2018 ANNUAL MONITORING PROGRESS REPORT FOR THE NPBA EXTRACTION SYSTEM SHUTDOWN
Former York Naval Ordnance Plant
1425 Eden Road, Springettsbury Township
York, Pennsylvania

Prepared for:

Former York Naval Ordnance Plant Remediation Team

April 9, 2019

Prepared by:

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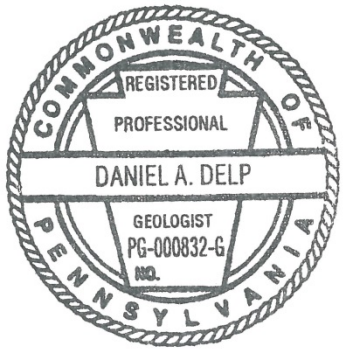

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Table of Contents

Tables

Figures

Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
Act 2	Pennsylvania Land Recycling and Environmental Remediation Standards Act
amsl	above mean sea level
bgs	below ground surface
cis12DCE	cis-1,2-dichloroethene
COC	constituents of concern
FSP	Field Sampling Plan
fYNOP	former York Naval Ordnance Plant
GSC	Groundwater Sciences Corporation
Harley-Davidson	Harley-Davidson Motor Company Operations, Inc.
MNA	monitored natural attenuation
MSCs	Medium-Specific Concentration
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NETT	North End of Test Track
NPBA	Northern Property Boundary Area
PADEP	Pennsylvania Department of Environmental Protection
Part 1 SRI	Part 1 Supplemental Remedial Investigation (RI) Groundwater Report
Part 2 SRI	Part 2 Supplemental Remedial Investigation (RI) Groundwater Report
PCE	tetrachloroethene
PRCP	Post-remediation Care Plan
PP-FR	Proposed Plan – Final Remedy
QAPP	Quality Assurance Project Plan
SSS	Site-Specific Standard
TCE	trichloroethene
U	undetected
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOCs	volatile organic compounds

EXECUTIVE SUMMARY

A groundwater extraction system was operated in the Northern Property Boundary Area (NPBA) for more than 22 years (1990 through 2013) when the fYNOP remediation team proposed to shut down the system. Following shutdown, five years of annual post-shutdown monitoring was completed in accordance with the Pennsylvania Department of Environmental Protection (PADEP) and United States Environmental Protection Agency (USEPA) approved plan.

The evaluation of the post-shutdown groundwater data confirms that operation of the groundwater extraction system in the NPBA met the objective of this interim remedial action. The operation of the groundwater extraction system in the NPBA successfully controlled off-Site migration of constituents of concern (COCs) in groundwater, pulled the off-Site plume from the north to the collection wells, and resulted in an approximate 3X order of magnitude reduction in COC concentrations from the NPBA. Post-shutdown groundwater elevation data indicates that the groundwater plume beneath the NPBA is not migrating off-Site to the north, northwest, or to the west from the NPBA. Plume migration from the beneath the NPBA is in a southwesterly direction, remaining on the property.

The success of the groundwater extraction system is further demonstrated by the lack of rebound (increase in concentrations after shutdown) and no observed consistent upward trend in COC concentrations in groundwater in 21 of the 23 NPBA wells following cessation of pumping. While concentrations of COCs trichloroethene (TCE) and tetrachloroethene (PCE) in many wells in and near the suspected source areas remain above PADEP Medium-Specific Concentrations (MSCs), the objective of the NPBA extraction system to reverse the northward spread of Site-related COCs has been met. Therefore, reactivation of the NPBA groundwater extraction system is not warranted.

The remedy identified in the Proposed Plan – Final Remedy (PP-FR) (GSC, 2018d) for groundwater in the NPBA is to attain the Site-Specific Standard (SSS) under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2). This Standard will be met using institutional controls that will allow PADEP MSCs for groundwater to eventually be met through monitored natural attenuation (MNA). MNA is defined in the PP-FR as monitoring groundwater for the presence of volatile organic compounds (VOCs) to confirm declining trends in

concentrations due to the natural attenuation processes of dilution, dispersion, aqueous diffusion, sorption, and abiotic degradation.

Future activities in the NPBA will be completed in accordance with the Post-remediation Care Plan (PRCP) for the former York Naval Ordnance Plant (fYNOP or Site). The future activities will include the following:

- Annual sampling of selected on-Site and off-Site wells.
- Annual evaluation of groundwater flow.
- Confirmation of continued non-use of groundwater at off-Site inactive wells.

The complete PRCP will be outlined in the Cleanup Plan to be submitted to PADEP and USEPA during the first half of 2019, and detailed in the Final Report following completion of the Cleanup Plan.

1 INTRODUCTION

A groundwater extraction system was operated in the Northern Property Boundary Area (NPBA) for more than 22 years (1990 through 2013) when the fYNOP remediation team proposed to shut down the system. Following shutdown, five years of annual post-shutdown monitoring was completed in accordance with the PADEP and USEPA approved plan (GSC, 2014). This report presents the results of the fifth year of post-shutdown monitoring and summarizes the findings of the 5 year post-shutdown period.

1.1 Background

As shown on **Figure 1.1-1**, the NPBA is located in the northeast corner of the former York Naval Ordnance Plant (fYNOP or Site). Investigations in the NPBA began in April 1986, when analysis of groundwater samples collected from wells in the NPBA reported detections of chlorinated solvents believed to have originated from dumping (road oiling and weed control) along the perimeter dirt roadway and fence. A groundwater extraction system was installed and operated from November 1990 through mid-June 2013 in the NPBA to control off-Site migration of dissolved-phase COCs in groundwater. The system pumped groundwater from nine collection wells illustrated on **Figure 1.1-2** (CW-1, CW-1A, CW-2, CW-3, CW-4, CW-5, CW-6, CW-7 and CW-7A) at a combined groundwater recovery rate approximately of 12.5 gallons per minute (gpm).

As part of the historic NPBA investigations, off-Site domestic (private residential) wells and one agricultural supply well were sampled for the same COCs found in groundwater beneath the NPBA. During the investigations, COCs were detected in samples from 3 of the 4 off-Site wells. The source of the COCs in these wells presumably came from the NPBA when the off-Site wells were used as water supplies, drawing groundwater from beneath the Site to the north and northwest.

As shown on **Figure 1.1-2** the off-Site wells are located on the north side of Paradise Road to the north of the NPBA. A description of the off-Site wells is as follows:

- Well RW-1 no longer exists (GSC, 2018a), and previously supplied water for a turkey farm prior to the beginning of the fYNOP investigations in 1986.

- RW-2 and RW-3 are former residential water supply wells that have not been in use since prior to the beginning of the NPBA investigations in 1986. These wells exist in basements at the residences. RW-2 is used as a monitoring point for the NPBA investigation. RW-3 was last sampled in 1997 and is not currently monitored because the property owners have denied access to the well.

- RW-4 was used as a residential water supply until October 2007 when the fYNOP connected it to the public water supply. Site-related COCs have never been detected in this well. RW-4 is located in the basement at the residence, has a pump connected to an exterior spigot on the residence, and water from the well is used occasionally for irrigation (non-potable purposes). The well is used as a monitoring point for the NPBA investigation.

As presented in the Supplemental Remedial Investigation (RI) Groundwater Report (Part 1) (GSC, 2011), the water table in the NPBA occurs in both unconsolidated material (decomposed bedrock retaining relict structure (saprolite)) and the underlying quarzitic sandstone bedrock. The aquifer beneath the NPBA is considered anisotropic due to spatial variability of the hydraulic conductivity in the bedrock matrix versus that in cracks, fractures, and bedding plane partings that influence groundwater flow rate and direction. Based on geophysical logging of well MW-12 conducted in 2012, bedding planes in bedrock beneath the NPBA are oriented with strikes to the north 40-60° west, and dips 30-45° to the southwest. These bedrock orientation measurements are highlighted in yellow on **Figure 1.1-3**.

While tetrachloroethene (PCE) is present in Site groundwater, particularly in the central portion of the NPBA, trichloroethene (TCE) is the primary groundwater COC in the NPBA. The difference in the distribution of PCE in groundwater compared to TCE is likely attributed to differences in waste composition applied to the perimeter roadway and fence area as opposed to a natural attenuation mechanism because the initial concentrations of PCE recorded in the NPBA wells was lower than the initial TCE concentrations (GSC, 2014a). This opinion is corroborated by product usage history at the fYNOP, in which PCE replaced TCE as a vapor degreasing solution for a short time.

Concentrations of TCE and PCE in groundwater from NPBA pumping wells generally decreased during operation of the groundwater extraction system, with many wells reaching asymptotic

concentration trends. In some locations, such as wells CW-3 and CW-6, TCE and PCE concentrations in groundwater have decreased while concentrations of cis-1,2-dichloroethene (cis12DCE), a degradation product of PCE and TCE, increased.

Overall, the operation of the NPBA groundwater extraction system met the objectives of the interim remedial action. The operation of the groundwater extraction system successfully controlled off-Site migration of COCs in groundwater and pulled the off-Site plume from the north in the area of the former residential supply wells back to the collection wells.

1.2 Purpose and Scope

The purpose of the five-year monitored shutdown (i.e., the analysis of the groundwater elevation and chemical data collected) is to confirm that shutdown of the NPBA groundwater extraction system did not result in unfavorable conditions in the NPBA, such as off-Site migration of Site-related COCs or rebound of COC concentrations in the aquifer. The rationale and plan for deactivation and evaluation of the NPBA groundwater extraction system are described in Section 8.7.5 of the Part 1 SRI (GSC, 2011), Section 4.3.4 of the Field Sampling Plan (FSP) for the Part 2 SRI (GSC, 2012), and Addendum #6 to the FSP (GSC, 2013). A report entitled "Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation" (GSC, 2014a), presents results of a monitored shutdown test conducted following system deactivation. The report, submitted to the United States Environmental Protection Agency (USEPA) and the PADEP on April 11, 2014, included a planned strategy for the identification of specific wells, monitoring frequency, and constituent analysis to conduct post-shutdown groundwater monitoring in the NPBA. This strategy is herein referred to as the NPBA post-shutdown monitoring plan. The USEPA approved the NPBA post-shutdown monitoring plan in an email reply to Groundwater Sciences Corporation (GSC) (USEPA, 2014).

In accordance with the NPBA post-shutdown monitoring plan, after five years of monitoring (through the end of 2018), the data collected during the shut-down period would be evaluated to determine if long-term shutdown of the NPBA groundwater extraction system is warranted. The approved shutdown plan contained requirements for monitoring groundwater from 26 locations in and north of the NPBA annually, and the yearly reporting of groundwater levels and chemistry from these wells. Water level and chemistry data were used to determine the potential for off-Site

migration of COCs. The two primary potential groundwater flow paths for off-Site plume migration in the NPBA are to the north and northwest toward the former residential water supply wells located along the north side of Paradise Road (RW-2, RW-3 and RW-4) and to the west across the Site property line west of monitoring well pairs MW-18S&D, MW-142S&D and MW-143S&S.

Seven additional on-Site wells located to the southwest of the NPBA were included in the plan to assess potential migration of COCs from the NPBA and to evaluate these wells as future long-term monitoring points. A listing of these wells is provided in Section 2.0.

A presentation and interpretation of the collected data for the entire 5-year shutdown period (2014 through 2018) are described in Section 2 of this report, conclusions and recommendations are presented in Section 3, and references are provided in Section 4.

2 NPBA SHUTDOWN MONITORING

This Section describes the 2018 NPBA shutdown monitoring results in addition to a summary of the annual shutdown monitoring results from 2014 through 2018. Reported groundwater levels and chemistry data for the first four years of annual shutdown monitoring of NPBA groundwater (2014, 2015, 2016 and 2017), indicates similar configurations of groundwater contours in plan and profile views, similar magnitude and direction of the lateral groundwater gradient, and a similar overall vertically upward flow gradient in identified nested well pairs (GSC, 2015, 2016, 2017 and 2018b, respectively).

Monitoring was performed and evaluated in accordance with the criteria in the NPBA post-shutdown monitoring plan at the 33 locations listed in the table, below.

On-Site NPBA Monitoring Locations (23)			**Off-Site NPBA Monitoring Locations to the North (3)**	**On-Site NPBA Monitoring Locations to the Southwest (7)**
CW-1	CW-7A	MW-20S	RW-2	MW-3
CW-1A	MW-9	MW-20M	RW-4 (Folk)	MW-82
CW-2	MW-11	MW-20D	Tate Spring (S-6)	MW-77
CW-3	MW-12	MW-142S		MW-102S
CW-4	MW-16S	MW-142D		MW-102D
CW-5	MW-16D	MW-143S		MW-103S
CW-6	MW-18S	MW-143D		MW-103D
CW-7	MW-18D			

As shown on **Figure 1.1-2**, the locations of NPBA monitoring wells are on the East Campus property; monitoring locations to the southwest of the NPBA are on the East and West Campus properties; and monitoring locations to the north of the NPBA are on off-Site residential properties.

2.1 Groundwater Elevations and Gradient

As part of the annual comprehensive monitoring round for 2018, groundwater elevation measurements from wells within and southwest of the NPBA were collected on September 27, 2018. In addition, water levels in off-Site inactive residential wells were monitored to further define northern NPBA area groundwater conditions. Groundwater elevation data from inactive residential well RW-2 was collected during the September 27, 2018 NPBA monitoring round, and

the water level in non-potable supply well RW-4 (Folk) was measured on September 29, 2018. Water levels at inactive residential well RW-3 and off-Site Herman spring (S-7) shown on **Figure 1.1-2** were measured previously during pumping conditions; however, water levels at these locations were not measured during the shutdown monitoring period because the property owners have denied access. The water level at off-Site Tate spring (S-6) was not measured because the staff gauge is no longer present.

Table 2.1-1 incorporates the September 2018 elevation data with the data collected previously during the NPBA groundwater extraction system shutdown. Groundwater elevations and potentiometric contours developed from the September 2018 data are shown in plan view on **Figure 1.1-3**. These contours represent shallow groundwater elevations under natural flow conditions (non-pumping) and show a lateral gradient sloping from the northeast toward the southwest beneath the NPBA. Piezometric surface elevations measured in deep wells were not used to construct the contours because these values do not represent the water table surface elevation in the aquifer.

Groundwater elevations measured in September 2018, excluding the deep wells and wells under artesian conditions, ranged from a high of approximately 540 feet above mean sea level (amsl) in the northeast portion of the NPBA to a low of approximately 350 feet amsl southwest of the NPBA. Wells MW-16D and MW-18S&D exhibit artesian flow and contain packers to seal off groundwater flow to the surface. Wells MW-20M&D do not contain packers, but measured groundwater elevations in these wells indicate an upward head potential exists.

