEND

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- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP-5 — Vertical Profiling Location Abandoned at Completion
- PA-1 — Abandoned Historic Groundwater Monitoring Well

NOTE: HISTORIC ANALYTICAL DATA USED TO INTERPRET LOCATION OF INFERRED ISOCONCENTRATION LINES. HISTORICAL DATA FOR LOCATION 4I WAS COLLECTED DURING SEPTEMBER 2003. HISTORICAL DATA FOR LOCATION PA-1 WAS COLLECTED DURING OCTOBER 1996.

60 0 60 120
SCALE IN FEET

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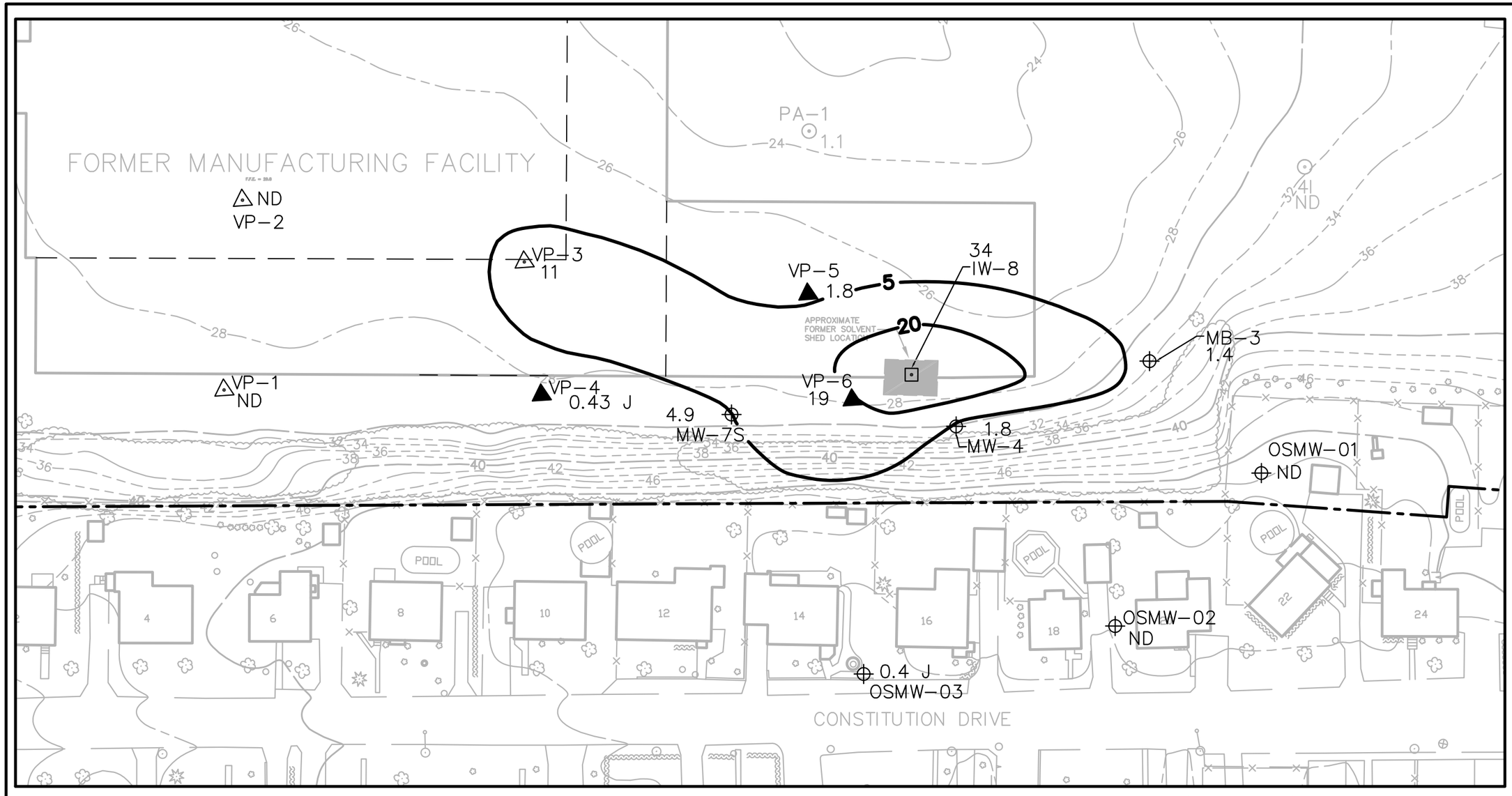
GROUNDWATER TCE ISOCONCENTRATION, SEPTEMBER 2009

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	1/08/10

10



LEGEND

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- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line

OSMW–03 — Existing Monitoring Well

IW–8 — Existing Injection Well Converted to Monitoring Well

Approx. Location of Former Process Trench

VP–1 — Vertical Profiling Location Converted to Piezometer

20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred

VP–5 — Vertical Profiling Location Abandoned at Completion

PA–1 — Abandoned Historic Groundwater Monitoring Well

TH–1 — Test Hole Location

NOTE: HISTORIC ANALYTICAL DATA USED TO INTERPRET LOCATION OF INFERRED ISOCONCENTRATION LINES. HISTORICAL DATA FOR LOCATION 41 WAS COLLECTED DURING SEPTEMBER 2003. HISTORICAL DATA FOR LOCATION PA–1 WAS COLLECTED DURING OCTOBER 1996.

60 0 60 120
SCALE IN FEET

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tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER PCE ISOCONCENTRATION, AUGUST 2009

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	1/08/10

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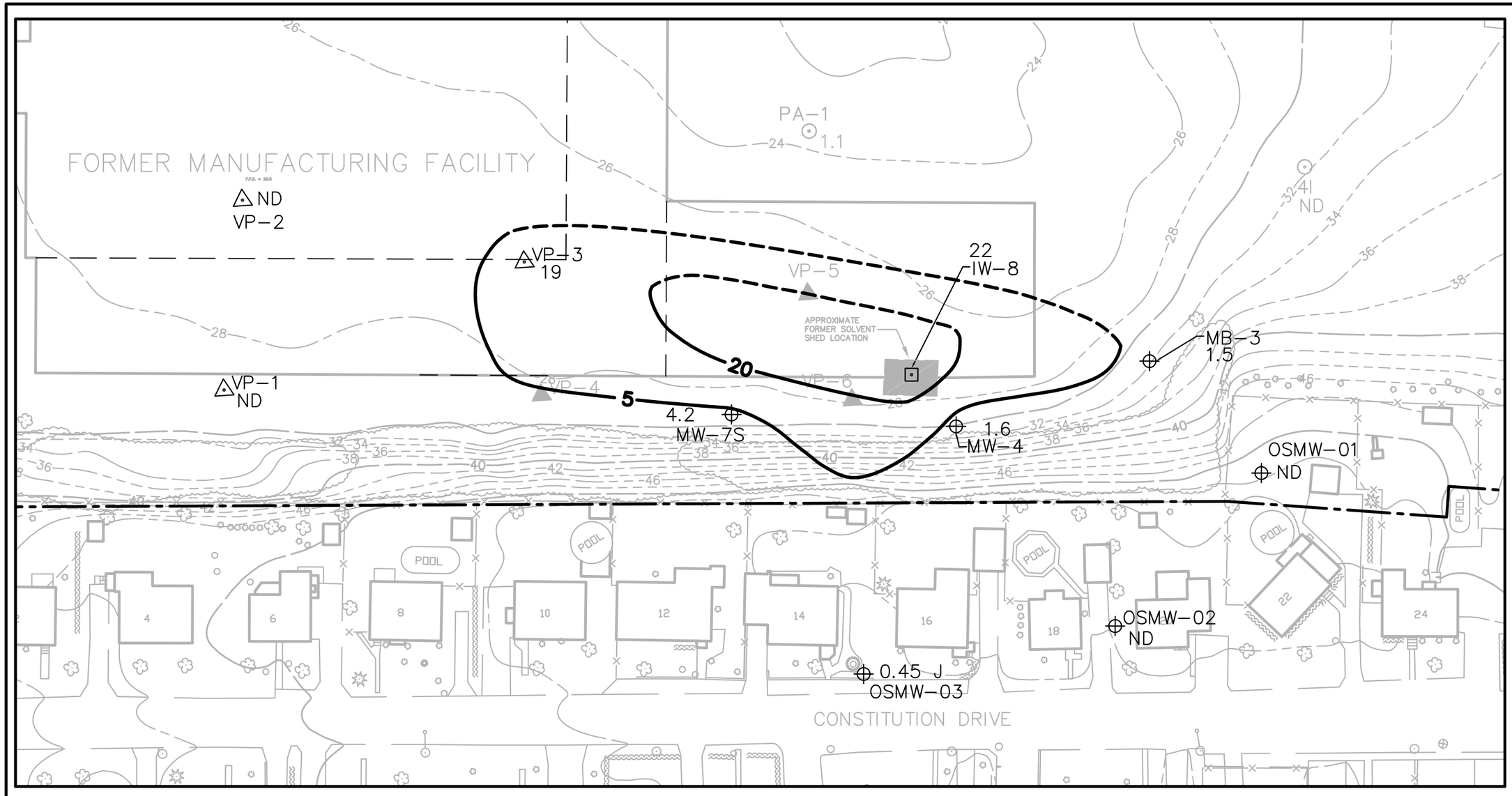

LEGEND

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- Existing Right of Way
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- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- TH–1 — Test Hole Location
- VP–5 — Vertical Profiling Location Abandoned at Completion
- PA–1 — Abandoned Historic Groundwater Monitoring Well

NOTE: HISTORIC ANALYTICAL DATA USED TO INTERPRET LOCATION OF INFERRED ISOCONCENTRATION LINES. HISTORICAL DATA FOR LOCATION 4I WAS COLLECTED DURING SEPTEMBER 2003. HISTORICAL DATA FOR LOCATION PA–1 WAS COLLECTED DURING OCTOBER 1996.

60 0 60 120
SCALE IN FEET

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GROUNDWATER PCE ISOCONCENTRATION, SEPTEMBER 2009
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95–219
DATE:	1/08/10

12

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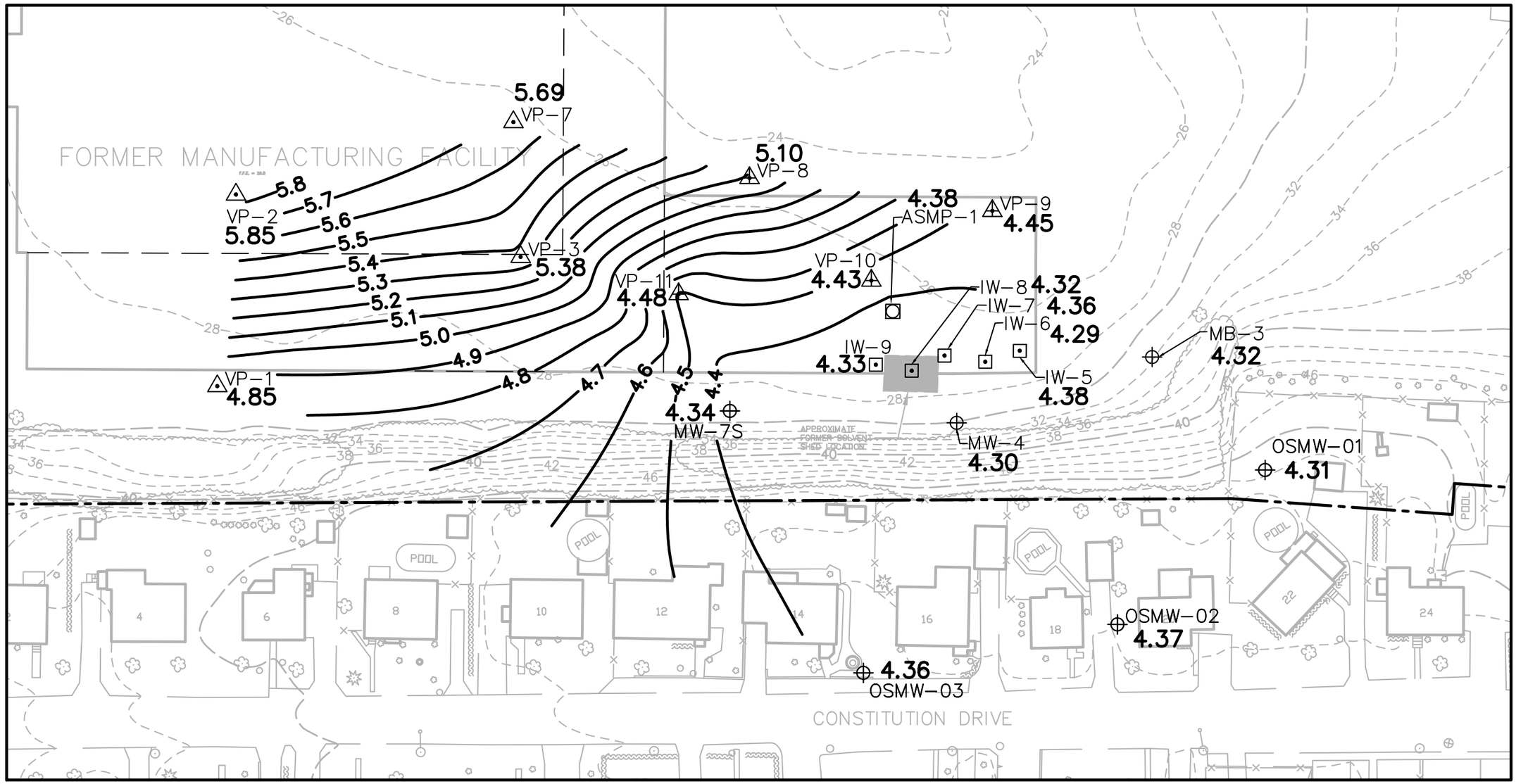
APPENDIX B

Groundwater Potentiometric and Isoconcentration Maps December 2019 to June 2021



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- Existing Building
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- Existing Right of Way
- Existing Tree Line
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- Approximate Property Line
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- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- VP-8 — Existing Piezometer
- ASMP-1 — Air Sparge Monitoring Probe
- — 4 — Groundwater Contour Line (ft msl)

Notes:
1) ALL GROUNDWATER ELEVATIONS PRESENTED AS FEET MEAN SEA LEVEL
2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

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1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER POTENTIOMETRIC MAP DECEMBER 15, 2019

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

1

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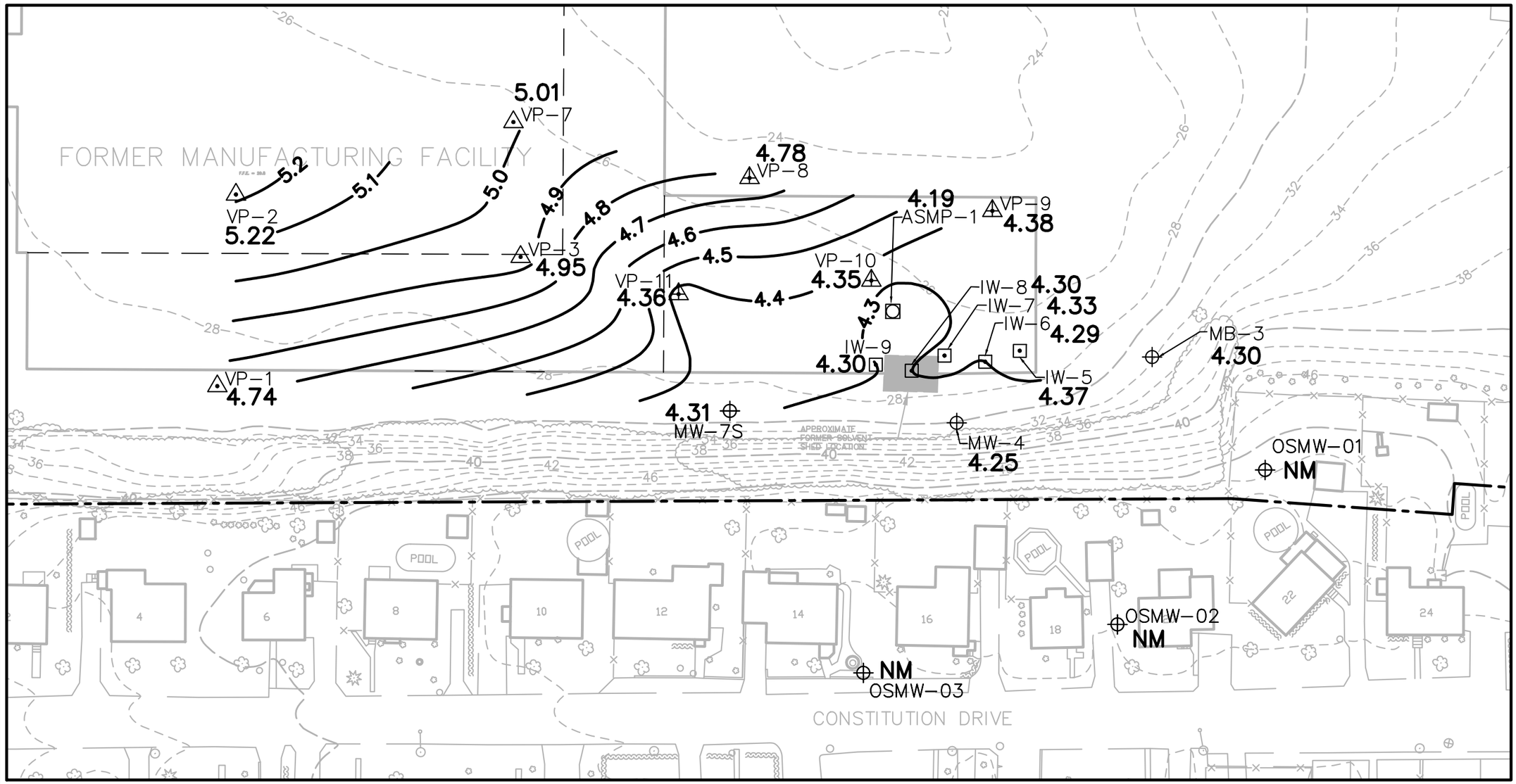

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- VP-8 — Existing Piezometer
- ASMP-1 — Air Sparge Monitoring Probe
- 4 — Groundwater Contour Line (ft msl)

Notes:
1) ALL GROUNDWATER ELEVATIONS PRESENTED AS FEET MEAN SEA LEVEL
2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
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GROUNDWATER POTENTIOMETRIC MAP
APRIL 22, 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

2

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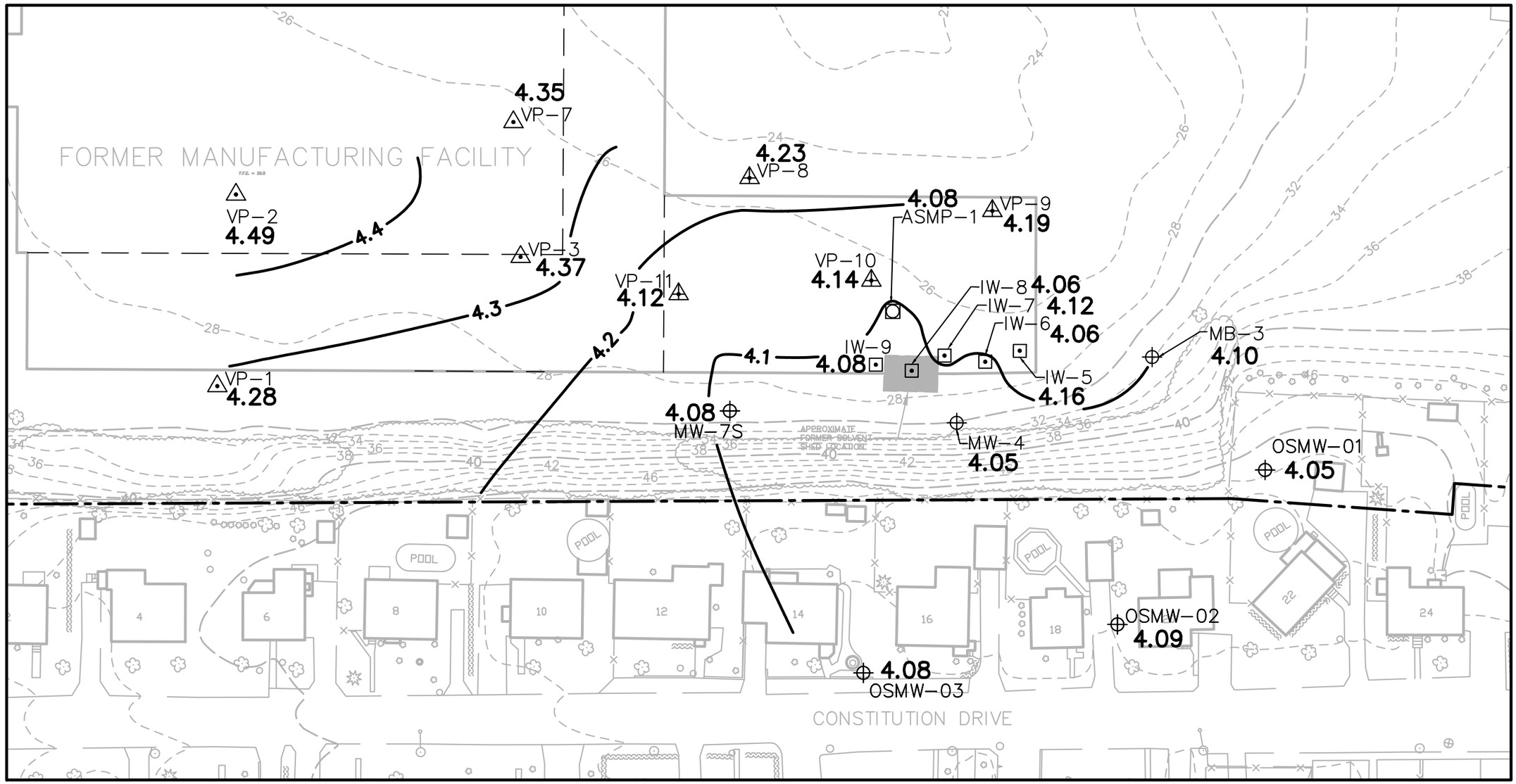

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60 0 60 120
SCALE IN FEET

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GROUNDWATER POTENTIOMETRIC MAP JUNE 24, 2020

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

3

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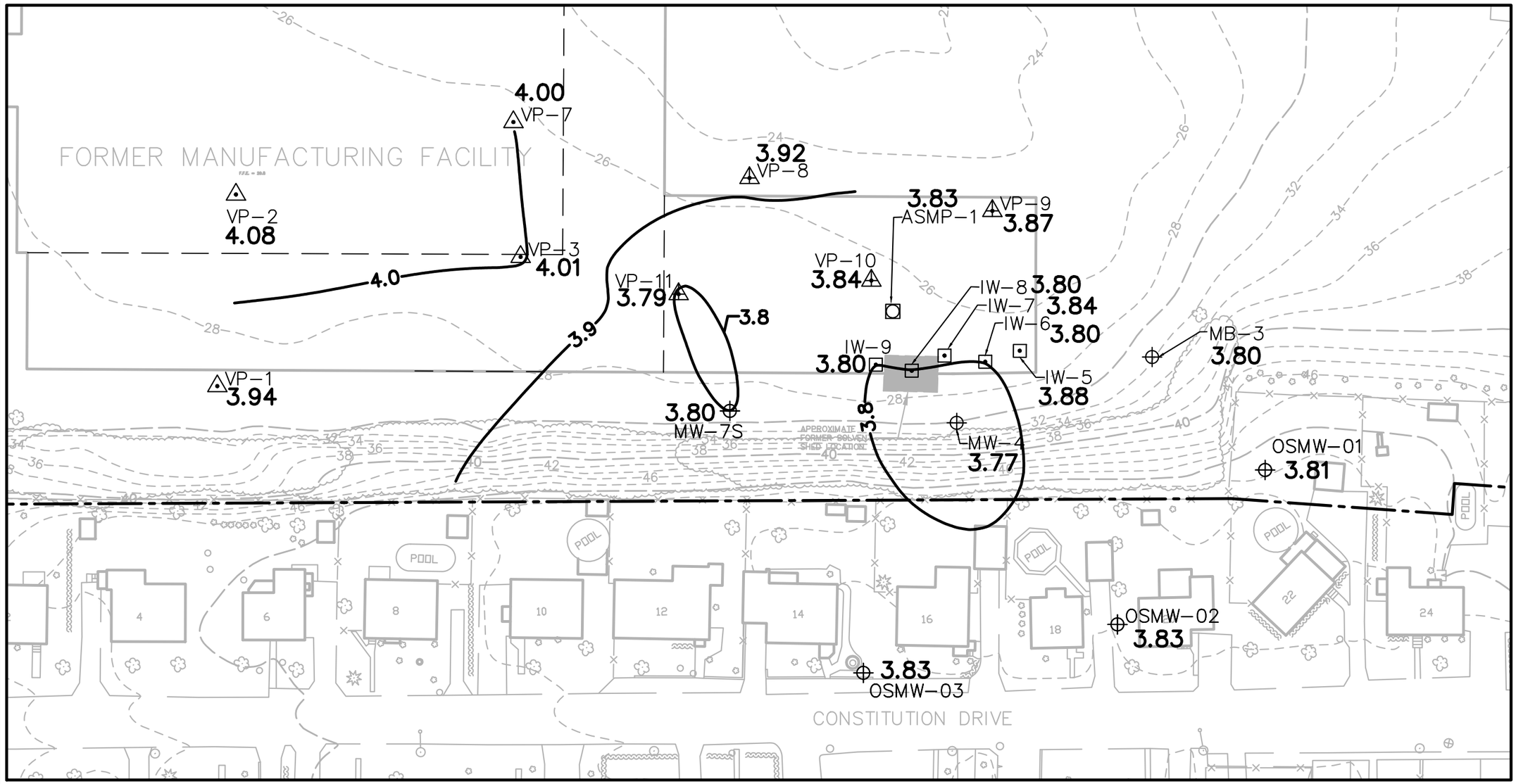

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Notes:
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2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
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GROUNDWATER POTENTIOMETRIC MAP SEPTEMBER 22, 2020

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

4

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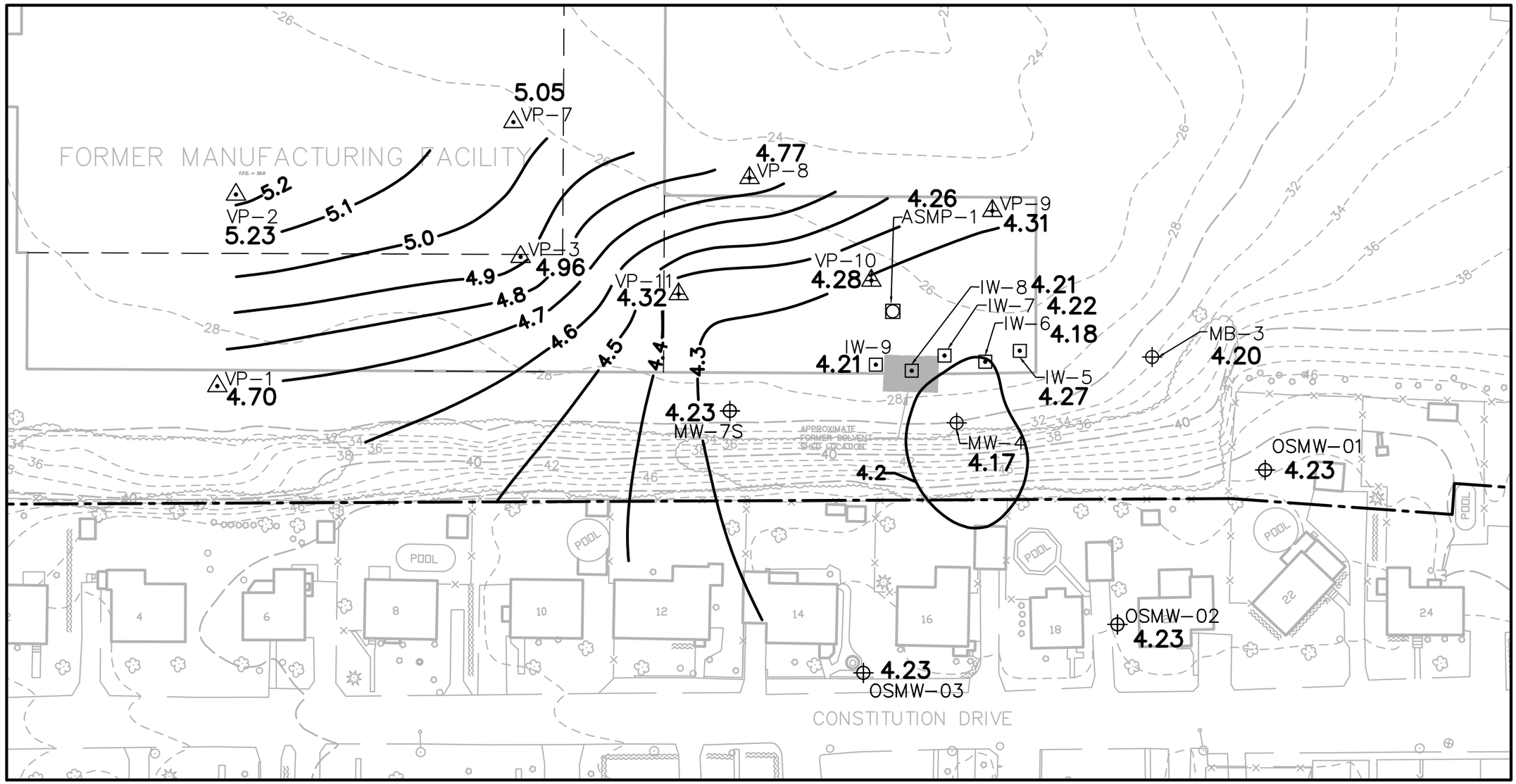