Groundwater elevations and potentiometric contours developed from September 2018 data are shown in profile view on **Figure 2.1-1**. Vertical groundwater gradients are indicated by arrows on the cross section for nested well pairs MW-16S&D; MW-18S&D; MW-20S, MW-20M & MW-20D; MW-142S&D; and MW-143S&D. In each of these well pairs except MW-142S&D, the groundwater elevation measurement from the deeper well is higher (closer to the surface) than the elevation measurement taken from the shallower well, indicating that vertical groundwater flow is upward at these well locations under non-pumping conditions. Given this vertically upward flow gradient, dissolved COCs would not migrate deeper into the aquifer under natural (non-pumping) conditions.

An overall comparison of the September 2018 groundwater elevations and potentiometric contours to previous data from 2014 through 2017 within and to the southwest of the NPBA indicates similar configurations of groundwater contours in plan and profile views. The elevations and contours show the magnitude and direction of the lateral groundwater gradient that slopes from the northeast to the southwest. In addition, there is a consistent overall vertically upward flow gradient in identified nested well pairs during non-pumping conditions.

Due to the unusually high levels of precipitation during late summer of 2018, water levels measured in most wells in the NPBA were higher than in the four previous years since the shutdown of the groundwater extraction system. In fact, 2018 precipitation is the highest ever recorded for York, Pennsylvania. As a result, water level elevations in on-Site wells CW-2 and MW-9 were higher than water levels in nearby off-Site former residential supply well RW-2. This condition has not been seen previously and could result in a potential component of groundwater flow to the north due to the high precipitation levels combined with the anisotropic permeability conditions within the aquifer. This condition was not accompanied by an increase in COC concentrations at RW-2, and is suspected to be a transient condition related to the 2018 precipitation.

2.2 Groundwater Chemistry

In October 2018, groundwater samples were collected from 32 wells and 1 spring on the dates shown on **Table 2.2-1** following procedures in the FSP (GSC, 2012) and Quality Assurance Project Plan (QAPP) (GSC, 2014b). Purge logs generated during the 2018 groundwater sampling are provided in **Appendix A**. The groundwater samples were submitted to TestAmerica Pittsburgh for analysis of volatile organic compounds (VOCs) by Method 8260C.

Groundwater sampling in the NPBA coincided with the timeframe of the annual comprehensive sampling round for 2018 at the Site and the laboratory data quality assessment that was performed in accordance with the QAPP for the NPBA and comprehensive round sample data were completed together. Therefore, the data quality assessment results for the NPBA samples are not included in this report, but will be included in the upcoming 2018 Comprehensive Groundwater Monitoring Report submittal. The VOC sample analytical results were determined to be acceptable as reported by the laboratory and qualified by the validator. The validated results for the NPBA well samples

are included on the figures, tables and graphs in this report and the results are presented in Sections 2.2.1, 2.2.2, and 2.2.3.

Primary COCs in NPBA groundwater are PCE, TCE and cis12DCE due to the following:

- Detected at the highest concentrations compared to other VOCs,
- Detected with the highest frequency,
- Detected at concentrations exceeding the PADEP MSCs, and
- Determined by historic analysis to have the highest potential for migration in groundwater.

In the 2018 samples from the on-Site wells in the NPBA, TCE was the most common COC detected in 20 of 23 samples and exceeded the PADEP MSCs in 15 of 23 samples. PCE reported 12 detections and 3 exceedances of MSCs, and cis12DCE reported 18 detections and no MSC exceedances. At the three off-Site sample locations to the north of the NPBA, TCE at RW-2 was the only COC detected and the concentration did not exceed the PADEP MSC. In the samples collected from the seven wells located southwest of the NPBA, TCE was reported with 6 detections and 3 MSC exceedances, PCE was reported with 5 detections and 4 MSC exceedances and cis12DCE was reported with 6 detections and 1 MSC exceedance.

Figure 2.2-1 provides TCE and PCE analytical results from the 2018 sampling event, and time versus concentration graphs for the six (6) rounds of samples collected following shutdown of the NPBA groundwater extraction system in June 2013. These samples, referred to herein as post-shutdown samples, were collected concurrent with the annual comprehensive sampling rounds in 2013 through 2018. **Figure 2.2-2** provides the PCE and TCE results in cross sectional view to illustrate concentration differences in the samples from the shallow and deep portions of the aquifer underlying the NPBA.

Appendix B contains time versus COC concentration graphs for samples from the wells that were monitored, dating back to 1986 when investigations in the NPBA were initiated to illustrate COC concentration fluctuations, trends, and whether rebound occurred following the cessation of pumping in 2013. Trend analyses were performed on the post-shutdown samples for cis12DCE, PCE, and TCE using ProUCL statistical software (version 5.1.002) available at https://www.epa.gov/land-research/proucl-software. **Table 2.2-2** provides a summary of the trend analysis results; copies of the data sheets are included in **Appendix C**.

2.2.1 Post-Shutdown Chemistry for NPBA Wells

The following bulleted text is taken from the NPBA monitored shutdown test report (GSC, 2014a), explaining the chemistry trends observed prior to and following the shutdown of the groundwater extraction system. Added to that text as sub-bullets is a summary of post-shutdown chemistry results for each year of monitoring (2014 through October 2018). The text taken from previous reports was edited to improve clarity in the current context. The added text for the 2018 samples is presented in *italicized font* and includes a comprehensive description of the post-shutdown results.

- Five wells are located in the eastern-most extent of the NPBA. MW-20S, M, D and CW-7 and CW-7A are within 20 feet of each other, and sample different depths in the aquifer, from 28 feet – 61 feet (MW-20S) to 153 feet – 165 feet (MW-20D). CW-7 is open to the bedrock aquifer from 61 feet – 150 feet, while CW-7A screens residuum and saprolite (decomposed bedrock maintaining the structural features of the bedrock) from 34 feet – 66 feet bgs. Concentrations of TCE are highest near the surface, and decrease with depth, with groundwater from MW-20S showing the highest concentrations during pumping. MW-20S concentrations dropped after cessation of pumping, suggesting TCE was being pulled through that well by pumping, and potentially indicating the location of higher concentrations of TCE to be to the east of MW-20S. CW-7A concentrations increased after cessation of pumping, indicating portions of the flow drawn in by pumping most likely had been diluting the concentrations. CW-7 TCE concentrations dropped after pumping ceased, indicating pumping of that well was likely drawing mass from the shallow portion of the aquifer.

    - The 2014 sample results indicate no significant changes from the description above. Concentrations of TCE in CW-7A decreased to a level closer to the pre-shutdown concentration.

    - The 2015 sample results are similar to the descriptions above with the exception that the PCE concentration in CW-7A increased to a high of 8.6 micrograms per liter (µg/L).

- The 2016 sample results are similar to the descriptions above with the exception that the PCE concentration in CW-7A decreased slightly from 8.6 µg/L in 2015 to 5.6 µg/L after several years of slightly increasing concentrations. The TCE concentration in CW-7A (86 µg/L) represents the lowest concentration detected since shutdown. Concentrations of TCE in MW-20S continue to decline with a detection 48 µg/L representing the lowest concentration detected since shutdown.

- The 2017 sample results continue to be similar to the descriptions above with the exception that both PCE and TCE concentrations in CW-7A and MW-20S represent the lowest concentrations detected since shutdown. Concentrations in MW-20D remain undetected (U). TCE in MW-20M has fluctuated with concentrations ranging from 0.85 J µg/L in 2014 to 32 J µg/L in 2017. "J" refers to results that are less than the laboratory's reporting limit, but greater than or equal to the method detection limit; the concentration is an approximate value. Concentrations of TCE in MW-20S continue to decline with a concentration of 32 µg/L representing the lowest concentration detected since shutdown.

*As shown on **Figure 2.2-1**, PCE, TCE, and Cis12DCE concentrations in 2018 groundwater increased at wells MW-20S and CW-7. The magnitude of concentration increases in groundwater from these wells represents the maximum PCE and TCE concentrations detected in the post-shutdown samples from these wells. Prior to 2018 (from 1988 through 2017), as shown on the graphs in **Appendix B**, COC concentrations in groundwater from MW-20S and CW-7 showed an overall declining concentration trend.*

The 2018 TCE concentration measured in the sample from CW-7 is much lower than that measured in the sample from MW-20S (9.8 µg/L versus of 130 µg/L). At well CW-7, historic analytical data show declining TCE concentrations during pumping followed by similar concentrations (below 1 µg/L) in groundwater collected during the post-shutdown monitoring period from 2013 to 2017. A pre-shutdown TCE concentration of 4.3 µg/L was measured in samples collected in 2013.

Similar COC concentration increases were not observed in samples from MW-20M and CW-7A that are located within 20 feet of MW-20S and CW-7. In addition, COCs have not been detected in groundwater from MW-20D which is attributed to an upward vertical gradient at this location.

*Similar increases in COC concentrations were not observed in samples from other NPBA wells indicating that this relationship is likely localized to MW-20S and CW-7. As shown on the groundwater elevation graph for these wells (**Figures 2.2-3 and 2.2-4**), the increase in the TCE concentrations in the 2018 samples may correlate with an increase in the water levels in wells MW-20S and CW-7 from 2017 to 2018 of 8.32 feet and 8.28 feet, respectively. It is likely that higher than normal groundwater elevations in this area resulting from record rainfalls has contacted residual TCE in cracks and fractures in the bedrock creating a localized condition, consistent with the conceptual model for the Site.*

- Collection wells CW-1 and CW-1A, the extraction well pair located approximately 100 feet west of the eastern-most wells described above, are open to a depth of 68 feet – 175 feet and 29 feet – 74 feet, respectively. TCE concentrations in these wells prior to cessation of pumping were nearly the same at 33 µg/L and 35 µg/L, respectively. With the pumps off, concentrations in both wells dropped to 9.4 µg/L in CW-1 and 26 µg/L in CW-1A.

    - One year later, the TCE concentration in CW-1 reduced to 1.8 µg/L, while the TCE concentration in CW-1A remained nearly unchanged (31 µg/L).

    - Two years later, the TCE concentration in CW-1 reduced to 1.1 µg/L, while the TCE concentration in CW-1A remained nearly unchanged (28 µg/L).

    - Three years later, the TCE concentration in CW-1 remained relatively unchanged (1.6 µg/L). The TCE concentration in CW-1A increased from 28 µg/L to 56 µg/L, which represents the highest detection since it was shut down.

    - Four years later, the TCE concentration in CW-1 has decreased to its lowest concentration since shutdown (0.79 J µg/L) and the TCE concentrations in CW-1A remained nearly unchanged (53 µg/L).

*As shown on **Figure 2.2-1**, 2018 PCE and TCE concentrations in groundwater from both CW-1A and CW-1 are similar to the concentrations observed in the 2014 through 2017 post-shutdown samples. COCs are higher in the shallow portion of the aquifer in this location than deeper in the bedrock. As shown on the graphs in **Appendix B**, PCE and TCE concentrations in post-shutdown samples from CW-1 are lower than in pre-shutdown samples, and concentrations of PCE and TCE in post-shutdown samples from CW-1A are equal to or higher than the pre-shutdown sample concentrations.*

- Monitoring well MW-11, which is west of CW-1 and CW-1A and east of CW-2 showed no change in pre- and post-shutdown TCE concentrations (pre-shutdown of 4.5 µg/L versus post-shutdown of 4.9 µg/L). The water level in this well is higher than wells on either side of it; and there was no apparent recovery (rise) in water level when the collection wells were shut down. The lack of response in both chemistry and water level, combined with the higher water level than in adjacent wells indicates that water from well MW-11 is not sufficiently hydraulically connected to the pumped portion of the aquifer or that it is being supported by an artesian condition below the pumping wells (deeper water sourced from the elevated area to the east).

    - The 2014 sample results indicate no significant changes from the description above. Monitoring well MW-3, located downgradient and about 600 feet southwest of MW-11, showed no change in concentrations compared to 2013 data.

    - The 2015 sample results show no significant changes from the descriptions above.

    - The 2016 sample results for MW-11 show no significant changes from the above descriptions, and the detected TCE concentration of 2.4 µg/L represents the lowest detection since the shutdown of the collection wells.

    - The 2017 sample results for MW-11 show no significant changes from the above descriptions for TCE and PCE.

The 2018 TCE concentration for the sample collected from MW-11 is similar to the previous shutdown monitoring results that ranged from 2.4 µg/L to 4.9 µg/L and similar to or less

than the pre-shutdown concentration (4.5 µg/L). PCE was not detected in the 2018 sample above a detection limit of 1 µg/L.

- Collection well CW-2 and adjacent monitoring well MW-9, located approximately 200 feet west of CW-1 and CW-1A, decreased in TCE concentrations after cessation of pumping. Since the groundwater flow direction at MW-9 while pumping was toward the northwest, and that flow direction changed to southwest when CW-2 stopped pumping, the change in chemistry indicates higher concentrations of TCE in groundwater being pulled southeast of MW-9. With the cessation of pumping, the concentration of PCE in CW-2 went from undetected (U) to 3 µg/L. PCE was detected in this well prior to initiation of the extraction system at 2 µg/L to 4 µg/L. The reappearance suggests the concentration of PCE was being diluted by pulling groundwater from a greater distance away from CW-2. These pre- and post-shutdown results suggest that PCE is adsorbed onto the aquifer material at a location close to or discretely connected to CW-2.

    - The 2014 sample results indicate no significant changes from the description above. CW-2 TCE concentrations increased slightly to a level similar to pre-shutdown conditions.

    - The 2015 sample results show no significant changes from the description above; however, the TCE concentration in CW-2 decreased to the lowest level to date (4.9 µg/L).

    - The 2016 sample results for MW-9 show TCE at its lowest concentration since shutdown at 19 µg/L. TCE in CW-2 increased in concentration to 15 µg/L versus the previous maximum concentration of 14 µg/L in 2014, and the PCE concentration decreased to the lowest concentration to date (0.97 J µg/L).

    - The 2017 sample results for MW-9 show no significant changes from the above descriptions with a TCE concentration of 20 µg/L and an undetected (U) PCE concentration. PCE and TCE concentrations both decreased in CW-2 with PCE decreasing from 0.97 J µg/L to 0.91 J µg/L and TCE decreasing from 15 µg/L to 10 µg/L in 2016 and 2017, respectively.

*As shown on the graphs in **Appendix B**, the analytical results for groundwater from MW-9 show an overall declining trend in TCE concentrations since the shutdown of the system. PCE ranged from 0.22 J µg/L to undetect at 1 µg/L and 5 µg/L, and no trend for cis12DCE concentrations is shown for the MW-9 groundwater data. The 2018 analytical results for groundwater samples from CW-2 were within the range of TCE and PCE concentration fluctuations in the post-shutdown samples (4.9 µg/L to 15 µg/L, and 0.91 J µg/L to 3.2 µg/L, respectively). At CW-2, the concentrations of TCE and PCE in the pre- and post-shutdown samples are similar.*

- The TCE concentration in off-Site former residential supply well RW-2, located 150 feet northwest of CW-2, rose slightly between pre- (1.2 µg/L) and post- (1.9 µg/L) shutdown sampling. The change is within its normal range of TCE concentrations in this well during pumping. This well was below applicable PADEP MSCs for all COCs since 2003 and the TCE concentrations have ranged from 1.4 µg/L (in 2006) to 3.9 µg/L (in 2009) over the last seven years of annual sampling (under pumping conditions).

    - The 2014 sample results indicate no significant changes from the description above. The TCE concentration measured one year later was 3.1 µg/L.

    - The 2015 sample results show no significant changes from the description above. The TCE concentration measured in 2015 was 3.8 µg/L. Concentrations of TCE and PCE continue to remain undetected (U) in the other former residential supply well, RW-4 (Folk), currently connected to an outdoor spigot, and not used as a potable supply.

    - The 2016 sample results for RW-2 suggest no significant changes from the descriptions above, and the TCE concentration in 2016 was 3.7 µg/L. RW-2 has not been used as a supply well since prior to the fYNOP investigations in 1986. Concentrations of TCE and PCE continue to remain undetected (U) in the other former residential supply well, RW-4 (Folk).

    - The 2017 sample results show no significant changes from the description above. The TCE concentration measured in 2017 was 3.4 µg/L. RW-2 is still not used.

Concentrations of TCE and PCE continue to remain undetected (U) in the other former residential supply well, RW-4 (Folk).

COCs in groundwater in 2018 samples from non-potable residential supply well RW-4 (Folk) and Tate spring (S-6) remained undetected at less than 1 µg/L. The continued absence of detectable COCs at RW-4 (Folk) indicates that occasional pumping from the well for non-potable use has not drawn the plume northward towards RW-4 from the NPBA. Samples from Tate spring (S-6) have never reported COC detections. Note that Herman spring, shown on the figures to the west of MW-18S&D and the East Campus property line, was sampled most recently in 2010 prior to the property owner denying access. No COCs were detected at that time, nor were they ever detected at this location.

*As shown on the graphs in **Appendix B**, TCE is the only COC detected in the samples from RW-2 and the detected concentrations in the 2014 through 2018 are similar, ranging from 1.9 µg/L to 3.8 µg/L.*

- TCE and PCE concentrations in collection well CW-4, located approximately 200 feet west of CW-2, decreased after cessation of pumping. Adjacent monitoring well MW-12, southwest of CW-4, more than doubled in TCE and PCE concentrations after pumping stopped. This suggests that higher concentrations of these COCs may be located south or southeast of CW-4 and northeast of MW-12, in an upgradient position from MW-12 under the static post-shutdown groundwater potentiometric surface conditions.

    - The 2014 sample results indicate no significant changes from the description above. Concentrations of TCE and PCE in CW-4 continued to drop significantly, while MW-12 levels moderated.

    - The 2015 sample results show no significant changes from the description above. Concentrations of TCE and PCE continued to drop in CW-4, while the concentration of PCE in MW-12 slightly increased to 6.4 µg/L (an increase of 1 µg/L above the 2014 value).

- The 2016 sample results indicate no significant changes from the descriptions above. Concentrations of TCE and PCE continued to drop in CW-4, while the concentrations of TCE and PCE in MW-12 decreased from 120 µg/L to 93 µg/L and 6.4 µg/L to 4.3 µg/L, respectively.

- Concentrations in CW-4 are the lowest concentrations since pre- and post-shutdown sampling with both TCE and PCE results being undetected (U). TCE and PCE in MW-12 continue to decrease from 93 µg/L to 61 µg/L and 4.3 µg/L to 2.7 µg/L, in 2016 and 2017, respectively, with TCE detected at its lowest concentration since pre- and post- shutdown sampling.

*As shown on the graphs in **Appendix B,** PCE and TCE concentrations in post-shutdown groundwater samples from CW-4 have shown an overall declining trend; cis12DCE concentrations show no trend (not increasing or decreasing) after pumping ceased. Cis12DCE became the highest concentration COC in CW-4, indicating reductive dechlorination of PCE and TCE is occurring in this portion of the aquifer. The concentrations of TCE in groundwater from MW-12 have shown a declining trend; concentrations of cis12DCE have risen slightly and PCE concentrations show no consistent trend throughout the shutdown sampling period.*

- Collection well CW-3, approximately 260 feet west of CW-4, and adjacent well pair MW-16S and MW-16D are located near the center of collection wells along the NPBA. The groundwater chemistry in MW-16S is notable in that it shows the highest concentration of PCE in the NPBA, where TCE is the dominant COC. CW-3 concentrations of TCE increased slightly, with the cessation of pumping, but remained in single digits. A pre-shutdown sample of MW-16S could not be analyzed due to excessive turbidity. However, compared to previous samples collected during pumping, the concentration appears to have reduced significantly under post-shutdown conditions. MW-16D, screened at a depth below ground surface (bgs) of 190 feet – 201 feet, is artesian, and groundwater quality is minimally influenced by the COCs in the shallower zones in the immediate vicinity, indicated by PCE concentrations being undetected (U).

- The 2014 sample results show no significant changes from the description above.

- In 2015, TCE and PCE both decreased significantly to below 10 µg/L in MW-16S, whereas concentrations in MW-16D have remained consistent. TCE and PCE were undetected (U) in CW-3 in 2015, compared to 1.4J and 0.41J µg/L in 2014. CW-3 also contained 460 µg/L of acetone, a common laboratory contaminant, and the laboratory had an issue with the recovery criteria for TCE and PCE in an associated Matrix Spike / Matrix Spike Duplicate (MS/MSD) sample, suggesting that the data at CW-3 may be suspect.

- In 2016, TCE remained relatively unchanged (6.2 µg/L) in MW-16S, but the PCE concentration increased from 6.7 to 48 µg/L, which is well below the 2013 and 2014 shutdown results. Concentrations in MW-16D have remained consistent with a slight decrease in TCE to 10 µg/L, which represents the lowest TCE concentration detected since shutdown. TCE and PCE remain undetected (U) in CW-3 in 2016.

- In 2017, TCE remained consistent (7.7 J µg/L) in MW-16S, and the PCE concentration decreased significantly from 48 µg/L in 2016 to 1.7 J µg/L in 2017, which represents the lowest detected since shutdown. TCE concentrations in MW-16D have continued to consistently decrease with the lowest post-shutdown concentration detected in 2017 (8.7 J µg/L). TCE and PCE remain undetected (U) in CW-3 in 2017.

The 2018 analytical results for groundwater in CW-3 reported detections of cis12DCE, PCE and TCE similar to concentrations in the 2014 through 2017 shutdown samples. As shown on the graphs in ***Appendix B****, cis12DCE (32 µg/L) has been detected at greater concentrations than PCE (1.8 µg/L) and TCE (1.4 µg/L) in the samples from CW-3 since 2007. This indicates that degradation via reductive dechlorination may be occurring in the aquifer at this location. As shown on* ***Figure 2.2-1****, TCE concentrations measured in the 2018 groundwater sample from MW-16S increased compared to those samples analyzed during the 2014 through 2017 shutdown period; however, PCE shows an overall declining concentration trend during this time-frame. TCE concentrations in groundwater from well MW-16D collected and analyzed in 2018 increased compared to TCE concentrations*

reported for samples collected during the shutdown period; TCE concentrations in groundwater from CW-3 show a downward trend from 2013 to 2017.

- Collection wells CW-5 and CW-6 are west and downgradient of the CW-3/MW-16 cluster of wells. After cessation of pumping, TCE and PCE concentrations in CW-6 dropped, suggesting during pumping this well was pulling COCs sourced some distance away from the pumping well. Since the reduction in PCE concentrations was disproportionately high, CW-6 was probably pulling in groundwater with PCE from the MW-16S area. After cessation of pumping, TCE and PCE concentrations in CW-5 increased slightly.

    - The 2014 sample results indicate no significant changes from the description above. After one year, CW-6 concentrations continued to drop, while CW-5 concentrations continued to increase slightly.

    - The 2015 sample results show no significant changes from the descriptions above. CW-6 concentrations remained consistent with respect to 2013 post-shutdown concentrations, and CW-5 concentrations remained consistent compared to 2014.

    - In 2016, CW-6 concentrations increased slightly from 2015 concentrations for PCE (40 J µg/L to 46 µg/L) and TCE (7.5 J µg/L to 11 µg/L). CW-5 TCE concentrations increased slightly from 5.3 µg/L in 2015 to 12 µg/L in 2016, whereas PCE concentrations had a somewhat larger increase from 15 µg/L in 2015 to 41 µg/L in 2016.

    - In 2017, concentrations in CW-6 and CW-5 decreased slightly for both TCE and PCE. In CW-6, concentrations of TCE decreased from 11 µg/L (2016) to 9.0 µg/L and concentrations of PCE decreased from 46 µg/L (2016) to 37 µg/L. In CW-5, concentrations for TCE and PCE went down from 12 µg/L to 9.4 µg/L and 41 µg/L to 31 µg/L, in 2016 and 2017, respectively.

The TCE concentration measured in groundwater during the 2018 monitoring event at CW-5 falls within the 5.3 µg/L to 12 µg/L range of concentration values reported during the shutdown period. The range of PCE concentrations in groundwater at CW-5 during the

shutdown period (11 µg/L to 41 µg/L) are higher than the TCE concentrations; the PCE concentration of 11 µg/L measured in 2018 from CW-5 groundwater represents the lowest post-shutdown PCE value since 2014. As shown on the graphs in ***Appendix B****, cis12DCE, PCE, and TCE concentrations in groundwater from CW-5 show no trend in concentrations since shutdown.*

The PCE concentrations in groundwater at CW-6 are higher than TCE concentrations. PCE results show no trend and TCE results show an increasing trend; however, the post-shutdown concentrations are mostly lower than the pre-shutdown concentrations.

- Well pair MW-18S and MW-18D are open from 45 feet – 65 feet and 130 feet – 140 feet bgs, respectively. When sampled in 1988, MW-18S had a relatively low concentration of TCE at 50 µg/L, and MW-18D had no detections of VOCs. At the time, this data was considered an indication of the western limit of the plume. These wells were resampled in 2008, and showed concentrations of TCE exceeding 1,000 µg/L in both wells. It was assumed that VOCs were mobilized by the extraction system and pulled through these wells, suggesting a source to the west of this well pair, with VOCs transported by groundwater being pulled eastward toward CW-5 and the other groundwater extraction system wells. As indicated by time vs. concentration graphs, concentrations of VOCs in wells MW-18S and MW-18D have generally declined over the last four to six years of pumping, and indicating reduction of the source mass. The pre-shutdown concentration of TCE in MW-18S was 220 µg/L while the post-shutdown concentration was 45 µg/L. The pre-shutdown concentration of TCE in MW-18D was 560 µg/L while the post-shutdown concentration was 42 µg/L. Concentration changes of that magnitude indicate pumping of the collection wells was pulling VOCs through the MW-18 well pair from a source located west of the well pair.

    - The 2014 sample results indicate no significant changes from the description above. Continued reductions of TCE concentrations in MW-18S (5.5 µg/L) and MW-18D (8.1 µg/L) support the conclusion regarding the observed concentration changes. Wells MW-142S&D and MW-143S&D, located downgradient of MW-18S&D for the purpose of monitoring westward mobilization of the suspected source, continued

to exhibit undetected or very low COC concentrations (TCE concentration of 1.9 µg/L at MW-143S).

- The 2015 sample results show no significant changes from the descriptions above, with concentrations slightly higher than in 2014 in wells MW-18D, MW-142S and MW-143S, but lower than the post-shutdown concentrations from 2013. The TCE concentration in MW-18S increased from 5.5 µg/L in 2014 to 11 µg/L in 2015, which is well below the pre- and post-shutdown concentrations detected in 2013.

- The 2016 sample results show no detections of TCE and PCE in MW-142S&D and MW-143D. TCE in MW-18S&D and MW-143S have all decreased to their lowest concentrations since shutdown.

- The 2017 sample results again show no detections of TCE and PCE in MW-142S&D and MW-143D. TCE and PCE in MW-143S continue to decrease to their lowest concentrations since shutdown. TCE in MW-18S increased slightly from 1.2 µg/L in 2016 to 4.1 µg/L in 2017. The concentrations have generally decreased since pre-shutdown conditions (220 µg/L) and post shutdown conditions (45 µg/L). PCE in MW-18S and MW-18D remain undetected (U).

*As shown on **Figure 2.2-1**, TCE was detected in the 2018 groundwater samples from MW-18S and MW-18D at concentrations consistent with detected TCE values in the 2014 through 2017 shutdown samples. PCE and TCE were undetected (at 1 µg/L) in samples from MW-142S&D and MW-143D. At MW-143S, PCE and TCE were detected at concentrations of 0.55 J µg/L and 1.1 µg/L and are similar to the concentrations in the 2014 through 2017 shutdown samples. Concentrations of cis12DCE in MW-142S and MW-143D have steadily risen since cessation of pumping, although remain well below the MSC. During this same period, cis12DCE concentrations have decreased in MW-142D and remain undetected in MW-143S. The trend of cis12DCE concentrations may be an indication that groundwater migration along the western property line follows the pathway indicated by the flow arrow on **Figure 2.2-1**, paralleling the southwest trending property line, and that PCE and TCE in the suspected source area west of MW-18S and MW-18D have undergone significant degradation during the interim remedial action period.*

2.2.2 Summary of COC Results and Trends for the On-Site NPBA Wells

More than 22 years of pumping in the NPBA resulted in an approximate 3X order of magnitude reduction in COC concentrations from many areas of the NPBA, and post-shutdown monitoring from 2014 through 2018 confirms these results. Post-shutdown monitoring data indicate no rebound (increase in concentrations after shutdown of the pumping wells) and no observed consistent upward trend in COC concentrations in groundwater in the majority of NPBA wells following cessation of pumping.

COC concentrations in the annual post-shutdown groundwater samples from 23 NPBA wells (2014 through 2018) ranged from undetected (at 1 µg/L) to 130 µg/L; TCE was detected in the most samples (20 of 23 wells), followed by cis12DCE (18 of 23 wells), and PCE (12 of 23 wells). Based on the comparison of pre- and post-shutdown monitoring data, COC concentrations decreased or remained undetected in groundwater from the majority of NPBA wells (19 of 23 wells).

The following subsections provide a summary of the post-shutdown sampling results and concentration trends for the COCs (TCE, PCE, and cis12DCE) in the NPBA wells.

2.2.2.1 TCE Results

As indicated by the pink shading on **Figure 2.2-1**, the highest TCE concentrations in post-shutdown samples were detected in groundwater at wells MW-12 (southcentral portion of the NPBA) and MW-20S and CW-7A (northeast corner of the NPBA). TCE concentrations of 5 µg/L or greater (indicated by the gray shading on the figure) were interpreted to exist in groundwater beneath most of the NPBA. The PADEP MSC for TCE of 5 µg/L was exceeded in samples from 17 of the 23 NPBA wells during the last 5 years of annual post-shutdown sampling and analysis.

Graphs in **Appendix B** show that TCE concentrations in post-shutdown samples from NPBA wells have ranged from undetected (at 1 µg/L) to 130 µg/L; TCE concentrations in samples from 19 of the 23 NPBA wells have decreased or remained about the same compared to pre-shutdown concentrations.