LEGEND

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- 4 — Groundwater Contour Line (ft msl)

Notes:
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2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

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GROUNDWATER POTENTIOMETRIC MAP DECEMBER 14, 2020

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

5

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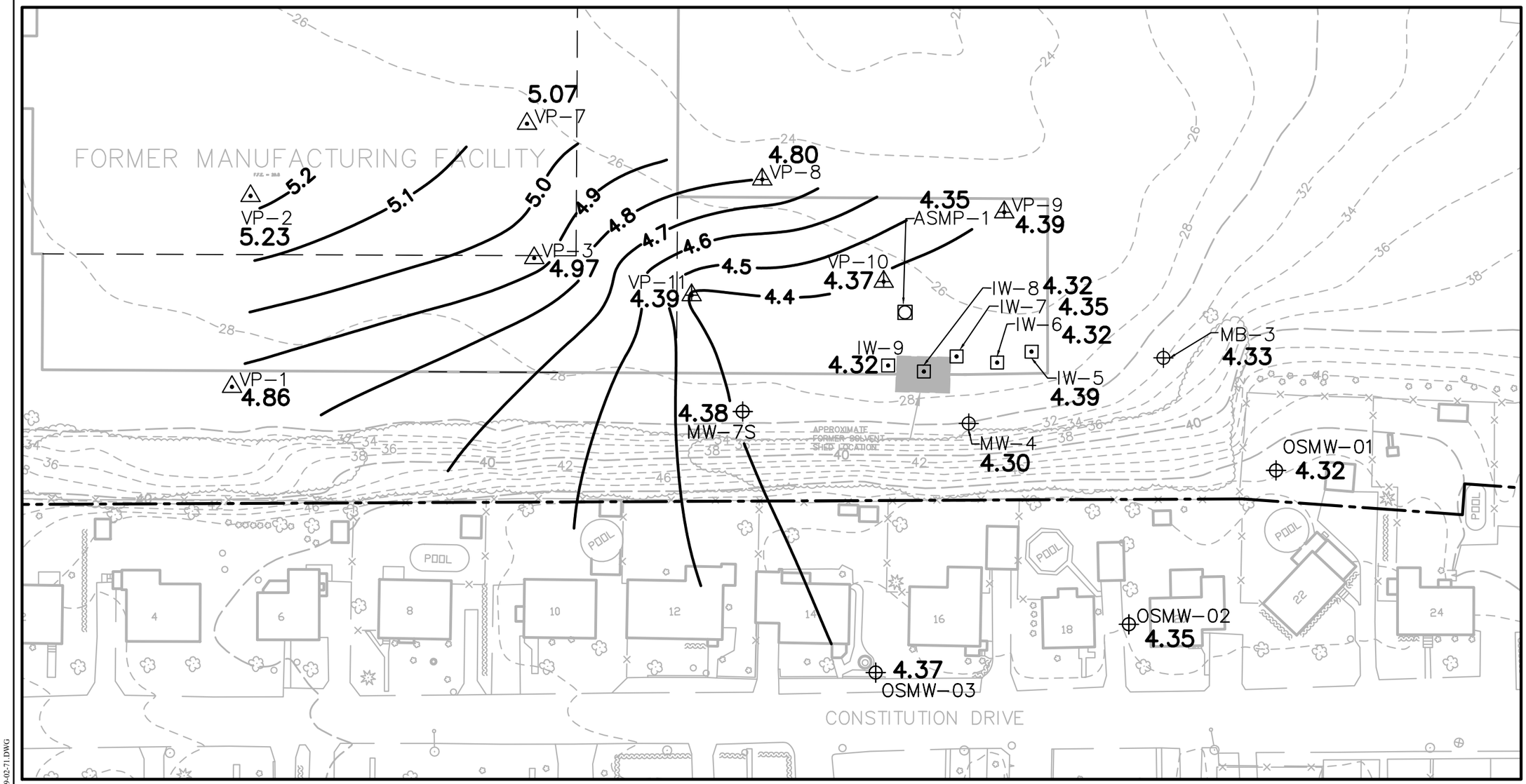

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Notes:
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2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

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GROUNDWATER POTENTIOMETRIC MAP MARCH 22, 2021

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

6

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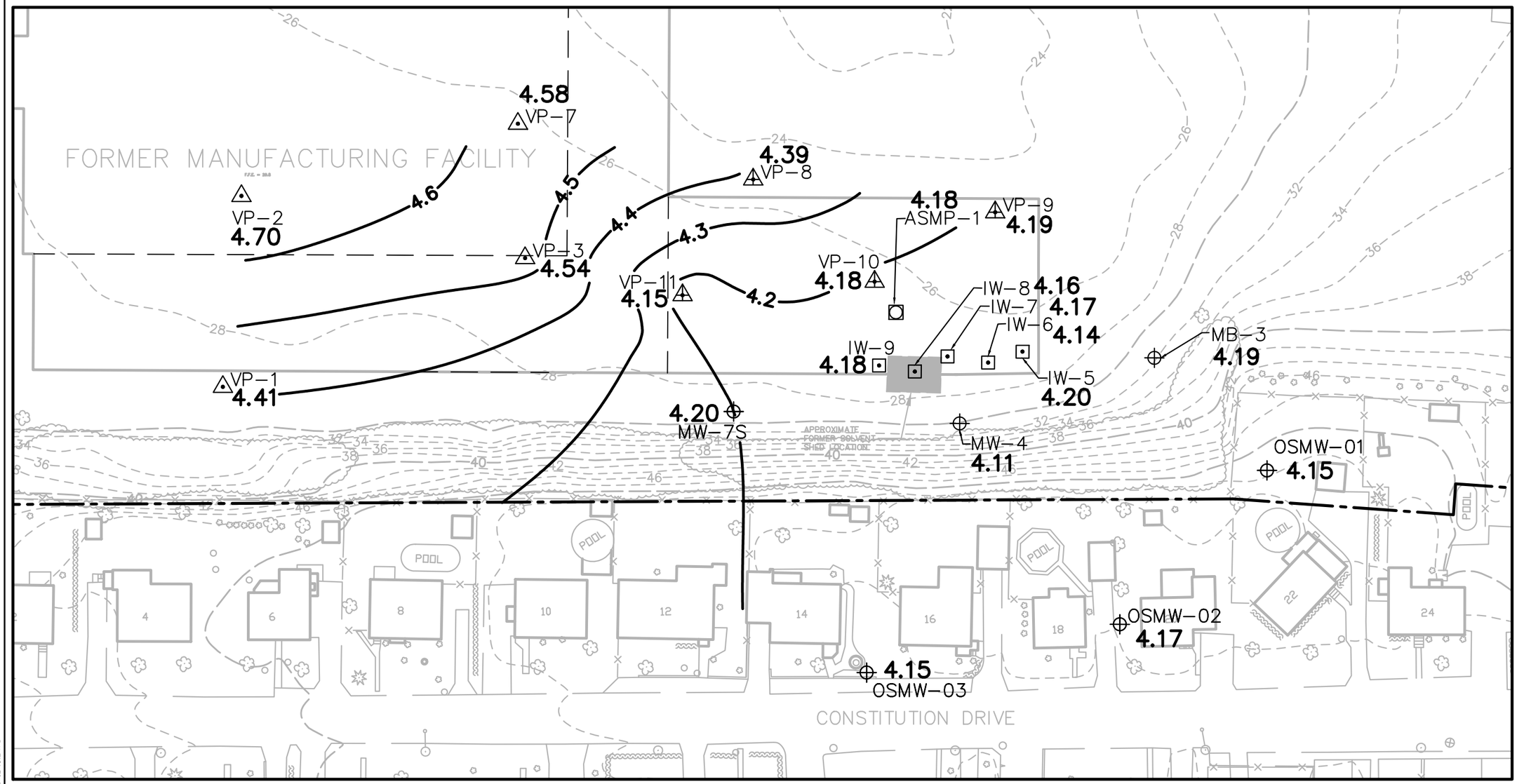

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2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

60 0 60 120
SCALE IN FEET

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GROUNDWATER POTENTIOMETRIC MAP JUNE 22, 2021

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

7

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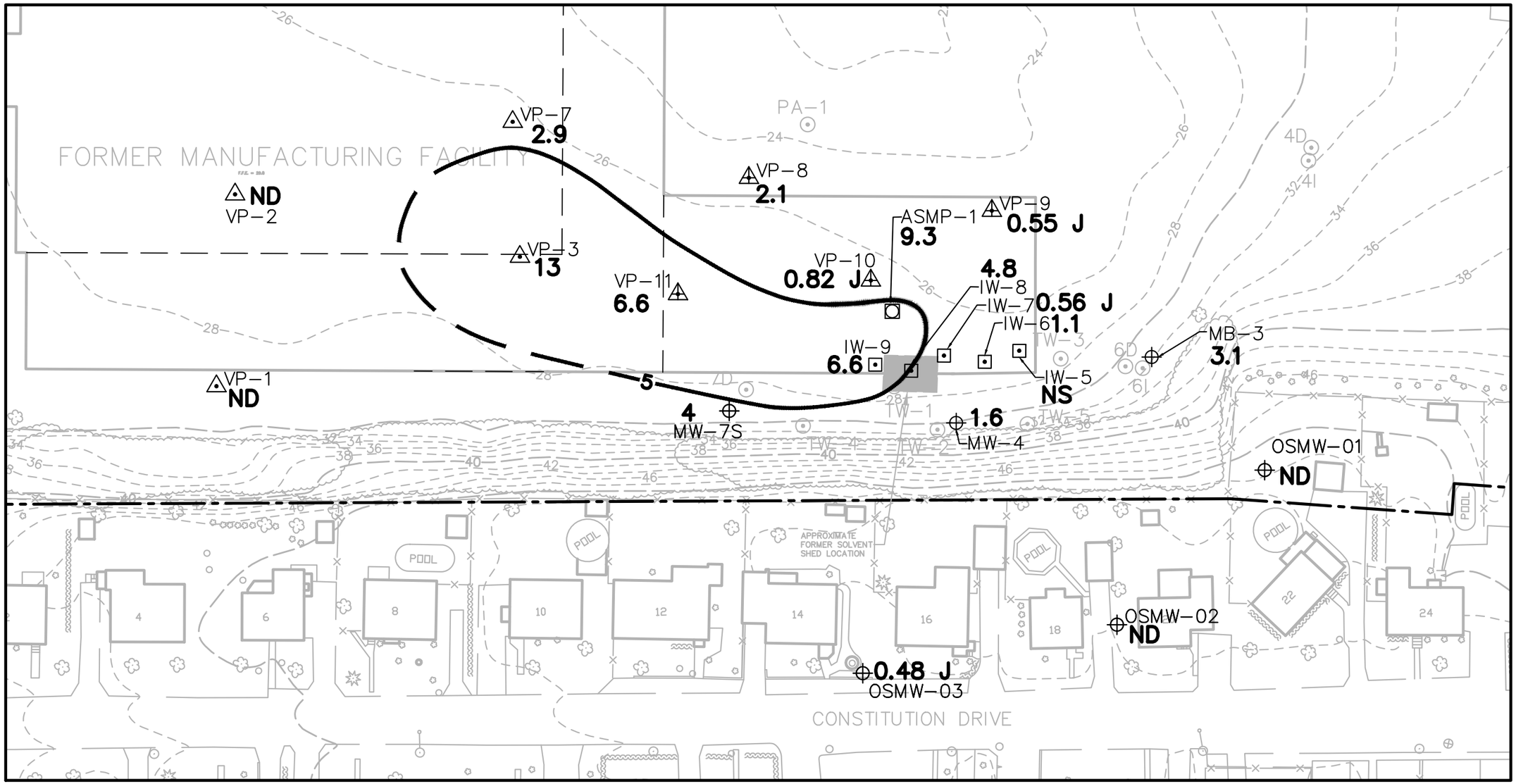

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- VP-8 — Existing Piezometer
- PA-1 — Abandoned Historic Groundwater Monitoring Well
- **NS** Not Sampled
- **ND** Not Detected

60 0 60 120

SCALE IN FEET

It is a violation of the New York Education Article 145 - Engineering and Land Surveying, Section 7209 (2) law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