2.2.2.2 PCE Results

As shown on the graphs on **Figure 2.2-1**, PCE concentrations in the post-shutdown samples (green lines) were less than the TCE concentrations (blue lines) except at MW-16S, CW-5 and CW-6 located in the central portion of the NPBA. The PADEP MSC for PCE of 5 µg/L was exceeded in 6 of the 23 post-shutdown samples. The exceedances were around an order of magnitude higher than the MSC in samples from MW-20S in the northeast corner of the NPBA and MW-16S, CW-5 and CW-6 in the central portion of the NPBA.

2.2.2.3 Cis12DCE Results

As shown on **Table 2.2-1**, cis12DCE was detected in the annual post-shutdown groundwater samples (2014 through 2018) in the majority of the NPBA wells (18 of the 23 wells). None of the cis12DCE detections in groundwater samples exceeded the PADEP MSC of 70 µg/L. As discussed in the SRI Groundwater Report (Part 2) (GSC, 2018c), reductive dechlorination is occurring in groundwater beneath the NPBA under reducing (anaerobic) conditions in the shallow and deep bedrock wells, which is evident by the elevated concentrations of daughter product cis12DCE.

The cis12DCE concentrations in groundwater from wells ranged from undetected at a detection limit of 1 µg/L to 58 µg/L; wells located in the central portion of the NPBA contain groundwater with higher concentrations compared to wells in the eastern and western portions of the NPBA (e.g., MW-9, MW-12, CW-3 and CW-4).

As shown on the graphs in **Appendix B**, cis12DCE concentration trends in most of the post-shutdown samples (19 of the 23 wells) showed either no trend or a declining trend. Concentrations of cis12DCE in MW-142S and MW-143D have steadily risen since cessation of pumping, although remain well below the MSC.

2.2.3 Post-Shutdown Chemistry for On-Site Wells Southwest of the NPBA

Groundwater samples were collected from seven wells located to the southwest of the NPBA. Six wells (MW-3, MW-82, MW-102S&D and MW-103S&D) are located on the East Campus property as illustrated on **Figure 1.1-2** and one well (MW-77) is located on the West Campus property owned by NP York 58. Groundwater monitoring data from these wells following shutdown of the

NPBA groundwater extraction system were evaluated to assess potential groundwater chemistry changes and determine whether future monitoring of these wells is warranted.

Wells MW-3, MW-77, MW-82, MW-102S&D, and MW-103S&D are located hundreds of feet to the southwest (downgradient) of the NPBA along the expected path of plume migration. Well MW-3 is the closest of these wells to the NPBA and monitors groundwater downgradient of the eastern portion of the NPBA. MW-82 monitors the groundwater conditions along the northern property line to the west-southwest of MW-18S&D, MW-14S&D, and MW-143S&D.

The primary source of COCs in groundwater from well clusters MW-102S&D and MW-103S&D is from former waste disposal, handling and storage activities at the North End of Test Track (NETT) and not the NPBA. Well MW-77 is located to the west of the NETT in an area where a release of gasoline from a former underground storage tank (UST) occurred; groundwater samples from this well contain dissolved-phase concentrations of petroleum hydrocarbons (e.g., benzene, toluene, ethylbenzene and xylenes) as shown on **Table 2.2-1**.

While there is little expectation that groundwater migration from the NPBA could occur rapidly enough to be detected in these seven wells during the five year post shutdown monitoring period, establishing COC trends may permit future tracking of the NPBA plume to the southwest. If COC concentration data from groundwater are higher than would be reasonably expected from the plume migrating from the NPBA, then these wells will not be used as sentinel wells for future NPBA plume migration.

COC concentrations in 2013 through 2018 groundwater samples from 5 of the 7 wells located to the southwest of the NPBA were either non-detect (MW-77) or showed no trend or declining concentration trends (MW-82, MW-102D, MW-103S&D). Concentrations of cis12DCE, PCE, and TCE in samples from MW-102S declined overall from 2008 through 2017; however, concentrations for all of these compounds increased in the 2018 sample.

Figure 2.2-1 shows that TCE, PCE, and cis12DCE concentrations in 2018 samples from wells MW-3 and MW-82 were similar to, or declined, compared to the pre- and post-shutdown groundwater sample analytical results. The May 2018 TCE concentration in the sample from MW-3 (18 µg/L) is the lowest detected since groundwater pumping in the NPBA ceased.

The TCE concentration in groundwater from MW-102S increased slightly from a maximum of 29 µg/L in the 2013 through 2017 sample set to 35 µg/L in the 2018 sample. Likewise, the concentration of PCE showed a slight increase from a maximum concentration of 15 J µg/L in 2013 through 2017 samples to 24 µg/L in the 2018 sample. The 2018 groundwater sample from MW-102S reported a cis12DCE concentration of 99 µg/L; this value is roughly one order of magnitude higher than the maximum concentration reported in samples collected from MW-102S between 2013 and 2017 (3.7 µg/L to 8.1 µg/L). As shown on the graph in **Figure 2.2-5**, concentrations of cis12DCE, PCE, and TCE in groundwater samples from MW-102S do not appear to correlate to changes in the water level elevation.

At MW-102D, concentrations of cis12DCE and PCE in groundwater samples were similar and ranged from 3.4 µg/L to 11 µg/L and 6.9 µg/L to 11 µg/L, respectively, between 2013 and 2018. TCE concentrations in groundwater at MW-102D decreased during this same time period. The maximum TCE concentration reported in 2016, 2017, and 2018 samples (4.5 µg/L) is two orders of magnitude lower than those reported in the samples from 2013, 2014 and 2015 (120 µg/L or more).

As shown on **Figure 2.2-1**, PCE and TCE concentrations in samples from MW-103S and MW-103D collected in 2013 through 2018 have declined. TCE in samples from MW-103S declined from 160 µg/L to 76 µg/L and TCE in samples from MW-103D declined from 79 µg/L to 4.7 µg/L.

Groundwater samples from MW-77 analyzed in 2013, 2014, 2017, and 2018, reported no detectable cis12DCE, PCE and TCE concentrations. Samples were not collected from MW-77 in 2015 and 2016 due to the UST release investigation activities and access issues caused by site construction.

As discussed previously, wells MW-3, MW-82, MW-102S&D, MW-103S&D and MW-77 were added to the list of NPBA monitoring wells to assess potential plume migration to the southwest of the NPBA, and to determine if future monitoring of these wells is warranted. As expected for this timeframe, groundwater chemistry in the wells located to the southwest (downgradient) of the NPBA does not appear to have been impacted by the shutdown of the NPBA groundwater extraction system, nor by migration of COCs from the NPBA. This is indicated by COC concentrations in 6 of the 7 wells that were either non-detect (MW-77) or showed no trend or declining concentration trends (MW-3, MW-82, MW-102D, MW-103S, and MW-103D). The increase in the concentrations of cis12DCE, PCE and TCE in the 2018 sample from MW-102S

appears to be a localized condition which is very likely associated with the higher than normal late summer rainfall, because a similar concentration increase was not observed in the other wells southwest of the NPBA.

These results indicate that future sampling of wells MW-77, MW-82, MW-102S&D, and MW-103S&D is not warranted to assess potential plume migration to the southwest of the NPBA. Continued sampling of groundwater at MW-3 to monitor COC concentrations and plume migration is recommended because it is located directly downgradient of the eastern portion of the NPBA where high post-shutdown groundwater concentrations are present, and not impacted by other sources of contamination.

2.3 Potential for Off-Site Plume Migration in the NPBA

This section discusses the potential for off-Site migration of COCs after shut-down of the groundwater extraction system that operated in the NPBA from November 1990 through mid-June 2013. Two potential areas of analysis are as follows:

- Migration to the north and northwest of the East Campus property line toward former residential water supply wells located along the north side of Paradise Road (e.g., RW-2 and RW-4 (Folk)), and

- Migration to the west of monitoring well pairs MW-18S&D, MW-142S&D and MW-143S&D, across the East Campus property line.

2.3.1 Potential for Plume Migration Off-Site to the North

The monitored shutdown report (GSC, 2014a) concluded that groundwater beneath the NPBA is not migrating off-Site to the north based on groundwater chemistry and groundwater level elevation contours under non-pumping conditions (mid-June through September 2013).

The 2018 groundwater elevation contours in plan (**Figure 1.1-3**) and profile (**Figure 2.1-1**) views are similar to the post-shutdown groundwater elevation contours observed in 2014 through 2017. Similarly, the 2018 groundwater chemistry results are consistent with the 2014 through 2017 post-shutdown results, and show that COCs continue to remain undetected (RW-4 and Tate spring (S-6)) or detected at similar concentrations (no rebound after pumping) below the PADEP MSCs in off-

Site monitoring locations to the north of the NPBA (RW-2). Multiple lines of evidence demonstrated that the contamination plume did not migrate off-site to the north.

As discussed in Section 2.1, unusually high levels of precipitation during late summer of 2018 led to elevated water levels measured in most wells in the NPBA. As a result, water level elevations in on-Site wells CW-2 and MW-9 were higher than water levels in nearby off-Site former residential supply well RW-2 (see graph on **Figure 2.3-1**). This condition has not been seen previously and could result in a potential northward component of groundwater flow due to the high precipitation levels that occurred during 2018 combined with the anisotropic permeability conditions within the aquifer. Additionally, this condition was not accompanied by an increase in COC concentrations at RW-2 and while evidence is not conclusive, appears to be a transient condition related to the unusual precipitation.

2.3.2 Potential for Plume Migration Off-Site to the West

The monitored shutdown report (GSC, 2014a) described the existence of a natural (non-pumping) lateral gradient to the south-southwest in the area of MW-18S&D. This gradient, indicated by the blue groundwater flow path arrow shown on **Figure 1.1-3**, is nearly parallel to the East Campus property line where well pairs MW-18S&D, MW-142S&D and MW-143S&D are located. With cis12DCE and TCE concentrations in the pre- and post-shutdown concentrations at MW-18S&D and anisotropic groundwater flow (preferential permeability) along bedding/cleavage planes, the potential exists for the western margin of the COC plume to extend across the East Campus property line to the west (GSC, 2014a). However, the plume would migrate towards the southwest beneath the property for a lateral distance of approximately 1,000 feet, and then cross back onto the East Campus where the property line changes to a northwest-southeast orientation just west of MW-143S&D (GSC, 2014a).

As discussed in Section 2.2, cis12DCE and TCE concentrations in samples from MW-18S&D declined sharply compared to the pre-shutdown concentrations and have remained consistent during the last five years of post-shutdown monitoring (2014 through 2018). These results, along with the consistent lateral gradient from the area of MW-18S&D to the southwest and the undetected to very low COC concentrations in groundwater from downgradient well pairs MW-142S&D and MW-143S&D, provides the rationale for interpreting the western edge of the 5 µg/L to 50 µg/L TCE

plume (gray shading) approximately 100 to 200 feet to the east of the property line downgradient of MW-18S&D. The rising trend of cis12DCE concentrations in MW-142S and MW-143D may be an indication that groundwater migration along the western property line follows the pathway indicated by the flow arrow on **Figure 2.2-1**, paralleling the southwest trending property line, and that PCE and TCE in the suspected source area west of MW-18S&D have undergone significant degradation during the interim remedial action period. As shown in **Figure 2.2-1**, the contamination plume did not migrate off-site to the west.

3 CONCLUSIONS AND RECOMMENDATIONS

A groundwater extraction system was operated in the NPBA for more than 22 years (1990 through 2013) when the fYNOP remediation team proposed to shut down the system. Following deactivation, five years of annual post-shutdown monitoring was completed in accordance with the PADEP and USEPA approved plan. Post-shutdown monitoring data confirms that system operation successfully controlled off-Site migration of COCs in groundwater and reversed the gradient and pulled the off-Site plume from the north in the area of the former residential supply wells back to the collection wells. Pumping resulted in an approximate 3X order of magnitude reduction COC concentrations from many areas of the NPBA and the area of the former residential wells to the north. There was no rebound (increase in concentrations after shutdown of the pumping wells) and no observed consistent upward trend in COC concentrations in groundwater in the majority of NPBA wells following cessation of pumping.

An overall comparison of the September 2018 groundwater elevations with previous data from 2014 through 2017 within and to the southwest of the NPBA indicates similar configurations of groundwater contours in plan and profile views. Post-shutdown groundwater elevation data indicates that the groundwater plume beneath the NPBA is not migrating off-Site to the west from the NPBA. Due to the historically high levels of precipitation during late summer of 2018, water levels measured in most wells in the NPBA were a number of feet higher than in the four previous years since the shutdown of the groundwater extraction system. As a result, a potential northward gradient exists toward off-Site well RW-2 during this period of abnormally high precipitation. However, no rise in COC concentrations were observed in the sample from RW-2; this recent condition may be transient, related to a combination of historically high precipitation experienced in 2018 and anisotropy within the aquifer. Future groundwater monitoring will be performed to support this interpretation.

The PADEP MSC for TCE of 5 µg/L was exceeded in groundwater samples from 16 of the 23 NPBA wells. TCE concentrations in the 2018 samples from a localized area in the northeast corner of the NPBA increased at monitoring well MW-20S and inactive collection well CW-7. It is likely that higher than normal groundwater elevations in this area resulting from record rainfalls has contacted residual TCE in cracks and fractures in the bedrock creating a localized condition,

consistent with the conceptual model for the Site. The TCE increases at these two wells do not represent a trend in TCE data especially since prior to 2018, TCE concentrations indicate a downward trend at these wells.

Concentrations of PCE in groundwater exceeding the PADEP MSC were detected in 6 of the 23 post-shutdown sample locations; however, modest PCE concentration increases were limited to isolated, localized areas and likely correlate to the historically high water levels measured at these locations during 2018. None of the cis12DCE detections exceeded PADEP MSC of 70 µg/L. COC concentrations in groundwater sampled outside of the NPBA to the southwest were either non-detect or showed no trend or declining concentration trends.

Wells MW-3, MW-82, MW-102S&D, MW-103S&D, and MW-77 were included in the post shutdown monitoring plan to assess whether future monitoring of these wells is warranted. Due to the distance from the NPBA, there was no expectation that NPBA plume migration would occur rapidly enough to be detected in these seven wells during the five year post-shutdown monitoring period. These results indicate that future sampling of wells MW-77, MW-82, MW-102S&D, and MW-103S&D is not warranted to assess potential plume migration to the southwest of the NPBA. Continued sampling of groundwater at MW-3 to monitor COC concentrations and plume migration is recommended because it is located directly downgradient and relatively close to the eastern portion of the NPBA where post-shutdown groundwater concentrations exceeding PADEP MSCs.

Reactivation of the NPBA groundwater extraction system is not warranted. No rebound (increase in concentrations after shutdown of the pumping wells) occurred and no observed consistent upward trend in COC concentrations occurred in groundwater in the majority of NPBA wells following cessation of pumping.