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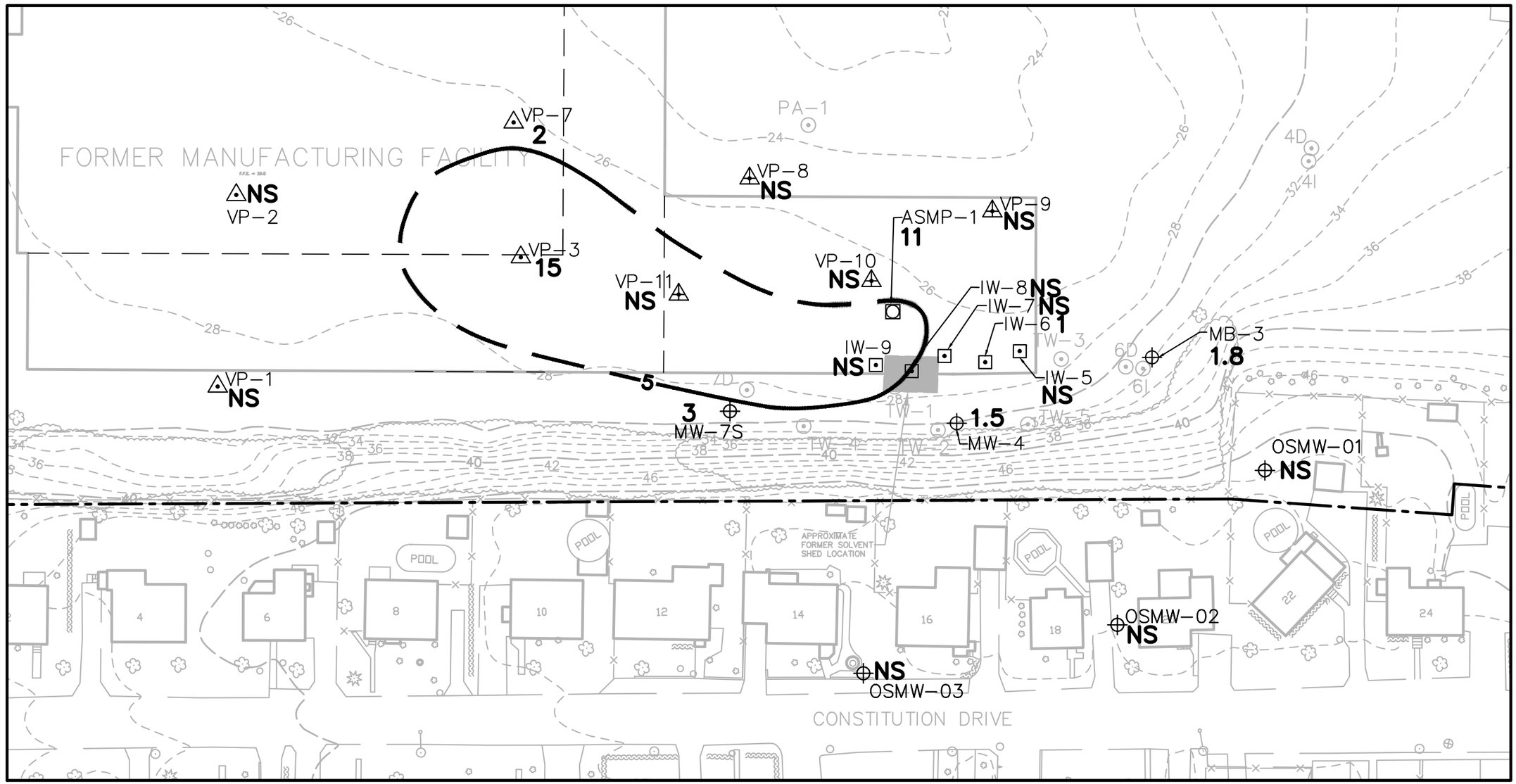
GROUNDWATER PCE ISOCONCENTRATION DECEMBER 2019

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

8



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GROUNDWATER PCE ISOCONCENTRATION APRIL 2020

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

9

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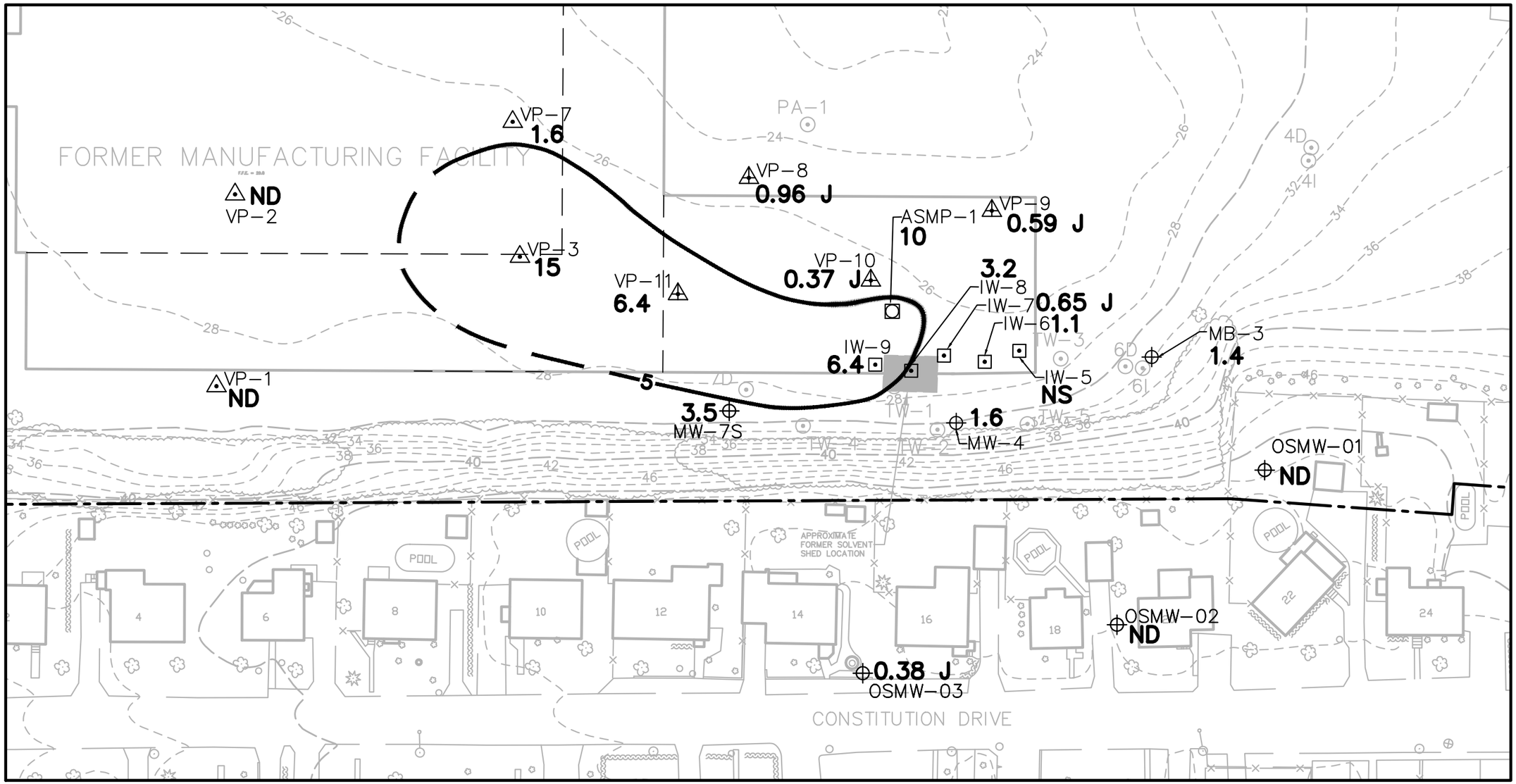

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GROUNDWATER PCE ISOCONCENTRATION JUNE 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

10

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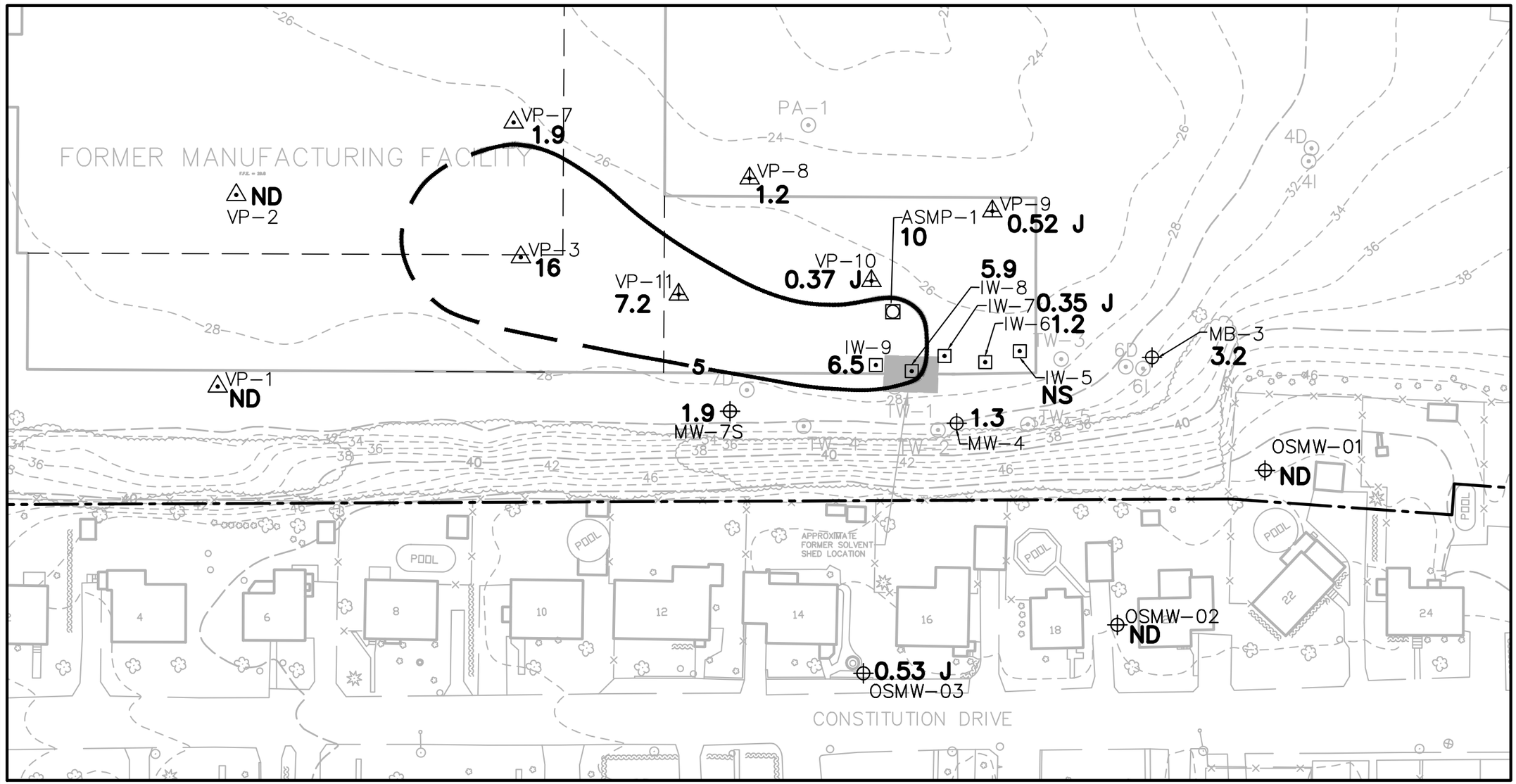

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GROUNDWATER PCE ISOCONCENTRATION SEPTEMBER 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

11

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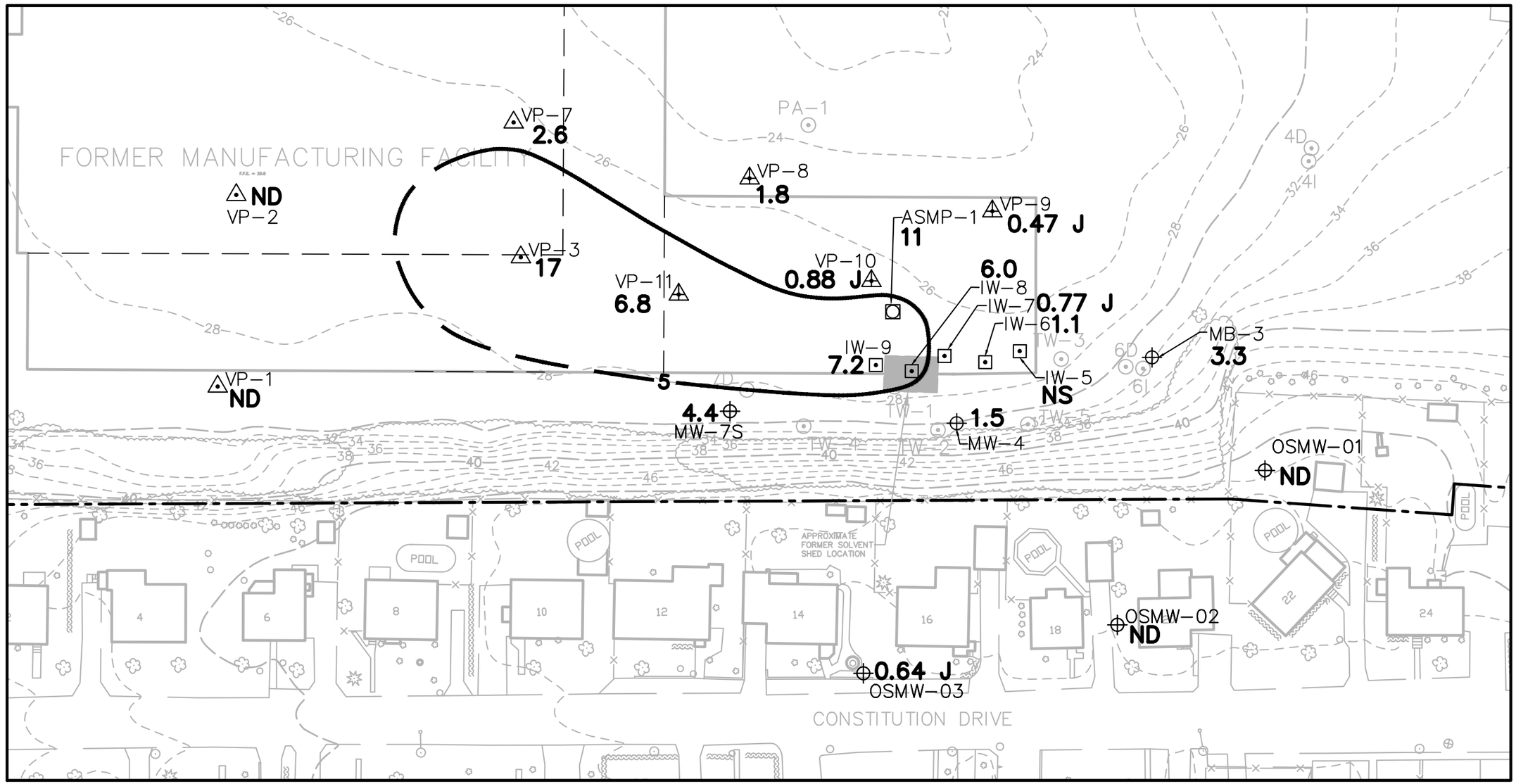