The remedy identified in the Proposed Plan – Final Remedy (PP-FR) (GSC, 2018d) for groundwater in the NPBA is to attain the Site-Specific Standard (SSS) under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2), using institutional controls with PADEP MSCs for groundwater eventually being met through monitored natural attenuation (MNA). MNA is defined in the PP-FR as monitoring groundwater for the presence of VOCs to confirm declining trends in concentrations due to the natural attenuation processes of dilution, dispersion, aqueous diffusion, sorption, and abiotic degradation.

Future activities in the NPBA will be completed in accordance with the Post-remediation Care Plan (PRCP) for the fYNOP Site. The future activities will include the following:

- Annual sampling of selected on-Site and off-Site wells.
- Annual evaluation of groundwater flow.
- Confirmation of continued non-use of groundwater at off-Site inactive wells.

The complete PRCP will be outlined in the Cleanup Plan to be submitted to the USEPA and PADEP during the first half of 2019, and detailed in the Final Report following completion of the Cleanup Plan.

4 REFERENCES

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GSC, 2014a. Results of NPBA Extraction System and Bldg3 Footer Drain Monitored Shutdown Tests for Part 2 of the Supplemental Groundwater Remedial Investigation Former York Naval Ordnance Plant, April.

GSC, 2014b. Quality Assurance Project Plan (QAPP), Former York Naval Ordnance Plant, June 2012, Revised August 2014.

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GSC, 2018a. Updated Water Use Survey Report, Former York Naval Ordnance Plant, March 2018, Revised September 2018.

GSC, 2018b. 2017 Annual Monitoring Progress Report for the NPBA Extraction System Shutdown, Former York Naval Ordnance Plant, April.

GSC, 2018c. Supplemental Remedial Investigation Groundwater Report (Part 2), Former York Naval Ordnance Plant, August 2016, Revised March 2018.

GSC, 2018d. Proposed Plan – Final Remedy, Former York Naval Ordnance Plant, December 12.

USEPA, 2014. Email from Mr. Griff Miller of USEPA to Mr. Stephen Snyder of GSC. April 17.

Tables

Table 2.1-1
NPBA Groundwater Elevation Data
Former York Naval Ordnance Plant- York, PA

	6/6/13			6/11/13			6/12/13			6/17/13			6/27/13			7/5/13			7/12/13			7/16/13			7/25/13			7/31/13		
	NPBA Shutdown Test Pre-Shutdown			NPBA Shutdown Test Event 1			NPBA Shutdown Test Event 2			NPBA Shutdown Test Event 3			NPBA Shutdown Test Event 4			NPBA Shutdown Test Event 5			NPBA Shutdown Test Event 6			NPBA Shutdown Test Event 7			NPBA Shutdown Test Event 8			NPBA Shutdown Test Event 9		
Location	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
Collection Wells																														
CW-1	570.07	72.12	497.95	NM	NM	NM	570.07	72.08	497.99	570.07	75.16	494.91	570.07	41.99	528.08	570.07	41.74	528.33	570.07	41.69	528.38	570.07	41.69	528.38	570.07	41.19	528.88	570.07	41.30	528.77
CW-1A	568.28	60.60	507.68	NM	NM	NM	568.28	61.53	506.75	568.28	61.12	507.16	568.28	38.17	530.11	568.28	38.72	529.56	568.28	38.65	529.63	568.28	38.05	530.23	568.28	37.38	530.90	568.28	37.78	530.50
CW-2	556.95	68.66	488.29	NM	NM	NM	556.95	71.17	485.78	556.95	75.50	481.45	556.95	31.54	525.41	556.95	31.02	525.93	556.95	29.80	527.15	NM	NM	NM	556.95	26.18	530.77	556.95	28.71	528.24
CW-3	518.66	80.80	437.86	518.66	81.57	437.09	NM	NM	NM	518.66	81.33	437.33	518.66	21.68	496.98	518.66	20.81	497.85	518.66	20.39	498.27	518.66	20.28	498.38	518.66	19.79	498.87	518.66	19.74	498.92
CW-4	541.55	85.70	455.85	AN	AN	AN	NM	NM	NM	541.55	84.84	456.71	541.55	27.75	513.80	541.55	26.94	514.61	541.55	27.20	514.35	NM	NM	NM	541.55	26.30	515.25	541.55	26.34	515.21
CW-5	470.34	NM	NM	NM	NM	NM	NM	NM	NM	470.34	47.49	422.85	470.34	19.49	450.85	470.34	19.38	450.96	NM	NM	NM	470.34	19.60	450.74	470.34	19.35	450.99	470.34	19.50	450.84
CW-6	484.67	70.70	413.97	484.67	70.67	414.00	NM	NM	NM	484.67	73.48	411.19	484.67	10.33	474.34	484.67	9.30	475.37	484.67	9.10	475.57	484.67	9.03	475.64	484.67	8.91	475.76	484.67	9.22	475.45
CW-7	573.78	86.40	487.38	NM	NM	NM	573.78	86.66	487.12	573.78	81.60	492.18	573.78	40.08	533.70	573.78	39.98	533.80	573.78	42.02	531.76	573.78	40.10	533.68	573.78	39.80	533.98	573.78	39.85	533.93
CW-7A	573.91	48.90	525.01	NM	NM	NM	573.91	48.55	525.36	573.91	50.10	523.81	573.91	41.88	532.03	573.91	41.87	532.04	573.91	41.85	532.06	573.91	41.88	532.03	573.91	41.60	532.31	573.91	41.74	532.17
Monitoring Wells																														
MW-3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-9	558.78	47.34	511.44	NM	NM	NM	558.78	47.22	511.56	558.78	46.32	512.46	558.78	34.23	524.55	558.78	33.45	525.33	558.78	32.90	525.88	NM	NM	NM	558.78	32.20	526.58	558.78	32.49	526.29
MW-10	567.80	51.94	515.86	NM	NM	NM	NM	NM	NM	567.80	51.45	516.35	567.80	40.92	526.88	567.80	40.77	527.03	567.80	40.75	527.05	NM	NM	NM	567.80	40.21	527.59	567.80	40.35	527.45
MW-11	563.08	27.84	535.24	NM	NM	NM	563.08	25.84	537.24	563.08	26.49	536.59	563.08	27.47	535.61	563.08	27.83	535.25	563.08	27.11	535.97	NM	NM	NM	563.08	24.64	538.44	563.08	25.83	537.25
MW-12	535.93	37.43	498.50	535.93	37.32	498.61	NM	NM	NM	535.93	37.59	498.34	535.93	35.55	500.38	535.93	34.95	500.98	535.93	34.26	501.67	NM	NM	NM	535.93	34.04	501.89	535.93	34.20	501.73
MW-16D	516.51	8.63	507.88	516.51	7.96	508.55	NM	NM	NM	516.51	7.73	508.78	521.59	4.00	517.59	521.59	1.85	519.74	521.59	1.11	520.48	521.59	1.13	520.46	521.59	0.84	520.75	521.59	0.86	520.73
MW-16S	516.60	35.87	480.73	516.60	37.90	478.70	NM	NM	NM	516.60	36.43	480.17	516.60	23.30	493.30	516.60	22.10	494.50	516.60	21.39	495.21	516.60	21.22	495.38	516.60	21.02	495.58	516.60	21.08	495.52
MW-18D	464.19	16.75	447.44	464.19	16.88	447.31	NM	NM	NM	464.19	16.56	447.63	469.20	A	A	469.20	0.75	468.45	469.20	0.81	468.39	469.20	0.70	468.50	469.20	0.88	468.32	469.20	A	A
MW-18S	464.12	16.98	447.14	464.12	26.70	437.42	NM	NM	NM	464.12	16.27	447.85	464.12	A	A	464.12	0.98	463.14	469.14	0.90	468.24	469.14	0.85	468.29	469.14	1.90	467.24	469.14	3.18	465.96
MW-19	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-20D	573.85	38.59	535.26	NM	NM	NM	573.85	38.12	535.73	573.85	38.21	535.64	573.85	31.76	542.09	573.85	31.86	541.99	573.85	32.00	541.85	573.85	32.10	541.75	573.85	31.36	542.49	573.85	31.53	542.32
MW-20M	574.19	46.59	527.60	NM	NM	NM	574.19	46.39	527.80	574.19	45.98	528.21	574.19	41.47	532.72	574.19	41.37	532.82	574.19	41.32	532.87	574.19	41.35	532.84	574.19	41.33	532.86	574.19	41.22	532.97
MW-20S	574.05	46.53	527.52	NM	NM	NM	574.05	46.10	527.95	574.05	46.08	527.97	574.05	42.24	531.81	574.05	42.13	531.92	574.05	42.19	531.86	574.05	42.25	531.80	574.05	41.93	532.12	574.05	42.10	531.95
MW-31D	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-31S	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-65D	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-65S	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-70D	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-70S	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-77	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-78	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-82	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-102D	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-102S	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-103D	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-103S	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-104	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-142D	437.78	16.20	421.58	437.78	15.58	422.20	NM	NM	NM	437.78	15.72	422.06	437.78	16.11	421.67	437.78	16.31	421.47	437.78	16.30	421.48	437.78	16.27	421.51	437.78	15.78	422.00	437.78	16.09	421.69
MW-142S	437.44	4.57	432.87	437.44	3.60	433.84	NM	NM	NM	437.44	3.95	433.49	437.44	3.89	433.55	437.44	3.75	433.69	437.44	3.84	433.60	437.44	3.55	433.89	437.44	2.74	434.70	437.44	3.29	434.15
MW-143D	403.71	9.44	394.27	403.71	8.65	395.06	NM	NM	NM	403.71	8.70	395.01	408.81	14.89	393.92	408.81	15.17	393.64	408.81	15.24	393.57	408.81	15.29	393.52	408.81	14.88	393.93	403.71	9.79	393.92
MW-143S	403.56	31.72	371.84	403.56	30.93	372.63	NM	NM	NM	403.56	30.77	372.79	403.56	31.57	371.99	403.56	32.04	371.52	403.56	32.05	371.51	403.56	32.05	371.51	403.56	31.99	371.57	403.56	31.85	371.71
Residential Wells																														
RW-4 (Folk)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	575.93	43.47	532.46	575.93	43.58	532.35
RW-2	NM	NM	NM	548.27	28.21	520.06	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Staff Gauge																														
TATE (S-6) Staff Gauge	NM	NM	NM	NM	NM	NM	488.86	1.10	488.96	488.86	0.90	488.76	488.86	1.05	488.91	488.86	1.30	489.16	488.86	1.40	489.26	488.86	1.40	489.26	488.86	1.09	488.95	488.86	1.04	488.90

MPE: Measuring Point Elevation
DTW: Depth to Water
WL Elev: Water level Elevation
NM: Not Measured
A: Artesian
D: Dry
*: RW-4 Measurements collected on 10/11/2014, 9/26/2015, 10/1/16, 10/14/17, and 9/29/18.
RW-2 Measurement collected on 9/16/2015.
AN: Anomalous Reading

Table 2.1-1
NPBA Groundwater Elevation Data
Former York Naval Ordnance Plant- York, PA