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SCALE IN FEET

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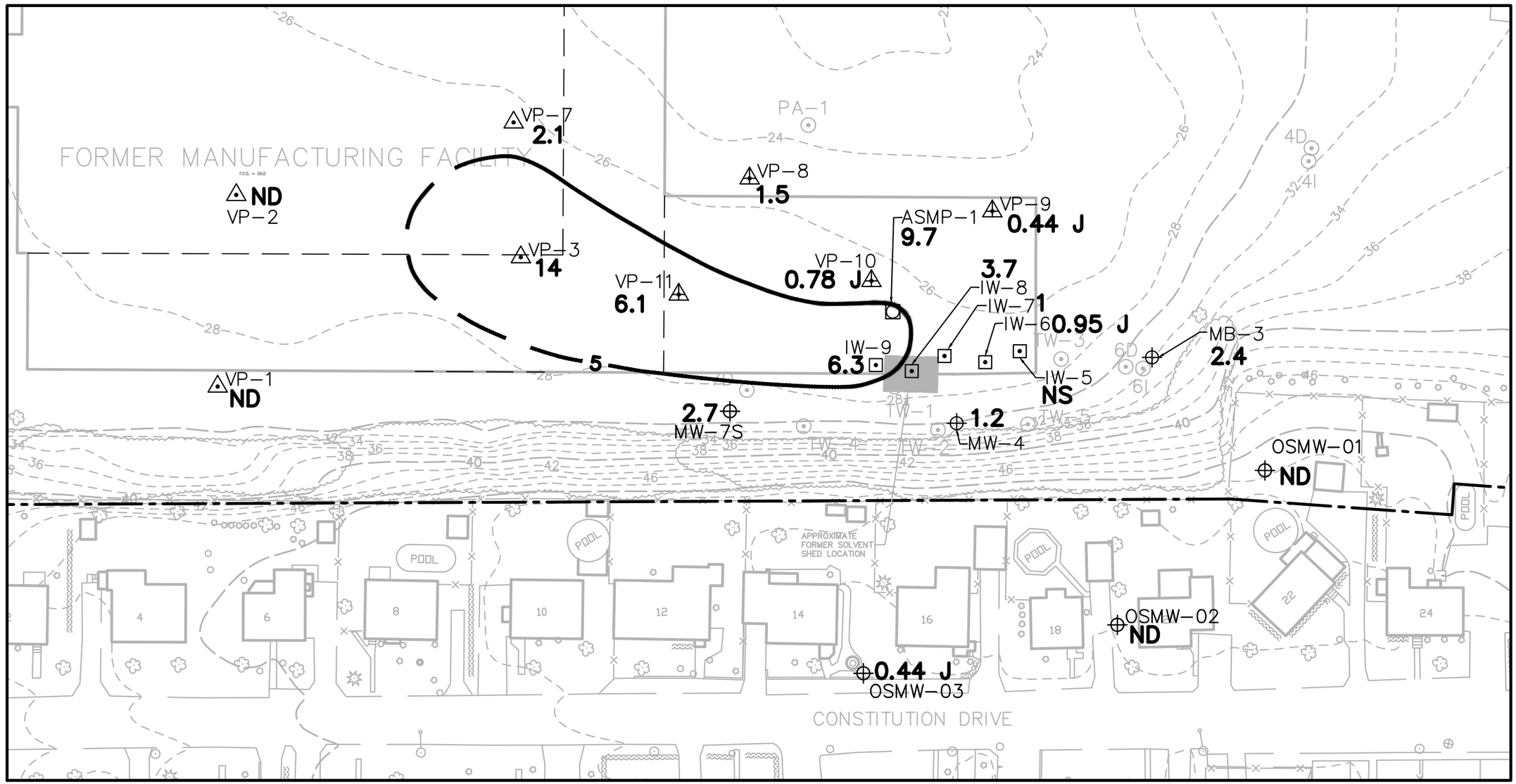
GROUNDWATER PCE ISOCONCENTRATION DECEMBER 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

12



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GROUNDWATER PCE ISOCONCENTRATION MARCH 2021

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

13

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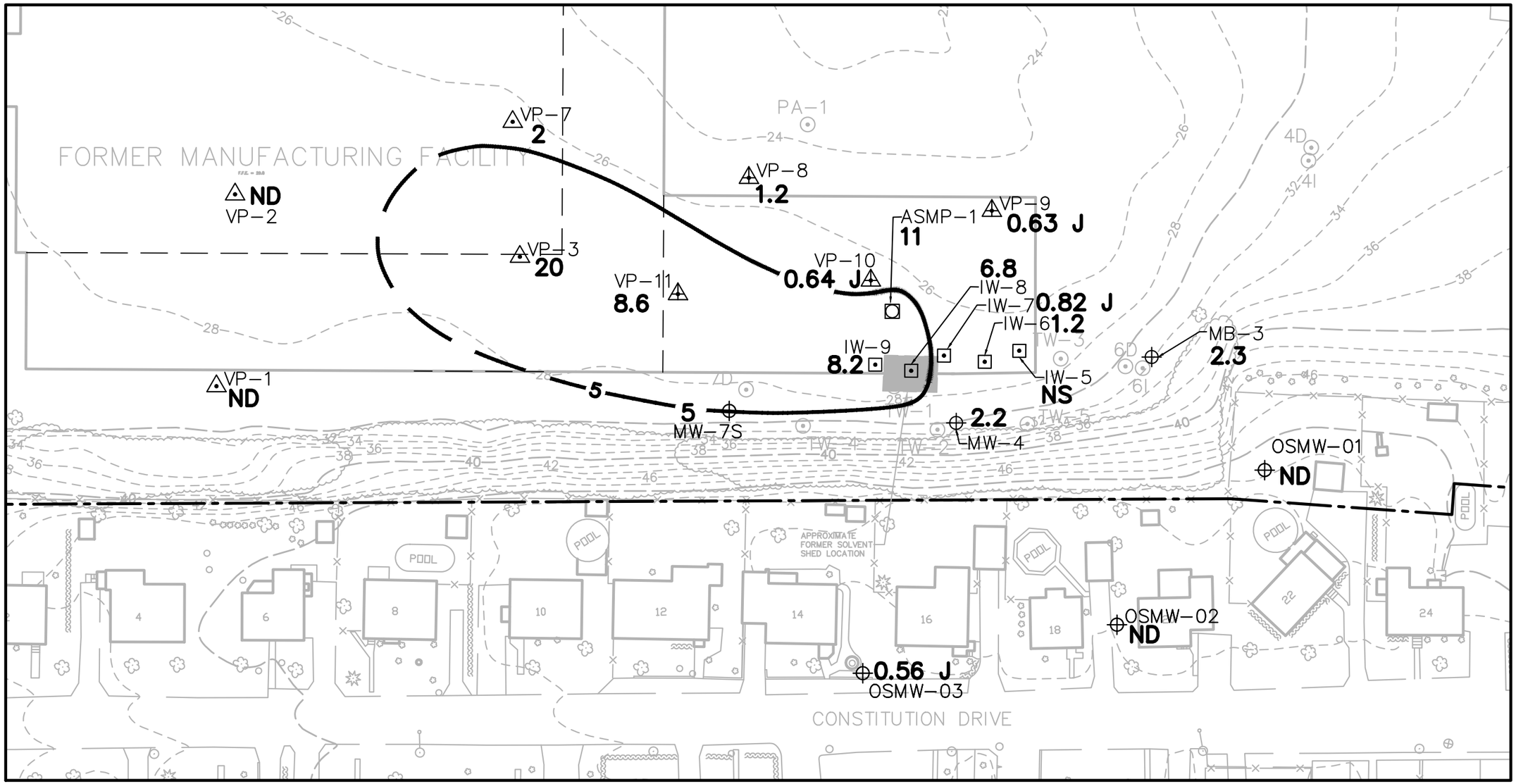

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GROUNDWATER PCE ISOCONCENTRATION JUNE 2021

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

14

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FORMER MANUFACTURING FACILITY

VP-7 32
VP-8 11
VP-9 5.7
VP-2 5
VP-3 73
VP-11 31
VP-10 16
ASMP-1 52
IW-8 32
IW-7 24
IW-6 85
IW-9 45
IW-5 NS
MB-3 20
VP-1 ND
53 MW-7S
MW-4 28
OSMW-01 ND
OSMW-02 ND
12 OSMW-03
PA-1
APPROXIMATE FORMER SOLVENT SHED LOCATION
POOL
CONSTITUTION DRIVE

50
20
5

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SCALE IN FEET

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GROUNDWATER TCE ISOCONCENTRATION DECEMBER 2019

MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

15

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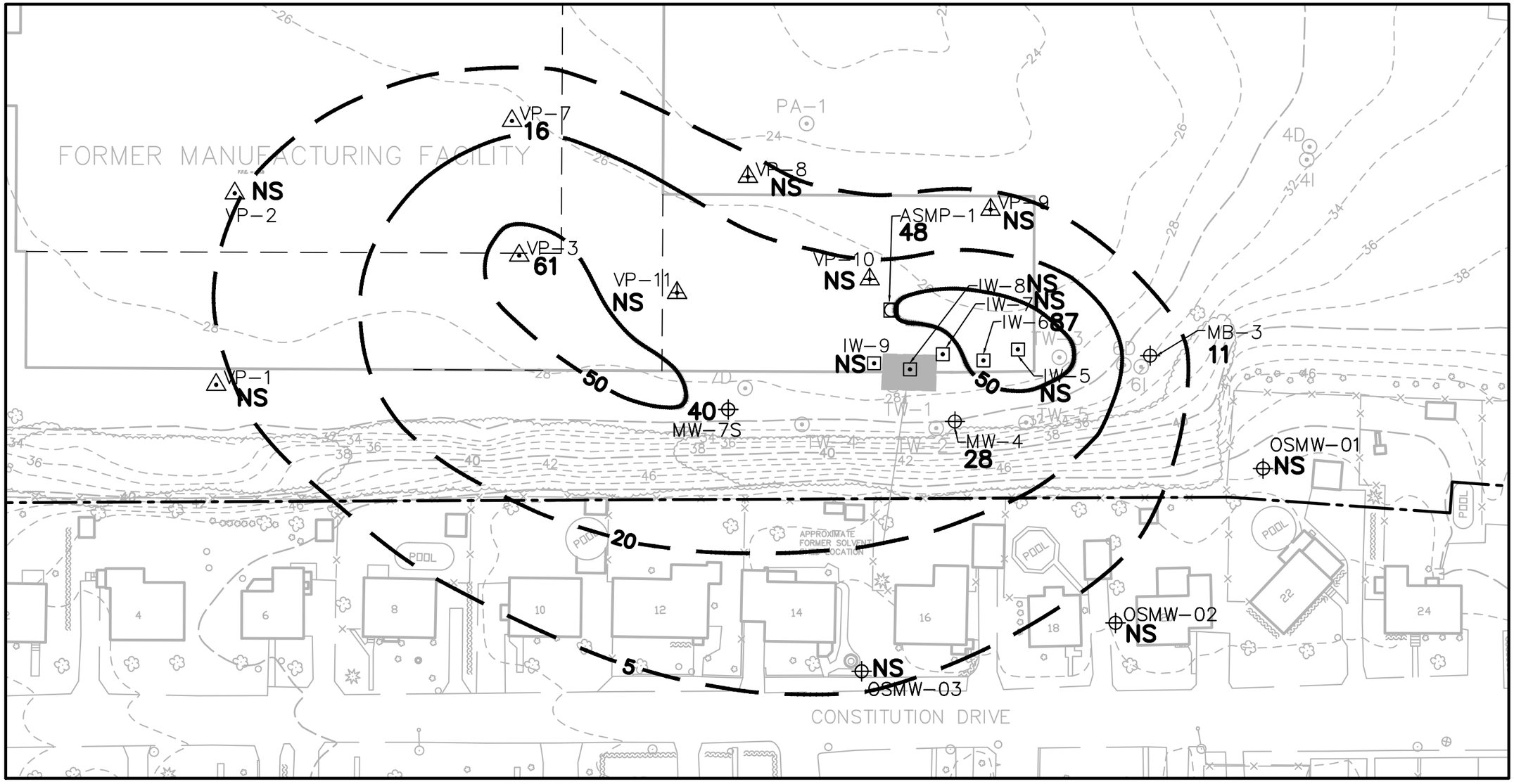

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GROUNDWATER TCE ISOCONCENTRATION
APRIL 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

16

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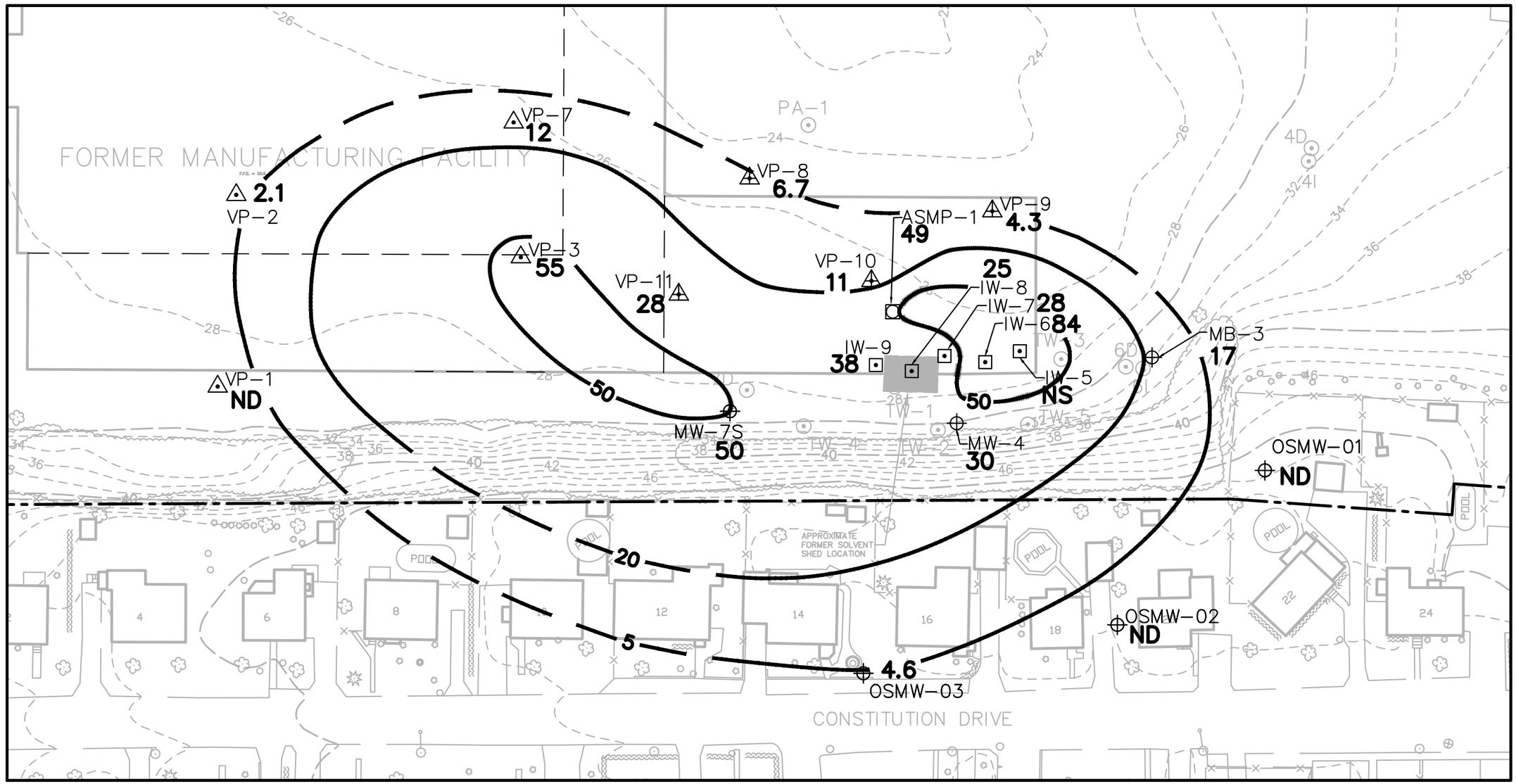

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP-8 — Existing Piezometer
- NS — Not Sampled
- ND — Not Detected
- PA-1 — Abandoned Historic Groundwater Monitoring Well

60 0 60 120

SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER TCE ISOCONCENTRATION JUNE 2020

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

17

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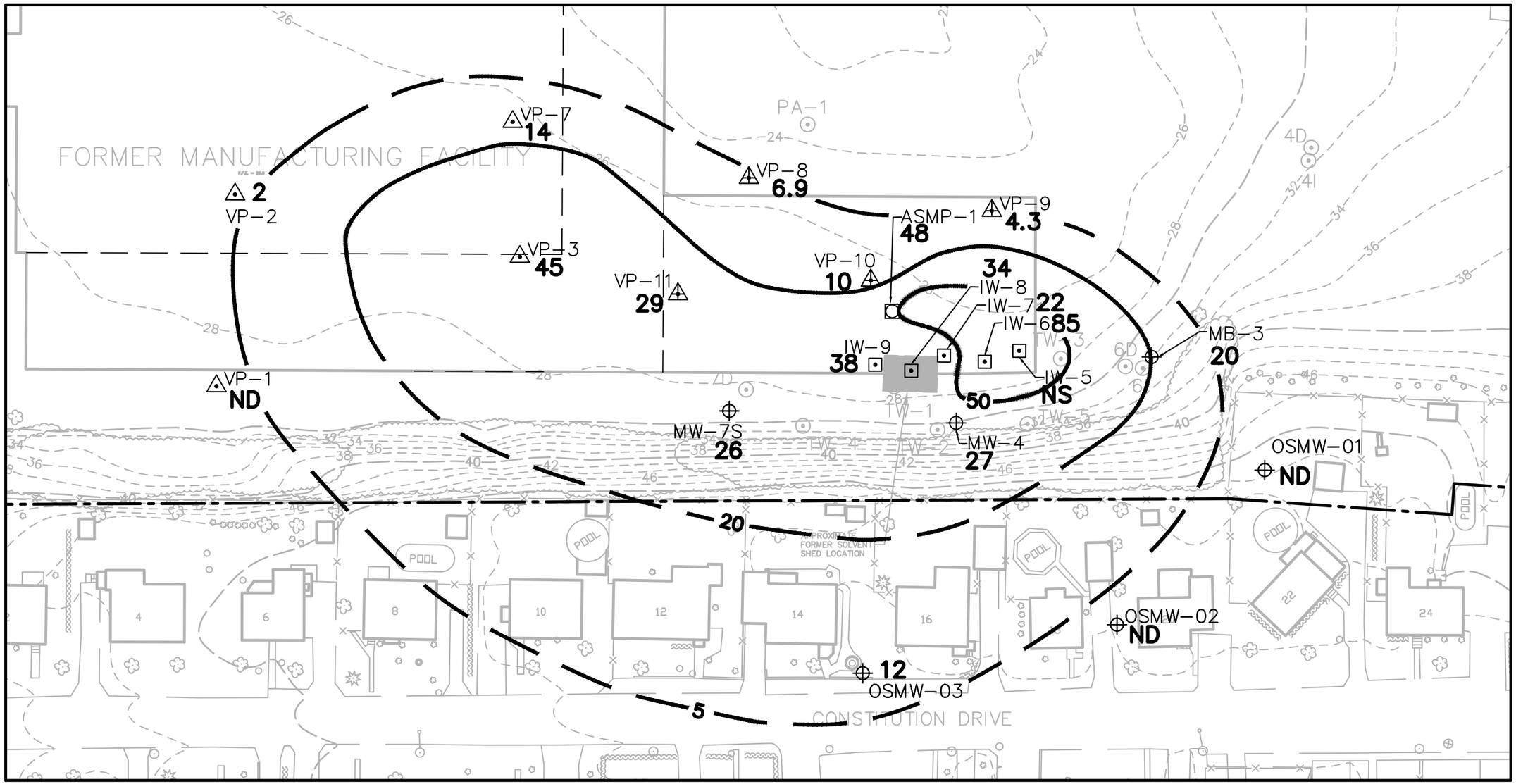

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
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- VP-8 — Existing Piezometer
- NS — Not Sampled
- ND — Not Detected
- PA-1 — Abandoned Historic Groundwater Monitoring Well

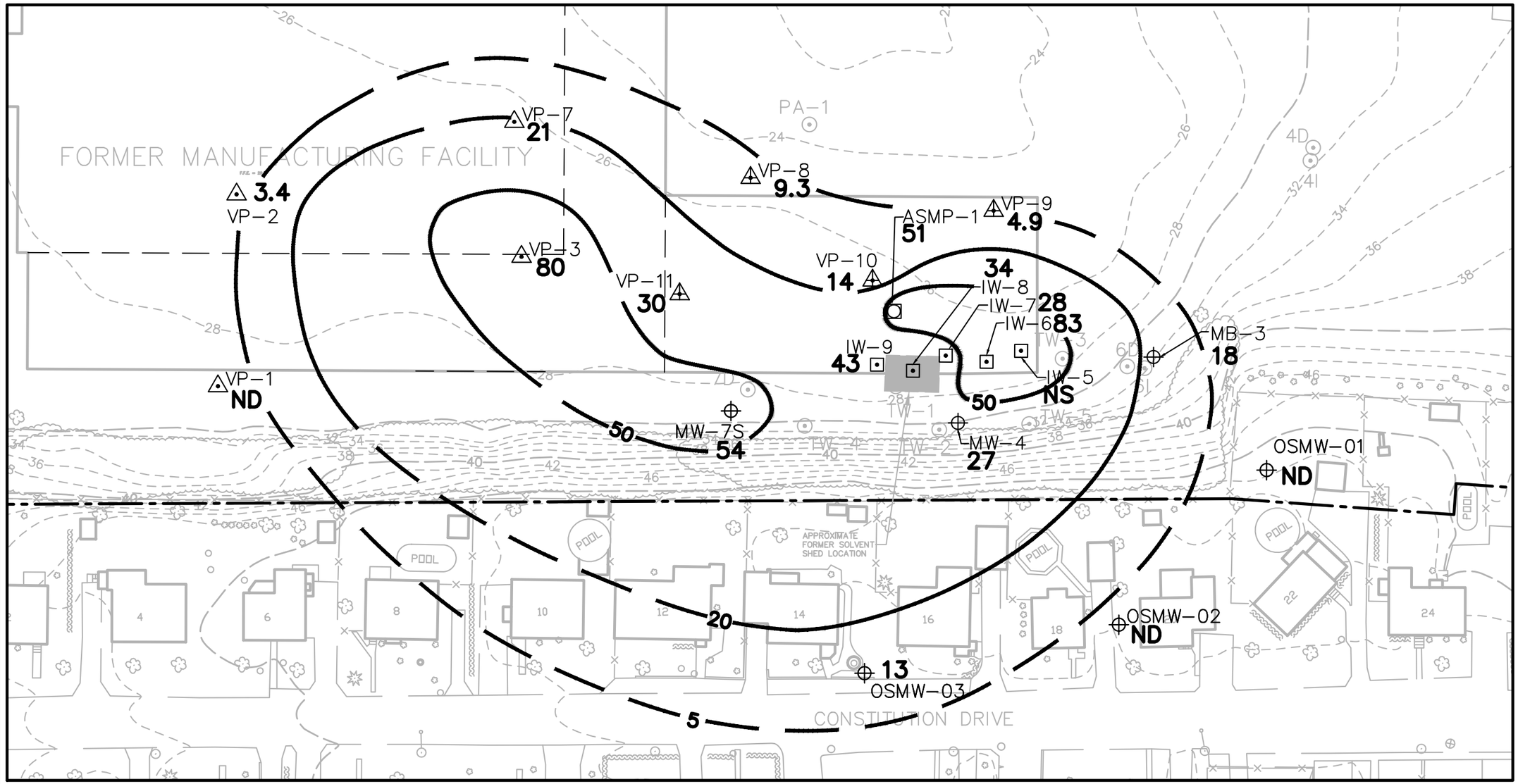
60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER TCE ISOCONCENTRATION SEPTEMBER 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

18



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
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- PA-1 — Abandoned Historic Groundwater Monitoring Well

60 0 60 120
SCALE IN FEET

It is a violation of the New York Education Article 145 - Engineering and Land Surveying, Section 7209 (2) law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

MONTROSE Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER TCE ISOCONCENTRATION DECEMBER 2020
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

19

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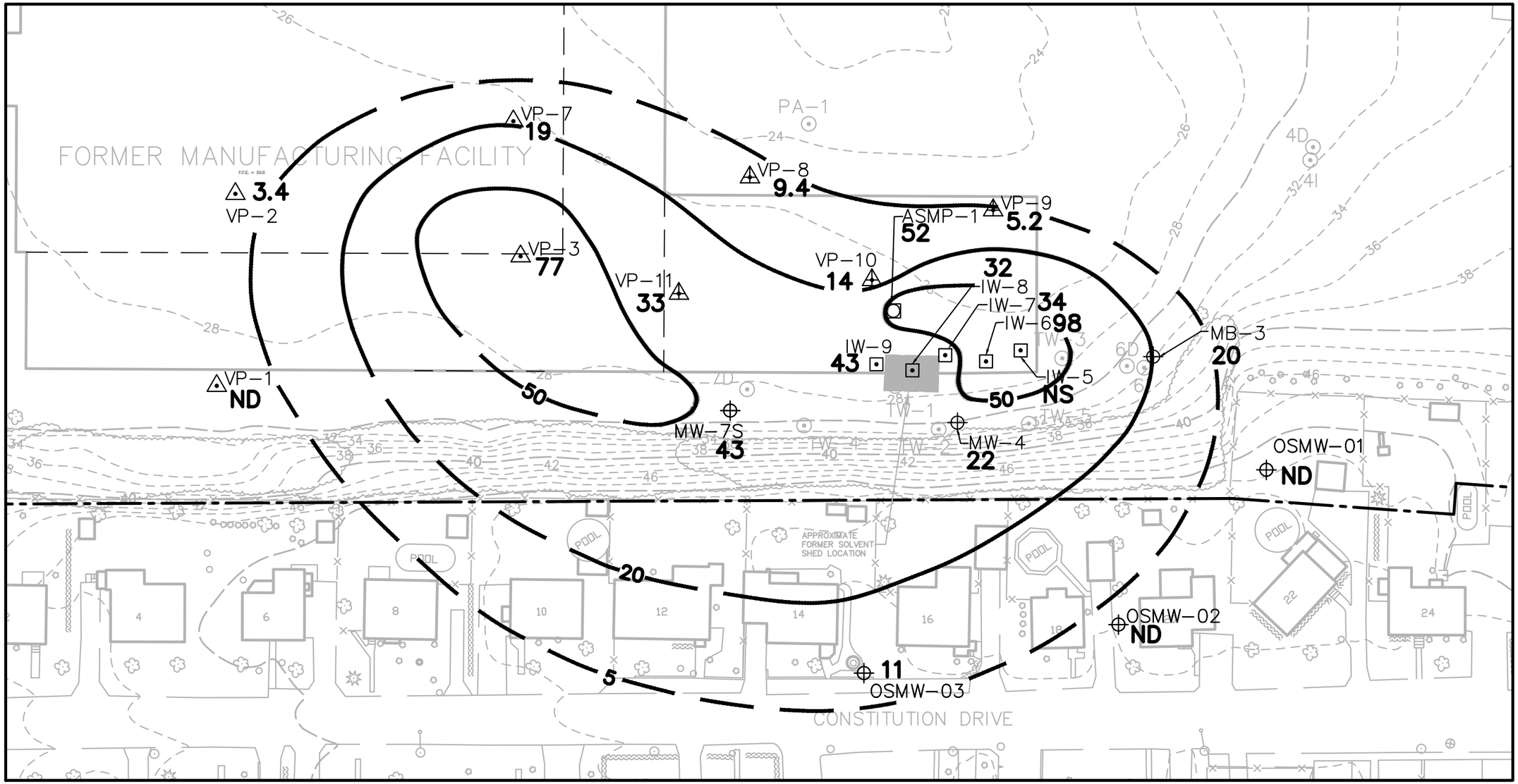