	8/8/13			8/28/13			11/22/13			1/16/14			5/5/14			10/7/14			9/3/15			10/3/16			10/16/17			9/27/18		
	NPBA Shutdown Test Event 10			August 2013 Site Wide Water Levels			November 2013 Site Wide Water Levels			January 2014 Site Wide Water Levels			May 2014 Site Wide Water Levels			October 2014 Site Wide Water Levels			September 2015 Site Wide Water Levels			October 2016 Site Wide Water Levels			October 2017 Site Wide Water Levels			September 2018 Site Wide Water Levels		
Location	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev	MPE	DTW	WL Elev
Collection Wells																														
CW-1	570.07	41.43	528.64	570.07	40.60	529.47	570.07	40.80	529.27	570.07	36.71	533.36	570.07	32.90	537.17	570.07	43.15	526.92	570.07	40.90	529.17	570.07	42.72	527.35	570.07	40.28	529.79	570.07	34.21	535.86
CW-1A	568.28	38.05	530.23	568.28	37.39	530.89	568.28	37.90	530.38	568.28	30.52	537.76	568.28	26.83	541.45	568.28	40.21	528.07	568.28	28.23	540.05	568.28	39	529.28	568.28	36.93	531.35	568.28	29.95	538.33
CW-2	556.95	29.96	526.99	556.95	28.97	527.98	556.95	30.75	526.20	556.95	16.28	540.67	556.95	16.81	540.14	556.95	32.32	524.63	556.95	30.20	526.75	556.95	29.3	527.65	556.95	27.49	529.46	556.95	19.02	537.93
CW-3	518.66	19.65	499.01	518.66	19.23	499.43	518.66	19.90	498.76	518.66	17.11	501.55	518.66	15.58	503.08	518.66	18.92	499.74	518.66	16.60	502.06	518.66	16.93	501.73	518.66	16.22	502.44	518.66	13.29	505.37
CW-4	541.55	26.28	515.27	541.55	25.50	516.05	541.55	25.25	516.30	541.55	21.93	519.62	541.55	28.47	513.08	541.55	26.50	515.05	541.55	24.80	516.75	541.55	25.2	516.35	541.55	23.97	517.58	541.55	20.19	521.36
CW-5	470.34	19.42	450.92	470.34	19.42	450.92	470.34	NM	NM	470.34	16.70	453.64	470.34	15.30	455.04	470.34	19.47	450.87	470.34	18.73	451.61	470.34	19.4	450.94	470.34	18.70	451.64	470.34	4.95	465.39
CW-6	484.67	8.65	476.02	484.67	8.00	476.67	484.67	8.00	476.67	484.67	5.33	479.34	484.67	4.46	480.21	484.67	8.51	476.16	484.67	7.75	476.92	484.67	8.15	476.52	484.67	7.63	477.04	484.67	5.92	478.75
CW-7	573.78	39.95	533.83	573.78	39.06	534.72	573.78	39.20	534.58	573.78	32.61	541.17	573.78	20.58	553.20	573.78	41.77	532.01	573.78	39.05	534.73	573.78	41.55	532.23	573.78	38.19	535.59	573.78	29.91	543.87
CW-7A	573.91	41.98	531.93	573.91	41.28	532.63	573.91	41.55	532.36	573.91	35.25	538.66	573.91	31.44	542.47	573.91	44.15	529.76	573.91	42.07	531.84	573.91	44	529.91	573.91	41.38	532.53	573.91	33.23	540.68
Monitoring Wells																														
MW-3	NM	NM	NM	541.10	65.30	475.80	541.10	65.74	475.36	541.10	58.91	482.19	541.10	53.75	487.35	541.10	67.75	473.35	541.10	66.03	475.07	541.10	68.08	473.02	541.10	66.25	474.85	541.10	61.16	479.94
MW-9	558.78	32.66	526.12	558.78	31.82	526.96	558.78	32.32	526.46	558.78	26.93	531.85	558.78	24.44	534.34	558.78	33.66	525.12	558.78	31.74	527.04	558.78	32.57	526.21	558.78	30.74	528.04	558.78	25.24	533.54
MW-10	567.80	40.42	527.38	567.80	39.60	528.20	567.80	39.77	528.03	567.80	34.52	533.28	567.80	31.61	536.19	567.80	42.03	525.77	567.80	39.85	527.95	567.80	41.43	526.37	567.80	39.03	528.77	567.80	32.44	535.36
MW-11	563.08	26.73	536.35	563.08	26.75	536.33	563.08	28.50	534.58	563.08	18.70	544.38	563.08	19.08	544.00	563.08	30.18	532.90	563.08	27.55	535.53	563.08	26.1	536.98	563.08	24.57	538.51	563.08	20.92	542.16
MW-12	535.93	34.29	501.64	535.93	34.12	501.81	535.93	34.98	500.95	535.93	29.34	506.59	535.93	25.47	510.46	535.93	35.72	500.21	535.93	34.93	501.00	535.93	35.55	500.38	535.93	35.10	500.83	535.93	29.85	506.08
MW-16D	521.59	0.89	520.70	516.51	0.00	516.51	516.51	A	A	516.51	NM	NM	516.51	NM	NM	516.51	NM	NM	516.74	-4.86A	521.60A	516.73	-3.7A	520.43A	516.73	-6.52	523.25A	516.73	-9.94	526.67A
MW-16S	516.60	21.07	495.53	516.60	20.85	495.75	516.60	19.25	497.35	516.60	16.65	499.95	516.60	15.31	501.29	516.60	20.83	495.77	516.60	18.75	497.85	516.60	20.05	496.55	516.60	16.83	499.77	516.60	7.46	509.14
MW-18D	479.46	8.14	471.32	479.46	8.91	470.55	464.19	NM	NM	464.19	NM	NM	464.19	NM	NM	464.19	0.53	463.66	464.57	-4.35A	468.92A	464.52	-5.06A	469.58A	464.52	-7.16	471.68A	464.52	-7.62	472.14A
MW-18S	469.14	0.77	468.37	469.14	NM	NM	464.12	NM	NM	464.12	NM	NM	464.12	NM	NM	464.12	A	A	464.58	-6.39A	470.97A	464.52	-0.38A	464.90A	464.52	-3.75	468.27A	464.52	-0.32	464.84A
MW-19	NM	NM	NM	427.36	23.00	404.36	427.36	23.25	404.11	427.36	19.87	407.49	427.36	16.81	410.55	427.36	24.70	402.66	427.36	23.22	404.14	427.36	24.50	402.86	427.36	23.20	404.16	427.36	20.41	406.95
MW-20D	573.85	31.80	542.05	573.85	30.43	543.42	573.85	31.10	542.75	573.85	23.18	550.67	573.85	18.87	554.98	573.85	34.43	539.42	573.85	30.45	543.40	573.85	33.76	540.09	573.85	30.21	543.64	573.85	21.47	552.38
MW-20M	574.19	41.33	532.86	574.19	40.62	533.57	574.19	40.80	533.39	574.19	35.00	539.19	574.19	39.40	534.79	574.19	43.59	530.60	574.19	41.86	532.33	574.19	42.53	531.66	574.19	41.24	532.95	574.19	33.32	540.87
MW-20S	574.05	42.30	531.75	574.05	41.65	532.40	574.05	42.08	531.97	574.05	35.30	538.75	574.05	31.39	542.66	574.05	44.55	529.50	574.05	42.38	531.67	574.05	44.27	529.78	574.05	41.68	532.37	574.05	33.36	540.69
MW-31D	369.30	17.56	351.74	369.30	17.47	351.83	369.30	19.27	350.03	369.30	12.86	356.44	369.30	10.43	358.87	369.30	19.53	349.77	369.30	17.94	351.36	369.30	19.04	350.26	369.30	18.65	350.65	369.30	13.6	355.70
MW-31S	369.28	17.20	352.08	369.28	17.06	352.22	369.28	18.98	350.30	369.28	12.52	356.76	369.28	10.41	358.87	369.28	19.26	350.02	369.28	17.56	351.72	369.28	18.65	350.63	369.28	18.09	351.19	369.28	13.11	356.17
MW-65D	NM	NM	NM	546.80	49.52	497.28	546.80	49.75	497.05	546.80	44.15	502.65	546.80	41.98	504.82	546.80	49.65	497.15	546.80	49.83	496.97	546.80	51.00	495.80	546.80	48.73	498.07	546.80	46.02	500.78
MW-65S	NM	NM	NM	546.82	48.35	498.47	546.82	48.77	498.05	546.82	45.65	501.17	546.82	43.76	503.06	546.82	50.90	495.92	546.82	48.48	498.34	546.82	49.70	497.12	546.82	49.80	497.02	546.82	47.39	499.43
MW-70D	416.31	23.20	393.11	416.31	23.50	392.81	416.31	23.87	392.44	416.31	16.45	399.86	416.31	11.40	404.91	416.31	26.24	390.07	416.31	24.28	392.03	416.31	26.97	389.34	416.31	24.81	391.50	416.31	18.53	397.78
MW-70S	416.21	23.20	393.01	416.21	23.14	393.07	416.21	23.50	392.71	416.21	16.70	399.51	416.21	11.64	404.57	416.21	25.75	390.46	416.21	23.97	392.24	416.21	26.4	389.81	416.21	24.41	391.80	416.21	18.53	397.68
MW-77	NM	NM	NM	379.48	26.95	352.53	379.48	26.95	352.53	379.48	20.00	359.48	379.48	17.16	362.32	379.48	27.28	352.20	379.48	25.58	353.90	379.48	24.94	354.54	379.48	24.41	355.07	379.48	21.08	358.40
MW-78	375.32	22.39	352.93	375.32	22.01	353.31	375.32	23.80	351.52	375.32	17.74	357.58	375.32	15.10	360.22	375.32	24.41	350.91	375.32	22.41	352.91	375.32	24.01	351.31	375.32	23.30	352.02	375.32	17.98	357.34
MW-82	382.18	36.23	345.95	382.18	36.74	345.44	382.18	37.91	344.27	382.18	31.56	350.62	382.18	29.06	353.12	382.18	37.04	345.14	382.18	36.83	345.35	382.18	37.63	344.55	382.18	37.84	344.34	382.18	33.33	348.85
MW-102D	405.23	12.91	392.32	405.23	12.74	392.49	405.23	13.20	392.03	405.23	5.75	399.48	405.23	0.71	404.52	405.23	42.53	362.70	405.23	13.60	391.63	405.23	16.31	388.92	405.23	14.09	391.14	405.23	7.8	397.43
MW-102S	405.41	39.14	366.27	405.41	38.54	366.87	405.41	40.33	365.08	405.41	31.90	373.51	405.41	26.83	378.58	405.41	15.60	389.81	405.41	40.17	365.24	405.41	43.18	362.23	405.41	41.58	363.83	405.41	34.41	371.00
MW-103D	NM	NM	NM	401.61	19.09	382.52	401.61	19.80	381.81	401.61	14.65	386.96	401.61	11.72	389.89	401.61	21.65	379.96	401.61	19.70	381.91	401.61	21.50	380.11	401.61	20.22	381.39	401.61	15.32	386.29
MW-103S	NM	NM	NM	402.00	17.05	384.95	402.00	17.79	384.21	402.00	13.00	389.00	402.00	10.30	391.70	402.00	19.63	382.37	402.00	17.86	384.14	402.00	19.67	382.33	402.00	18.21	383.79	402.00	13.57	388.43
MW-104	NM	NM	NM	428.72	28.83	399.89	428.72	28.99	399.73	428.72	27.95	400.77	428.72	27.45	401.27	428.72	29.51	399.21	428.72	28.98	399.74	428.72	29.31	399.41	428.72	28.96	399.76	428.72	28.11	400.61
MW-142D	437.78	16.36	421.42	437.78	16.30	421.48	437.78	16.75	421.03	437.78	12.75	425.03	437.78	11.05	426.73	437.78	17.82	419.96	437.78	15.90	421.88	437.78	16.5	421.28	437.78	15.07	422.71	437.78	12.11	425.67
MW-142S	437.44	3.38	434.06	437.44	3.52	433.92	437.44	3.70	433.74	437.44	0.82	436.62	437.44	0.00	437.44	437.44	4.24	433.20	437.44	2.97	434.47	437.44	2.9	434.54	437.44	2.66	434.78	437.44	0.56	436.88
MW-143D	403.71	10.25	393.46	403.71	10.01	393.70	403.71	10.70	393.01	403.71	3.17	400.54	403.71	0.05	403.66	403.71	12.04	391.67	403.71	9.40	394.31	403.71	11.43	392.28	403.71	9.14	394.57	403.71	3.71	400.00
MW-143S	403.56	32.25	371.31	403.56	34.57	368.99	403.56	33.65	369.91	403.56	25.03	378.53	403.56	21.73	381.83	403.56	36.54	367.02	403.56	33.30	370.26	403.56	38.4	365.16	403.56	34.87	368.69	403.56	26.53	377.03
Residential Wells																														
RW-4 (Folk)	575.93	43.74	532.19	575.93	NM	NM	575.93	NM	NM	575.93	NM	NM	575.93	NM	NM	575.93	46.51*	529.42	575.93	44.58*	531.35	575.93	40.82*	535.11	575.93	37.93*	538.00	575.93	30.02	545.91*
RW-2	548.46	21.79	526.67	548.46	21.13	527.33	548.46	NM	NM	548.46	NM	NM	548.46	14.44	534.02	548.46	22.54	525.92	548.46	21.47*	526.99	548.27	21.98	526.29	548.27	21.24	527.03	548.27	16.78	531.49
Staff Gauge																														
TATE (S-6) Staff Gauge	488.86	1.05	488.91	488.86	NM	NM	488.86	NM	NM	488.86	NM	NM	488.86	1.32	489.18	488.86	NM	NM	488.86	NM	NM	488.86	NM	NM	488.86	NM	NM	488.86	NM	NM

MPE: Measuring Point Elevation
DTW: Depth to Water
WL Elev: Water level Elevation
NM: Not Measured
A: Artesian
D: Dry
*: RW-4 Measurements collected on 10/11/2014, 9/26/2015, 10/1/16, 10/14/17, and 9/29/18.
RW-2 Measurement collected on 9/16/2015.
AN: Anomalous Reading

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-3 9/11/13	MW-3 10/14/14	MW-3 9/21/15	MW-3 10/7/16	MW-3 10/24/17	MW-3 10/1/18	MW-9 6/10/13	MW-9 9/12/13	MW-9 10/16/14	MW-9 9/22/15	MW-9 10/10/16	MW-9 10/20/17	MW-9 10/3/18	MW-11 6/10/13	MW-11 9/10/13	MW-11 10/16/14	MW-11 9/23/15	MW-11 10/11/16	MW-11 10/24/17	MW-11 10/3/18	MW-12 5/31/13	MW-12 Dup 5/31/13	MW-12 9/12/13	MW-12 10/17/14	MW-12 9/22/15	MW-12 10/12/16	MW-12 10/25/17
TOTAL VOC																															
TOTAL VOC					36.29	34.91	34.41	31.67	35.02	21.02	110	76	71.22	70	58.6	50.7	61.7	5.07	5.69	4.05	3.4	3.17	2.6	3.5	116.8	84.8	179	142.4	178.4	155.3	109.7
Volatile Organic Compound																															
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1.0 U	1 U	1.0 U	1 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,1-Dichloroethane	31	160		2.8	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,1-Dichloroethene	7	7	7	280	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,2-Dichloroethane	5	5	5	0.17	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,2-Dichloropropane	5	5	5	0.85	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
1,4-Dioxane	6.4	32		0.46	200 U	200 U	200 U	200 U	R	R	1000 U	1000 U	200 UJ	200 U	200 U ^c	R	R	200 U	200 U	200 U	200 U	200 U	R	R	800 U	400 U	1000 U	200 UJ	200 U	600 U	R
2-Butanone	4000	4000		5600	5 U	5.0 U	5 U	5.0 U	5 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5 U	5.0 U	5 U	5 U	5 U	5.0 U	5.0 U	5 U	5 U	5 U	20 U	10 U	25 U	5.0 UJ	5 UJ	15 U	10 U
2-Hexanone	63	260		38	5 U	5.0 U	5 UJ	5.0 U	5 U	5 U	25 U	25 U	5.0 UJ	5 UJ	5 U	5.0 U	5 U	5 U	5 U	5.0 U	5 UJ	5 U	5 U	5 U	20 UJ	10 U	25 U	5.0 UJ	5 UJ	15 U	10 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	5.0 U	5 U	5.0 U	5 U	5 U	25 U	25 U	5.0 UJ	5 UJ	5 U	5.0 U	5 U	5 U	5 U	5.0 U	5 UJ	5 U	5 U	5 U	20 UJ	10 U	25 U	5.0 UJ	5 UJ	15 U	10 U
Acetone	38000	110000		14000	5 U	5.0 U	5 U	5.0 U	5 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5 U ^c	5.0 U	5 U	5 U	5 U	5.0 U	5.0 U	5 U ^c	5 U	5 U	20 UJ	10 U	25 U	5.0 UJ	5.0 U	15 U	10 U
Acrylonitrile	0.72	3.7		0.052	20 U	20 U	20 U	20 U	20 U	20 U	100 U	100 U	20 UJ	20 U	20 U ^c	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	80 U	40 U	100 U	20 UJ	20 U	60 U	40 U
Benzene	5	5	5	0.46	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Bromochloromethane	90	90		83	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Bromodichloromethane	80	80		0.13	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Bromoform	80	80		3.3	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Bromomethane	10	10		7.5	1 U	1.0 U	1 U	1.0 U ^c	1 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U ^c	1.0 UJ	1 U	1 U	1 U	1.0 U	1.0 U	1 U ^c	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Carbon Disulfide	1500	6200		810	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Carbon Tetrachloride	5	5	5	0.46	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Chlorobenzene	100	100	100	78	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Chlorodibromomethane	80	80		0.87	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Chloroethane	250	1200		21000	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Chloroform	80	80		0.22	2.9	2.6	2.2	2.4	2.2	2.2	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	0.31 J	0.45 J	0.41 J	0.43 J	0.46 J	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Chloromethane	30	30		190	1 U	1.0 U	1 U	1.0 U ^c	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U ^c	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 UJ
cis-1,2-Dichloroethene	70	70	70	36	0.66 J	0.75 J	0.63 J	0.73 J	0.82 J	0.82 J	34	32	30 J	36	34	27	33	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	47 J	25	42	47 J	52	58	46
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1 UJ	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Ethylbenzene	700	700	700	1.5	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Methyl tert-butyl ether	20	20		14	0.26 J	0.23 J	0.19 J	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Methylene chloride	5	5		11	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	1 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.1 J	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Styrene	100	100	100	1200	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Tetrachloroethene	5	5	5	11	0.47 J	0.33 J	0.39 J	0.54 J	1 U	1 U	5 U	5 U	0.22 J	1.0 U	1 U	1.0 U	1 U	0.26 J	0.34 J	0.24 J	0.37 J	0.31 J	1 U	1 U	1.9 J	1.4 J	4.7 J	5.4 J	6.4	4.3	2.7
Toluene	1000	1000	1000	1100	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	4 UJ	0.47 J	2.3 J	1.0 UJ	1.0 U	3.0 U	2 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	1.0 U	1 U	1.0 U ^c	1 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1 U ^c	1 U	1 U	4 U	2 U	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Trichloroethene	5	5	5	0.49	32	31	31	28	32	18	76	44	41 J	29	19	20	27	4.5	4.9	3.4	2.6	2.4	2.6	3.5	63	57	130	90 J	120	93	61
Vinyl Chloride	2	2	2	0.019	1 U	1.0 U	1 U	1.0 U	1 U	1 U	5 U	5 U	1.0 UJ	5	5.6 ^c	3.7	1.7	1 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	3.8 J	0.93 J	5 U	1.0 UJ	1.0 U	3.0 U	2 U
Xylenes (Total)	10000	10000	10000	190	3 U	3.0 U	3 U	2.0 U	2 U	2 U	15 U	15 U	3.0 UJ	3.0 U	2 U	2.0 U	2 U	3 U	3 U	3.0 U	3.0 U	2 U	2 U	2 U	12 U	6 U	15 U	3.0 UJ	3.0 U	6.0 U	4 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-12 10/3/18	MW-16D 6/11/13	MW-16D 9/10/13	MW-16D Dup 9/10/13	MW-16D 10/16/14	MW-16D 9/23/15	MW-16D 10/7/16	MW-16D 10/25/17	MW-16D 10/2/18	MW-16D 10/2/18	MW-16S 9/10/13	MW-16S 10/22/14	MW-16S 9/23/15	MW-16S Dup 10/11/16	MW-16S 10/11/16	MW-16S 10/25/17	MW-16S 10/2/18	MW-18D 6/11/13	MW-18D 9/10/13	MW-18D 10/23/14	MW-18D 9/24/15	MW-18D 10/7/16	MW-18D Dup 10/26/17	MW-18D 10/26/17	MW-18D 10/3/18
TOTAL VOC																													
TOTAL VOC					127.1	23.9	23.8	25.8	18.4	24.1	18.9	15.7	27.8	26.4	527.2	157.3	54.58	91	91.2	21.4	28.5	937	112.9	22.68	30.1	21.03	20.7	17.8	34.6
Volatile Organic Compound																													
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 UJ	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.85	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	R	200 U	200 U	200 U	200 U	200 U	200 U	R	R	R	5000 U	200 U	200 U	200 U	200 U	R	R	8000 U	1000 U	200 U	200 U	200 U ^c	R	R	R
2-Butanone	4000	4000		5600	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	130 U	5.0 U	5.0 U	5 U	5 U	10 U	5 U	200 U	25 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U
2-Hexanone	63	260		38	5 U	5 U	5 U	5 U	5.0 U	5 UJ	5.0 U	5 U	5 U	5 U	130 U	5.0 U	5.0 U	5 U	5 U	10 U	5 U	200 U	25 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	5 U	5 U	5 U	5.0 U	5 UJ	5.0 U	5 U	5 U	5 U	130 U	5.0 U	5.0 U	5 U	5 U	10 U	5 U	200 U	25 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U
Acetone	38000	110000		14000	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U ^c	5 U	5 U	5 U	130 U	5.0 U	5.0 U	5 U	5 U	10 U	5 U	200 U	25 U	5.0 U	5.0 U	5.0 U ^c	5 U	5 U	5 U
Acrylonitrile	0.72	3.7		0.052	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	500 U	20 U	20 U	20 U ^c	20 U ^c	40 U	20 U	800 U	100 U	20 U	20 U	20 U ^c	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromochloromethane	90	90		83	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromoform	80	80		3.3	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1 UJ	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromomethane	10	10		7.5	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U ^c	1 U ^c	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1 UJ	1.0 U	1 U	1 U	1 U
Chloroform	80	80		0.22	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	6.2 J	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	1.2 J	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Chloromethane	30	30		190	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	25 U	1.0 U	0.28 J	1 U ^c	1 U ^c	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	56	3.9	7.8	6.8	3.4	5.1	8.9	7	6.8	6.4	40	38	42	35	37	12	7.4	350	66	14	20	15	16	14	28
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1 UJ	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Methylene chloride	5	5		11	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	12 J	1.0 U	1.0 U	1 U	1 U	2 U	1 U	17 J	2.1 J	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Styrene	100	100	100	1200	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	4.1	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	450	110	6.7	50	48	1.7 J	1.1	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Toluene	1000	1000	1000	1100	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	40 U	5 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	67	20	16	19	15	19	10	8.7 J	21	20 J	19 J	9.3	5.6	6	6.2	7.7 J	20	560	42	8.1	9.5	5.5	4.7	3.8	6.6
Vinyl Chloride	2	2	2	0.019	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 UJ	1 U	1 U	25 U	1.0 U	1.0 U	1 U	1 U	2 U	1 U	10 J	1.6 J	0.58 J	0.60 J	0.53 J ^c	1 U	1 UJ	1 U
Xylenes (Total)	10000	10000	10000	190	2 U	3 U	3 U	3 U	3.0 U	3.0 U	2.0 U	2 U	2 U	2 U	75 U	3.0 U	3.0 U	2 U	2 U	4 U	2 U	120 U	15 U	3.0 U	3.0 U	2.0 U	2 U	2 U	2 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-18S 6/11/13	MW-18S 9/9/13	MW-18S 10/23/14	MW-18S 9/25/15	MW-18S 10/13/16	MW-18S 10/27/17	MW-18S 10/3/18	MW-20D 6/18/13	MW-20D 9/11/13	MW-20D 10/23/14	MW-20D 10/1/15	MW-20D 10/13/16	MW-20D 10/20/17	MW-20D 10/2/18	MW-20M 9/13/13	MW-20M 10/29/14	MW-20M 9/30/15	MW-20M 10/14/16	MW-20M 10/20/17	MW-20M 10/3/18	MW-20S 6/6/13	MW-20S 9/11/13	MW-20S 10/17/14	MW-20S 9/24/15	MW-20S 10/13/16	MW-20S 10/19/17
TOTAL VOC																														
TOTAL VOC					333.8	119.7	12.84	33.85	4.9	18.1	32.8	0.61	0.8	0.34	0.36	0.43	0.74	0	21.6	0.85	14.3	8.2	33.31	22.85	237.4	95.5	119.1	87.8	54.9	36.95
Volatile Organic Compound																														
1,1,1,2-Tetrachloroethane	70	70		0.57	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200	200	200	8000	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	5	5	5	0.28	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	31	160		2.8	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7	7	7	280	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5	5	5	0.17	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	5	5	5	0.85	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
1,4-Dioxane	6.4	32		0.46	2000 U	1000 U	200 U	200 U	200 U	R	R	200 U	200 U	200 U	200 UJ	200 U	R	R	200 U	200 U	200 UJ	200 U	R	R	1000 U	1000 U	200 UJ	200 U	200 U	R
2-Butanone	4000	4000		5600	50 U	25 U	5.0 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5.0 U	5.0 U
2-Hexanone	63	260		38	50 U	25 U	5.0 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5.0 U	5 UJ	5.0 U	5.0 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	3300	9300		6300	50 U	25 U	5.0 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Acetone	38000	110000		14000	50 U	25 U	5.0 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5.0 U	5.0 U	2.7 J	5.0 U	5 U	25 U	25 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Acrylonitrile	0.72	3.7		0.052	200 U	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 UJ	20 U	20 UJ	20 U	100 U	100 U	20 UJ	20 U	20 U	20 U
Benzene	5	5	5	0.46	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Bromochloromethane	90	90		83	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Bromodichloromethane	80	80		0.13	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Bromoform	80	80		3.3	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Bromomethane	10	10		7.5	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 UJ	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 UJ	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Carbon Disulfide	1500	6200		810	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	5	5	0.46	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Chlorobenzene	100	100	100	78	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Chlorodibromomethane	80	80		0.87	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Chloroethane	250	1200		21000	10 U	5 U	1.0 U	1 UJ	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Chloroform	80	80		0.22	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	0.45 J	0.46 J	0.34 J	0.36 J	0.43 J	1.0 U	1 U	1.4	1.0 U	1	0.38 J	0.83 J	1.3	1.1 J	2.8 J	1.7 J	1.8	1.6	1.4
Chloromethane	30	30		190	10 U	5 U	1.0 U	0.28 J	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	70	70	70	36	110	71	7	22	3.7	14	26	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	0.81 J	4.1 J	5 U	1.6 J	1.2	1	0.95 J
cis-1,3-Dichloropropene	7.3	34		0.47	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Ethylbenzene	700	700	700	1.5	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Methyl tert-butyl ether	20	20		14	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Methylene chloride	5	5		11	10 U	2 J	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	2.2 J	3.8 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Styrene	100	100	100	1200	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	5	5	11	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	0.30 J	0.52 J	0.48 J	0.74 J	10	2.7 J	5.8 J	3.8	4.3	2.6
Toluene	1000	1000	1000	1100	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	0.16 J	0.34 J	1.0 U	1 U	1.0 U	0.74 J	1 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	100	100	100	360	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	7.3	34		0.47	10 U	5 U	1.0 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Trichloroethene	5	5	5	0.49	220	45	5.5	11	1.2	4.1	6.8	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	18	0.85 J	13	4.6	32 J	20	220	90	110 J	81	48	32
Vinyl Chloride	2	2	2	0.019	3.8 J	1.7 J	0.34 J	0.57 J	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	5 U	1.0 UJ	1.0 U	1.0 U	1.0 U
Xylenes (Total)	10000	10000	10000	190	30 U	15 U	3.0 U	3 U	2.0 U	2 U	2 U	3 U	3 U	3.0 U	3 U	2.0 U	2.0 U	2 U	3 U	3.0 U	3.0 U	2.0 U	2.0 U	2 U	15 U	15 U	3.0 UJ	3.0 U	2.0 U	2.0 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-20S 10/2/18	MW-77 9/9/13	MW-77 10/17/14	MW-77 10/18/17	MW-77 10/4/18	MW-82 9/3/13	MW-82 10/23/14	MW-82 Dup 10/23/14	MW-82 9/28/15	MW-82 10/7/16	MW-82 10/26/17	MW-82 10/4/18	MW-102D 9/11/13	MW-102D 10/21/14	MW-102D 10/2/15	MW-102D 10/11/16	MW-102D Dup 10/17/17	MW-102D 10/17/17	MW-102D 10/3/18	MW-102S 9/12/13	MW-102S 10/21/14	MW-102S Dup 10/21/14	MW-102S 10/2/15	MW-102S 10/11/16
TOTAL VOC																												
TOTAL VOC					150.06	1968	1748.8	738	976	32.68	32.19	30.39	30.09	26.44	21.7	26.3	158	162.35	141.45	18.08	18.2	13.2	16.4	70.9	64.32	70.3	52.82	72.5
Volatile Organic Compound																												
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	14	9.5	11	3.8	8.7
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,1-Dichloroethane	31	160		2.8	1 U	50 U	5.0 UJ	1.0 U	5 U	0.48 J	0.58 J	1.0 U	0.50 J	0.55 J	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.6	0.92 J	1	0.62 J	2.4
1,1-Dichloroethene	7	7	7	280	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	0.41 J	0.39 J	0.39 J	0.39 J	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	9.1	8.9	9.8	5.7	6.3
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,2-Dichloropropane	5	5	5	0.85	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
1,4-Dioxane	6.4	32		0.46	R	10000 U	1000 UJ	R	R	200 U	200 U	200 U	200 U	200 U	R	R	2000 U	200 U	200 UJ	200 U	R	R	R	200 U	200 U	200 U	200 U	8 J
2-Butanone	4000	4000		5600	5 U	250 U	25 UJ	5.0 U	25 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	50 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U
2-Hexanone	63	260		38	5 U	250 U	25 UJ	5.0 U	25 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	50 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	250 U	25 UJ	5.0 U	25 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	50 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U
Acetone	38000	110000		14000	5 U	250 U	25 UJ	5.0 U	25 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U ^c	5 U	5 U	50 U	5 U	5 UJ	5 U	4.6 J	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U