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW–03 — Existing Monitoring Well
- IW–8 — Existing Injection Well Converted to Monitoring Well
- VP–1 — Vertical Profiling Location Converted to Piezometer
- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP–8 — Existing Piezometer
- **NS** Not Sampled
- **ND** Not Detected
- PA–1 — Abandoned Historic Groundwater Monitoring Well

60 0 60 120

SCALE IN FEET

It is a violation of the New York Education Article 145 - Engineering and Land Surveying, Section 7209 (2) law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

MONTROSE
Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER TCE ISOCONCENTRATION MARCH 2021
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

20

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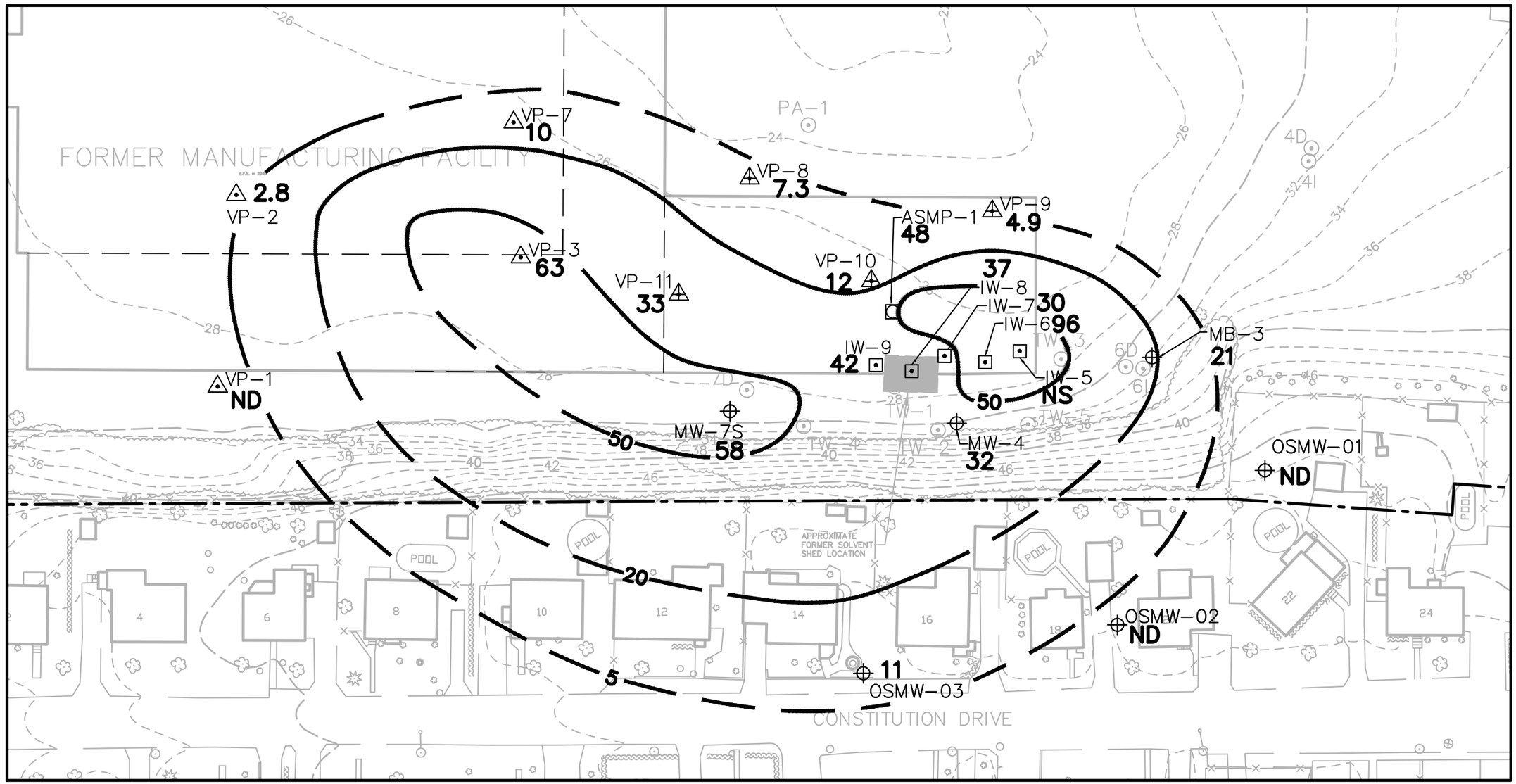

LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW–03 — Existing Monitoring Well
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- **NS** Not Sampled
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60 0 60 120

SCALE IN FEET

MONTROSE
Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

GROUNDWATER TCE ISOCONCENTRATION JUNE 2021

MARATHON REMEDIATION SITE

Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

21

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APPENDIX C

Groundwater Sampling Results
December 2019 to September 2021

APPENDIX C
DECEMBER 2019 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-7D			IW-8			IW-9			MB-3			MW-4			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-199519-08			460-199519-15			460-199519-13			460-199519-14			460-199519-11			460-199519-16			460-199519-10			460-199519-12			460-199519-17			460-199519-01			460-199519-02			460-199519-03		
Sample Date		12/16/2019			12/18/2019			12/17/2019			12/17/2019			12/17/2019			12/18/2019			12/16/2019			12/17/2019			12/18/2019			12/15/2019			12/15/2019			12/15/2019		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks											FD of IW-7																											
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L	1		1	2.1		1	0.94	J	1	0.89	J	1	1.2		1	1.3		1	0.49	J	1	0.75	J	1		U	1		U	1		U	1	0.39	J	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1
Chloroform	ug/L	0.91	J	1	0.58	J	1	1.1		1	1.1		1	0.97	J	1	0.73	J	1	0.68	J	1	0.66	J	1	3.8		1		U	1		U	1	1.8		1
Chloromethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1
cis-1,2-Dichloroethene	ug/L		U	1	0.5	J	1		U	1		U	1		U	1	2		1	0.41	J	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	9.3		1	1.1		1	0.56	J	1	0.29	J	1	4.8		1	6.6		1	3.1		1	1.6		1	4		1		U	1		U	1	13		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	52		1	85		1	24		1	24		1	32		1	45		1	20		1	28		1	53		1		U	1	5		1	73		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
DECEMBER 2019 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-121819			Tripblank		
Lab ID		460-199519-04			460-199519-05			460-199519-06			460-199519-07			460-199519-09			460-199520-01			460-199520-02			460-199520-03			460-199520-04			460-199519-18			460-199519-19		
Sample Date		12/15/2019			12/15/2019			12/16/2019			12/16/2019			12/16/2019			12/17/2019			12/17/2019			12/17/2019			12/17/2019			12/18/2019			12/18/2019		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L		U	1	0.83	J	1	1.1		1	0.95	J	1		U	1	0.55	J	1	0.56	J	1	0.45	J	1	0.64	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1		UJ	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		U	1		U	1		U	1		U	1		UJ	1		UJ	1
Chloroform	ug/L	1.8		1	0.82	J	1	0.33	J	1	0.59	J	1	2.9		1		U	1		U	1		U	1	0.8	J	1		U	1		U	1
Chloromethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		U	1		U	1		U	1		U	1		UJ	1		UJ	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		UJ	1		UJ	1		UJ	1		UJ	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2.9		1	2.1		1	0.55	J	1	0.82	J	1	6.6		1		U	1		U	1		U	1	0.48	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	32		1	11		1	5.7		1	16		1	31		1		U	1		U	1		U	1	12		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
APRIL 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			MB-3			MW-4			MW-4D			MW-7S			VP-3			VP-7			EB-01-042220			TB-01-042220		
Lab ID		460-207484-07			460-207484-06			460-207484-08			460-207484-04			460-207484-05			460-207484-01			460-207484-03			460-207484-02			460-207484-09			460-207484-10		
Sample Date		4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020			4/22/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks														FD of MW-4													Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L	0.95	J	1	2.5		1	0.47	J	1	0.75	J	1	0.84	J	1		U	1	0.29	J	1		U	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5	9.6		5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	0.56	J	1	0.52	J	1		U	1	0.42	J	1	0.41	J	1	2.3		1	1.3		1	1.4		1		U	1		U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1	8		1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	11		1	1		1	1.8		1	1.5		1	1.3		1	3		1	15		1	2		1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	48		1	87		1	11		1	28		1	29		1	40		1	61		1	16		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
JUNE 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MW-4			MW-4D			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-212091-16			460-212091-11			460-212091-09			460-212091-07			460-212091-05			460-212091-17			460-212091-13			460-212091-14			460-212091-02			460-212091-01			460-212091-03			460-212091-06		
Sample Date		6/25/2020			6/24/2020			6/24/2020			6/24/2020			6/24/2020			6/25/2020			6/24/2020			6/24/2020			6/24/2020			6/24/2020			6/24/2020			6/24/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																							FD of MW-4														
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L	1.1		1	2		1	1		1	1.2		1	1.1		1	0.97	J	1	1.1		1	1.1		1		U	1		U	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		UJ	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	0.59	J	1	0.43	J	1	0.91	J	1	0.74	J	1	0.43	J	1		U	1	0.44	J	1	0.46	J	1	2.8		1		U	1		U	1	1.7		1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	0.38	J	1		U	1		U	1	1.8		1	6		1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	10		1	1.1		1	0.65	J	1	3.2		1	6.4		1	1.4		1	1.6		1	1.5		1	3.5		1		U	1		U	1	15		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	49		1	84		1	28		1	25		1	38		1	17		1	30		1	30		1	50		1		U	1	2.1		1	55		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
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ug/L - microgram per liter
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APPENDIX C
JUNE 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-062620			TB-01-062420		
Lab ID		460-212091-04			460-212091-10			460-212091-12			460-212091-15			460-212091-08			460-212091-22			460-212091-23			460-212091-21			460-212091-20			460-212091-18			460-212091-19		
Sample Date		6/24/2020			6/24/2020			6/24/2020			6/25/2020			6/24/2020			6/26/2020			6/26/2020			6/26/2020			6/26/2020			6/26/2020			6/24/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L		U	1		U	1	1.1		1	0.92	J	1		U	1	0.45	J	1	0.56	J	1	0.43	J	1		U	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		UJ	5	6	J	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		UJ	1		UJ	1		UJ	1		U	1		U	1		UJ	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	1.5		1	1.1		1		U	1	0.34	J	1	2.2		1		U	1		U	1		U	1	0.94	J	1		U	1		U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	1.6		1	0.96	J	1	0.59	J	1	0.37	J	1	6.4		1		U	1		U	1		U	1	0.38	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	12		1	6.7		1	4.3		1	11		1	28		1		U	1		U	1		U	1	4.6		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
SEPTEMBER 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MW-4			MW-4D			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-219140-16			460-219140-11			460-219140-09			460-219140-07			460-219140-05			460-219140-17			460-219140-14			460-219140-15			460-219140-02			460-219140-01			460-219140-03			460-219140-06		
Sample Date		9/23/2020			9/22/2020			9/22/2020			9/22/2020			9/22/2020			9/23/2020			9/23/2020			9/23/2020			9/22/2020			9/22/2020			9/22/2020			9/22/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																							FD of MW-4														
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L	1.1		1	1.5		1	0.91	J	1	1.4		1	0.96	J	1	0.66	J	1	0.69	J	1		U	1		U	1		U	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5	6.1		5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	0.5	J	1	0.49	J	1	0.79	J	1	0.65	J	1	0.56	J	1	0.35	J	1	0.53	J	1	0.53	J	1	1.5		1		U	1		U	1	2.1		1
Chloromethane	ug/L	0.79	J	1		U	1		U	1		U	1	0.58	J	1		U	1		U	1		U	1		U	1		U	1	0.61	J	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	0.55	J	1		U	1		U	1	1.9		1	0.74	J	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	10		1	1.2		1	0.35	J	1	5.9		1	6.5		1	3.2		1	1.3		1	1.5		1	1.9		1		U	1		U	1	16		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	48		1	85		1	22		1	34		1	38		1	20		1	27		1	27		1	26		1		U	1	2		1	45		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
SEPTEMBER 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-092420			TB-01-092220		
Lab ID		460-219140-04			460-219140-10			460-219140-12			460-219140-13			460-219140-08			460-219140-22			460-219140-23			460-219140-21			460-219140-20			460-219140-18			460-219140-19		
Sample Date		9/22/2020			9/22/2020			9/23/2020			9/23/2020			9/22/2020			9/24/2020			9/24/2020			9/24/2020			9/24/2020			9/23/2020			9/22/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
1,1,1-Trichloroethane	ug/L		U	1	0.4	J	1	0.82	J	1	1.1		1		U	1	0.34	J	1	0.41	J	1	0.29	J	1	0.81	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	1.7		1	1.3		1	0.35	J	1		U	1	2.4		1		U	1		U	1	0.34	J	1	0.74	J	1		U	1		U	1
Chloromethane	ug/L		U	1	1		1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	1.9		1	1.2		1	0.52	J	1	0.37	J	1	7.2		1		U	1		U	1		U	1	0.53	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	14		1	6.9		1	4.3		1	10		1	29		1		U	1		U	1		U	1	12		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
DECEMBER 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MW-4			MW-4D			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-224998-14			460-224998-12			460-224998-04			460-224998-03			460-224998-02			460-224998-13			460-224998-10			460-224998-11			460-224998-01			460-224998-22			460-224998-21			460-224998-19		
Sample Date		12/14/2020			12/15/2020			12/15/2020			12/14/2020			12/14/2020			12/15/2020			12/15/2020			12/15/2020			12/14/2020			12/15/2020			12/15/2020			12/15/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																							FD of MW-4														
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																						
1,1,1-Trichloroethane	ug/L	0.91	J	1	1.8		1	1		1	1.2		1	1.2		1	0.54	J	1	0.69	J	1	0.62	J	1		U	1		U	1		U	1	0.37	J	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		UJ	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2.6	U	1		U	1		U	1	1.3	U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1	1.5		1	1.5		1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	11		1	1.1		1	0.77	J	1	6		1	7.2		1	3.3		1	1.5		1	1.5		1	4.4		1		U	1		U	1	17		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	51		1	83		1	28		1	34	J	1	43		1	18		1	27		1	25		1	54		1		U	1	3.4		1	80		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
DECEMBER 2020 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-121520			TB-01-121520		
Lab ID		460-224998-20			460-224998-18			460-224998-16			460-224998-15			460-224998-17			460-224998-05			460-224998-06			460-224998-08			460-224998-09			460-224998-07			460-224998-23		
Sample Date		12/15/2020			12/15/2020			12/14/2020			12/14/2020			12/14/2020			12/15/2020			12/15/2020			12/15/2020			12/15/2020			12/15/2020			12/15/2020		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																	
1,1,1-Trichloroethane	ug/L		U	1	0.66	J	1	1		1	0.67	J	1		U	1	0.46	J	1	0.42	J	1	0.4	J	1	0.66	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5	39		5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	2.7	U	1	1	U	1		U	1	1	U	1	2	U	1		U	1		U	1		U	1	1	U	1	0.63	J	1	0.74	J	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2.6		1	1.8		1	0.47	J	1	0.88	J	1	6.8		1		U	1		U	1		U	1	0.64	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	21		1	9.3		1	4.9		1	14		1	30		1		U	1		U	1		U	1	13		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
MARCH 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MB-3D			MW-4			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-230937-15			460-230937-14			460-230937-09			460-230937-07			460-230937-05			460-230937-16			460-230937-17			460-230937-11			460-230937-03			460-230937-01			460-230937-02			460-230937-06		
Sample Date		3/23/2021			3/23/2021			3/22/2021			3/22/2021			3/22/2021			3/23/2021			3/23/2021			3/23/2021			3/22/2021			3/22/2021			3/22/2021			3/22/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																				FD of MB-3																	
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																				
1,1,1-Trichloroethane	ug/L	1.2		1	3		1	1.1		1	1.3		1	1.2		1	0.71	J	1	0.79	J	1	0.56	J	1		U	1		U	1		U	1	0.29	J	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5	7.4	U	5	9.9	U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2.3		1		U	1		U	1	2.2		1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	0.28	J	1		U	1		U	1	1.5		1	3.9		1	3.9		1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	9.7		1	0.95	J	1	1		1	3.7		1	6.3		1	2.4		1	2.5		1	1.2		1	2.7		1		U	1		U	1	14		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	52		1	98		1	34		1	32		1	43		1	20		1	20		1	22		1	43		1		U	1	3.4		1	77		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
MARCH 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-032421			TB-01-032421		
Lab ID		460-230937-04			460-230937-10			460-230937-12			460-230937-13			460-230937-08			460-230937-18			460-230937-19			460-230937-22			460-230937-21			460-230937-20			460-230937-23		
Sample Date		3/22/2021			3/23/2021			3/23/2021			3/23/2021			3/22/2021			3/23/2021			3/23/2021			3/24/2021			3/24/2021			3/24/2021			3/24/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																	
1,1,1-Trichloroethane	ug/L		U	1	0.57	J	1	0.92	J	1	0.71	J	1		U	1	0.52	J	1	0.53	J	1	0.38	J	1	0.48	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5	16		5	6.3		5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	2.9		1	1.3	U	1		U	1	1	U	1	2.7		1		U	1		U	1		U	1	1.1	U	1	0.42	J	1	0.35	J	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2.1		1	1.5		1	0.44	J	1	0.78	J	1	6.1		1		U	1		U	1		U	1	0.44	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	19		1	9.4		1	5.2		1	14		1	33		1		U	1		U	1		U	1	11		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
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APPENDIX C
JUNE 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MB-3D			MW-4			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-237380-15			460-237380-13			460-237380-09			460-237380-07			460-237380-04			460-237380-16			460-237380-17			460-237380-11			460-237380-02			460-237380-01			460-237380-03			460-237380-06		
Sample Date		6/23/2021			6/23/2021			6/22/2021			6/22/2021			6/22/2021			6/23/2021			6/23/2021			6/23/2021			6/22/2021			6/22/2021			6/22/2021			6/22/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																				FD of MB-3																	
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																						
1,1,1-Trichloroethane	ug/L	0.95	J	1	2.7		1	0.9	J	1	1.3		1	1.2		1	0.93	J	1	0.9	J	1	1.3		1	0.31	J	1		U	1		U	1	0.25	J	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		UJ	5		U	5		U	5		U	5		U	5		UJ	5		UJ	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L	6.1	U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5	9.1	U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	0.36	J	1	0.56	J	1	0.96	J	1	0.69	J	1	0.52	J	1		U	1		U	1	0.49	J	1	2.7		1		U	1		U	1	2.3		1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	0.36	J	1		U	1		U	1	1.5		1	4.5		1	4.2		1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1	3		1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	11		1	1.2		1	0.82	J	1	6.8		1	8.2		1	2.3		1	2.3		1	2.2		1	5		1		U	1		U	1	20		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	48		1	96		1	30		1	37		1	42		1	21		1	22		1	32		1	58		1		U	1	2.8		1	63		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
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U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
JUNE 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-062321			TB-01-062221		
Lab ID		460-237380-05			460-237380-10			460-237380-12			460-237380-14			460-237380-08			460-237380-19			460-237380-21			460-237380-20			460-237380-18			460-237380-22			460-237380-23		
Sample Date		6/22/2021			6/23/2021			6/23/2021			6/23/2021			6/22/2021			6/23/2021			6/23/2021			6/23/2021			6/23/2021			6/23/2021			6/22/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																																		
1,1,1-Trichloroethane	ug/L		U	1	0.24	J	1	1		1	1		1		U	1	0.49	J	1	0.51	J	1	0.55	J	1	0.43	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		UJ	5		UJ	5		UJ	5		UJ	5		UJ	5		UJ	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5	6.6		5	7.2		5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	5.5		1	1.8		1		U	1	0.49	J	1	2.8		1		U	1		U	1		U	1	1		1		U	1		U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2		1	1.2		1	0.63	J	1	0.64	J	1	8.6		1		U	1		U	1		U	1	0.56	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	10		1	7.3		1	4.9		1	12		1	33		1		U	1		U	1		U	1	11		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX C
SEPTEMBER 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		ASMP-1			IW-6			IW-7			IW-8			IW-9			MB-3			MW-4			MW-4D			MW-7S			VP-1			VP-2			VP-3		
Lab ID		460-243574-17			460-243574-13			460-243574-10			460-243574-08			460-243574-06			460-243574-15			460-243574-01			460-243574-02			460-243574-03			460-243574-04			460-243574-05			460-243574-09		
Sample Date		9/21/2021			9/21/2021			9/21/2021			9/21/2021			9/21/2021			9/21/2021			9/20/2021			9/20/2021			9/20/2021			9/20/2021			9/21/2021			9/21/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
Remarks																							FD of MW-4														
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatile																																						
1,1,1-Trichloroethane	ug/L	0.9	J	1	1.9		1	0.84	J	1	1.1		1	1		1	0.7	J	1		U	1	1		1		U	1		U	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	0.35	J	1	0.36	J	1	0.7	J	1	0.44	J	1	0.33	J	1	0.43	J	1		U	1		U	1	2.2		1		U	1		U	1	3.3		1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	1		1	0.94	J	1		U	1	3.5		1	2		1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	12		1	1.1		1	0.9	J	1	7.8		1	8.8		1	2		1	1.2		1	1.3		1	4		1		U	1		U	1	15		1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	46		1	86		1	26		1	36		1	41		1	17		1	34		1	35		1	40		1		U	1	3.3		1	57		1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

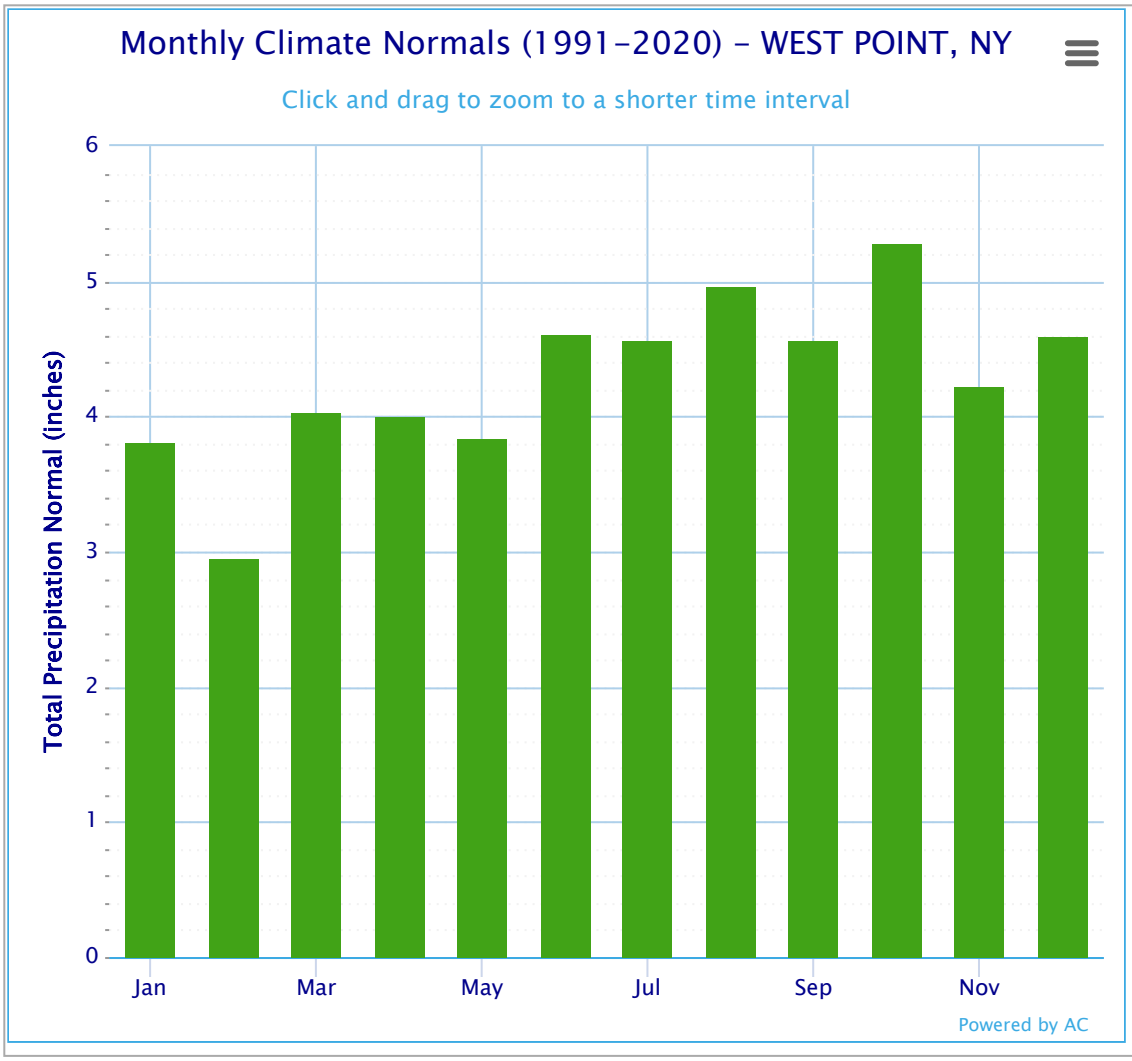
APPENDIX C
SEPTEMBER 2021 GROUNDWATER SAMPLING RESULTS
Marathon Remediation Site Cold Spring, New York

Sample Location		VP-7			VP-8			VP-9			VP-10			VP-11			OSMW-01			OSMW-01D			OSMW-02			OSMW-03			EB-01-092221			TB-01-092021		
Lab ID		460-243574-07			460-243574-12			460-243574-14			460-243574-16			460-243574-11			460-243574-20			460-243574-21			460-243574-18			460-243574-19			460-243574-22			460-243574-23		
Sample Date		9/21/2021			9/21/2021			9/21/2021			9/21/2021			9/21/2021			9/22/2021			9/22/2021			9/21/2021			9/22/2021			9/22/2021			9/20/2021		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks																				FD of OSMW-01									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatile																																		
1,1,1-Trichloroethane	ug/L		U	1	0.35	J	1	0.91	J	1	0.68	J	1		U	1	0.41	J	1	0.41	J	1	0.32	J	1	0.47	J	1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1		U	1		UJ	1		UJ	1		UJ	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		UJ	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	4.8		1	3.1		1		U	1	0.41	J	1	3		1		U	1		U	1		U	1	0.72	J	1		U	1		U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2.3		1	1.4		1	0.64	J	1	0.98	J	1	6.5		1		U	1		U	1		U	1	0.34	J	1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	19		1	8.5		1	5.8	J	1	14		1	28		1		U	1		U	1		U	1	7.7		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2		U	2

Notes:
RL - Reporting Limit
J - Estimated
U - Not Detected
Q - Qualifier
ug/L - microgram per liter
FD - Field Duplicate

APPENDIX D

NOAA Precipitation Records for West Point New York and Statewide Precipitation Ranks for 2018



Month	Total Precipitation Normal (inches)
January	3.82
February	2.95
March	4.04
April	4.00
May	3.84
June	4.61
July	4.57
August	4.96
September	4.57
October	5.29
November	4.23
December	4.59
Annual	51.47

Statewide Precipitation Ranks

January–December 2018

Period: 1895–2018