Acrylonitrile	0.72	3.7		0.052	20 U	1000 U	100 UJ	20 U	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	200 U	20 U	20 U	20 U ^c	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	1300	1200 J	460	680	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Bromochloromethane	90	90		83	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Bromodichloromethane	80	80		0.13	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Bromoform	80	80		3.3	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U ^c	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Bromomethane	10	10		7.5	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	10 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U ^c
Carbon Disulfide	1500	6200		810	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U ^c	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Chlorobenzene	100	100	100	78	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Chlorodibromomethane	80	80		0.87	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U ^c	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Chloroethane	250	1200		21000	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1 UJ	1.0 U	1 U	1 U	10 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Chloroform	80	80		0.22	0.86 J	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	0.35 J	0.45 J	0.38 J	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Chloromethane	30	30		190	1 U	50 U	9.8 J	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U ^c	1 UJ	1 U	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U ^c
cis-1,2-Dichloroethene	70	70	70	36	2.2	50 U	5.0 UJ	1.0 U	5 U	22	22	21	19 J	17	15	19 J	9.2 J	11	10	3.6	3.2	3.4	5.3	5.2	4	4.5	3.7	8.1
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1.0 U	1 U ^c	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	99	92 J	31	50	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Methyl tert-butyl ether	20	20		14	1 U	380	350 J	200	210	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Methylene chloride	5	5		11	1 U	41 J	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	2.3 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Styrene	100	100	100	1200	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Tetrachloroethene	5	5	5	11	17	50 U	5.0 UJ	1.0 U	5 U	1.7	1.9	1.7	1.9	1.8	1.3	1.5 J	8.8 J	11	11	9.6	7.6	6.9	8.9	12	13	14	12	15 J
Toluene	1000	1000	1000	1100	1 U	70	45 J	22	20	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 UJ	10 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 UJ	10 U	1 U	1.0 U	1 U ^c	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U ^c
Trichloroethene	5	5	5	0.49	130	50 U	5.0 UJ	1.0 U	5 U	8.5	7.3	7.3	8.3	6.7	5.4	5.8	140	140	120	4.5	2.8	2.9	2.2	29	28	30	27	24 J
Vinyl Chloride	2	2	2	0.019	1 U	50 U	5.0 UJ	1.0 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	10 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U
Xylenes (Total)	10000	10000	10000	190	2 U	78 J	52 J	25	16	3 U	3.0 U	3.0 U	3.0 U	2.0 U	2 U	2 UJ	30 U	3 U	3.0 U	2 U	2 U	2 U	2 U	3 U	3 U	3 U	3.0 U	2 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-102S 10/17/17	MW-102S 10/3/18	MW-103D 9/10/13	MW-103D 10/17/14	MW-103D Dup 10/17/14	MW-103D 10/2/15	MW-103D 10/10/16	MW-103D 10/16/17	MW-103D 10/3/18	MW-103S 9/11/13	MW-103S 10/17/14	MW-103S 10/2/15	MW-103S 10/10/16	MW-103S 10/16/17	MW-103S 10/3/18	MW-142D 5/31/13	MW-142D 9/10/13	MW-142D 10/13/14	MW-142D 10/1/15	MW-142D 10/13/16	MW-142D 10/18/17	MW-142D 10/3/18	MW-142S 5/30/13	MW-142S 9/10/13
TOTAL VOC																												
TOTAL VOC					53.4	264	92.07	86.89	86.87	30.04	21.07	13.3	16.13	194.7	169.93	130.44	108.7	72.7	101.5	9.8	5.39	6.2	2.6	5.78	0.79	0.75	1.82	1.25
Volatile Organic Compound																												
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	4.6	55	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.3 J	1.1	0.76 J	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	1.2	27	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	0.22 J	0.16 J	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	4.6	24	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.7 J	1.3	0.64 J	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.85	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	R	R	1000 U	200 UJ	200 UJ	200 U	200 U	R	R	2000 U	200 UJ	200 UJ	400 U ^c	R	R	200 U	200 U	R	200 UJ	200 U	R	R	200 U	200 U
2-Butanone	4000	4000		5600	5 U	50 U	25 U	5.0 UJ	5.0 UJ	5.0 U	5 U	5 U	5 U	50 U	5.0 UJ	5.0 U	10 U	25 U	25 U	5 UJ	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5 U
2-Hexanone	63	260		38	5 U	50 U	25 U	5.0 UJ	5.0 UJ	5.0 U	5 U	5 U	5 U	50 U	5.0 UJ	5.0 U	10 U	25 U	25 U	5 UJ	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	50 U	25 U	5.0 UJ	5.0 UJ	5.0 U	5 U	5 U	5 U	50 U	5.0 UJ	5.0 U	10 U	25 U	25 U	5 UJ	5 U	5.0 U	5 U	5.0 U	5.0 U	5 U	5 U	5 U
Acetone	38000	110000		14000	5 UJ	50 U	25 U	5.0 UJ	5.0 UJ	5.0 U	4.1 J ^c	5 U	5 U	50 U	5.0 UJ	5 UJ	10 U ^c	25 U	25 U	5 UJ	5 U	5.0 U	5 U	5	5.0 U	5 U	5 U	5 U
Acrylonitrile	0.72	3.7		0.052	20 U	200 U	100 U	20 UJ	20 UJ	20 U	20 U	20 U	20 U	200 U	20 UJ	20 U	40 U ^c	100 U	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromochloromethane	90	90		83	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromoform	80	80		3.3	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Bromomethane	10	10		7.5	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1 UJ	1 U ^c	1 U	1 U	10 U	1.0 UJ	1 UJ	2 U ^c	5 U	5 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1 UJ	2 U	5 U	5 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U
Chloroform	80	80		0.22	1 U	10 U	0.97 J	0.59 J	0.57 J	0.44 J	0.57 J	1 U	0.63 J	2.6 J	0.51 J	0.48 J	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Chloromethane	30	30		190	1 UJ	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U ^c	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U ^c	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	6	99	2.8 J	6.3 J	5.5 J	2	1.7	1.8	2.6	7.1 J	7.2 J	5.4	4.3	3.7 J	6.5	9.8	5.1	6.2	2.6	0.78 J	0.79 J	0.75 J	1.5	1.1
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Methylene chloride	5	5		11	1 U	10 U	2.3 J	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	9.7 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Styrene	100	100	100	1200	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	13 J	24	7	11 J	9.8 J	9.6	10	9.3	8.2	25	29 J	28	27	15	19	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Toluene	1000	1000	1000	1100	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	0.29 J	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 UJ	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U ^c	1 U	1 U	10 U	1.0 UJ	1.0 U	2 U	5 U	5 U	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	24 J	35	79	69 J	71 J	18	4.7	2.2	4.7	160	130 J	94	76	54	76	1 U	1 U	1.0 U	1 U	1.0 U	1.0 U	1 U	0.32 J	0.15 J
Vinyl Chloride	2	2	2	0.019	1 U	10 U	5 U	1.0 UJ	1.0 UJ	1.0 U	1 U	1 U	1 U	10 U	1.0 UJ	1 UJ	2 U ^c	5 U	5 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	190	2 U	20 U	15 U	3.0 UJ	3.0 UJ	3.0 U	2 U	2 U	2 U	30 U	3.0 UJ	3.0 U	4 U	10 U	10 U	3 U	3 U	3.0 U	3 U	2.0 U	2.0 U	2 U	3 U	3 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	MW-142S 10/13/14	MW-142S 10/1/15	MW-142S 10/13/16	MW-142S 10/18/17	MW-142S 10/3/18	MW-143D 5/31/13	MW-143D 9/9/13	MW-143D 10/13/14	MW-143D 9/30/15	MW-143D 10/7/16	MW-143D 10/18/17	MW-143D 10/3/18	MW-143S 5/30/13	MW-143S 9/9/13	MW-143S 10/15/14	MW-143S 9/30/15	MW-143S 10/7/16	MW-143S 10/18/17	MW-143S 10/3/18	CW-1 5/29/13	CW-1 9/16/13	CW-1 10/13/14	CW-1 10/6/15	CW-1 10/25/16	CW-1 10/27/17	CW-1 10/2/18
TOTAL VOC																														
TOTAL VOC					1.6	2.05	6.8	2.4	8.7	0	0.25	0.34	0.39	0.66	0.74	1.5	2.67	4.1	2.74	2.2	2.06	1.67	1.65	44	15	3.6	2.49	3.2	0.79	2.52
Volatile Organic Compound																														
1,1,1,2-Tetrachloroethane	70	70		0.57	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.85	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	R	200 UJ	200 U	R	R	200 U	200 U	R	200 UJ	200 U	R	R	200 U	200 U	200 U	200 UJ	200 U	R	R	200 U	200 U	R	200 U	200 U ^c	R	R
2-Butanone	4000	4000		5600	5.0 U	5 U	5.0 U	5.0 U	5 U	5 UJ	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U
2-Hexanone	63	260		38	5.0 U	5 U	5.0 U	5.0 U	5 U	5 UJ	5 U	5.0 U	5 UJ	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5 UJ	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5.0 U	5 U	5.0 U	5.0 U	5 U	5 UJ	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U
Acetone	38000	110000		14000	5.0 U	5 U	4.2 J	5.0 U	5 U	5 UJ	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 UJ	5 U
Acrylonitrile	0.72	3.7		0.052	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 UJ	20 U	20 U	20 U	20 U	20 U	20 U	20 UJ	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Bromochloromethane	90	90		83	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Bromoform	80	80		3.3	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Bromomethane	10	10		7.5	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U
Chloroform	80	80		0.22	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Chloromethane	30	30		190	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	1.6	1.9	2.6	2.4	8.7	1 U	0.25 J	0.34 J	0.39 J	0.66 J	0.74 J	1.5	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	11	5.6	1.8	1.2	1.6	1 U	0.92 J
cis-1,3-Dichloropropene	7.3	34		0.47	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Methylene chloride	5	5		11	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Styrene	100	100	100	1200	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	0.77 J	1.1	0.84 J	1.0 U	0.76 J	0.57 J	0.55 J	1 U	1 U	1.0 U	0.19 J	1 U	1 U	1 U
Toluene	1000	1000	1000	1100	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	1.0 U	1 U	1.0 U	1.0 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1.0 U	1 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1.0 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	1.0 U	0.15 J	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1.9	3	1.9	2.2	1.3	1.1	1.1	33	9.4	1.8	1.1	1.6	0.79 J	1.6
Vinyl Chloride	2	2	2	0.019	1.0 U	1 UJ	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	190	3.0 U	3 U	2.0 U	2.0 U	2 U	3 U	3 U	3.0 U	3.0 U	2.0 U	2.0 U	2 U	3 U	3 U	3.0 U	3.0 U	2.0 U	2.0 U	2 U	3 U	3 U	3.0 U	3 U	2 U	2 U	2 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	CW-1A 5/30/13	CW-1A 9/16/13	CW-1A 10/14/14	CW-1A 10/6/15	CW-1A 10/26/16	CW-1A 10/31/17	CW-1A 10/1/18	CW-2 5/29/13	CW-2 9/16/13	CW-2 10/14/14	CW-2 10/7/15	CW-2 10/26/16	CW-2 10/24/17	CW-2 10/3/18	CW-3 5/29/13	CW-3 9/16/13	CW-3 10/15/14	CW-3 10/6/15	CW-3 10/25/16	CW-3 10/23/17	CW-3 10/3/18	CW-4 5/29/13	CW-4 9/16/13	CW-4 10/14/14	CW-4 10/7/15	CW-4 10/26/16	CW-4 10/23/17	CW-4 10/2/18
TOTAL VOC																																
TOTAL VOC					37.3	28.39	34.75	30.21	59.47	54.8	42.8	15.1	10.17	18	8.88	22.07	10.91	19	34.6	120.19	118.03	512.05	517.5	331.2	54.2	82	62.5	42.8	35.66	36.22	0	35.9
Volatile Organic Compound																																
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.85	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	200 U	200 U	200 U	200 U	200 U ^c	R	R	200 U	200 U	200 U	200 U	200 U	R	R	200 U	200 U	200 U	200 U	400 U ^c	R	R	200 U	400 U	200 U	200 U	200 U	R	R
2-Butanone	4000	4000		5600	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	10 U	5 U	5 U	5 U	10 U	5.0 U	5 U	5 U	5 U	5 U
2-Hexanone	63	260		38	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	10 U	5 U	5 U	5 U	10 U	5.0 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	10 U	5 U	5 U	5 U	10 U	5.0 U	5 U	5 U	5 U	5 U
Acetone	38000	110000		14000	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	5.6	74	76	460 J	470	290 ^c	19	5 U	10 U	5.0 U	5 U	5 U	5 U	5 U
Acrylonitrile	0.72	3.7		0.052	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	40 U	20 U	20 U	20 U	40 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.46	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Bromochloromethane	90	90		83	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	2 U	1 U	1 U	1 U	2 U	1.0 U	1 UJ	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Bromoform	80	80		3.3	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	1 U	0.88 J	3.1	12	11	10	1 U	1 U	2 U	1.0 U	1 U	1 U ^c	1 U	1 U
Bromomethane	10	10		7.5	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	0.55 J	2 U	1 U	1 U	1 U	2 U	1.0 U	1 UJ	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U ^c	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	0.54 J	1.7	1.9 J	1.7	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	2 U	1 U	1 U	1 U	2 U	1.0 U	1 UJ	1 U	1 U	1 U
Chloroform	80	80		0.22	0.27 J	0.38 J	0.44 J	0.31 J	0.44 J	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Chloromethane	30	30		190	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	0.3 J	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	36	1.2	0.31 J	0.51 J	1 U	0.73 J	1 U	1 U	4.1	0.87 J	2.6	0.78 J	6.1	1 U	5.7	21	32	36	36	33	28	32	29	40	36	31	33	1 U	34
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Methylene chloride	5	5		11	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Styrene	100	100	100	1200	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	0.83 J	1.7	2.8	1.9	2.3	1.8	1.8	1 U	3	1.4	3.2	0.97 J	0.91 J	1.3	1.3	2.5	0.41 J	1 U	2 U	1 U	1.8	6	3.5	1.2	0.86 J	0.52 J	1 U	1 U
Toluene	1000	1000	1000	1100	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	0.91 J	0.58 J	1.8	1.6 J	1.5	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	1 U	1 U	2 U	1.0 U	1 U	1 U	1 U	1 U
Trichloroethene	5	5	5	0.49	35	26	31	28	56	53	41	11	6.3	14	4.9	15	10	12	6.7	9.9	1.4	1 U	2 U	1 U	1.4	47	19	5.6	3.5	2.7	1 U	1.9
Vinyl Chloride	2	2	2	0.019	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	2 U	1 U	1 U	1 U	2 U	1.0 U	1 UJ	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	190	3 U	3 U	3.0 U	3 U	2 U	2 U	2 U	3 U	3 U	3.0 U	3 U	2 U	2 U	2 U	3 U	3 U	3.0 U	3 U	4 U	2 U	2 U	3 U	6 U	3.0 U	3 U	2 U	2 U	2 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	CW-5 5/29/13	CW-5 9/16/13	CW-5 10/16/14	CW-5 10/7/15	CW-5 10/26/16	CW-5 10/24/17	CW-5 10/2/18	CW-6 5/30/13	CW-6 9/16/13	CW-6 10/16/14	CW-6 10/7/15	CW-6 10/26/16	CW-6 10/23/17	CW-6 10/2/18	CW-7 5/30/13	CW-7 9/16/13	CW-7 10/15/14	CW-7 10/7/15	CW-7 10/26/16	CW-7 10/24/17	CW-7 10/3/18	CW-7A 5/29/13	CW-7A 9/16/13	CW-7A 10/15/14	CW-7A 10/6/15	CW-7A Dup 10/6/15	CW-7A 10/26/16
TOTAL VOC																															
TOTAL VOC					8.5	14.9	36.7	24.9	65	52.4	22.9	170	77.73	47.5	71.5	92	74	96	5.7	2.1	2.53	2.87	2.67	1.77	11.73	84.2	165.8	99.4	142	132.5	94.6
Volatile Organic Compound																															
1,1,1,2-Tetrachloroethane	70	70		0.57	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,1,1-Trichloroethane	200	200	200	8000	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,1,2-Trichloroethane	5	5	5	0.28	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,1-Dichloroethane	31	160		2.8	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,1-Dichloroethene	7	7	7	280	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,2-Dichloroethane	5	5	5	0.17	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,2-Dichloropropane	5	5	5	0.85	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
1,4-Dioxane	6.4	32		0.46	200 U	200 U	200 U	200 U	200 U	R	R	1600 U	200 U	200 UJ	200 UJ	200 U	R	R	200 U	200 U	200 U	200 U	200 U	R	R	1000 U	1000 U	200 UJ	200 U	200 U	400 U ^c
2-Butanone	4000	4000		5600	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	40 U	5 U	5.0 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	25 U	25 U	5.0 UJ	5 U	5 U	10 U
2-Hexanone	63	260		38	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	40 U	5 U	5.0 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	25 U	25 U	5.0 UJ	5 U	5 U	10 U
4-Methyl-2-Pentanone	3300	9300		6300	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	40 U	5 U	5.0 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	25 U	25 U	5.0 UJ	5 U	5 U	10 U
Acetone	38000	110000		14000	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	40 U	14	5.0 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5 U	25 U	25 U	5.0 UJ	5 U	5 U	10 U
Acrylonitrile	0.72	3.7		0.052	20 U	20 U	20 U	20 U	20 U	20 U	20 U	160 U	20 U	20 UJ	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	100 U	100 U	20 UJ	20 U	20 U	40 U
Benzene	5	5	5	0.46	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Bromochloromethane	90	90		83	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Bromodichloromethane	80	80		0.13	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Bromoform	80	80		3.3	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	8 U	0.44 J	1.0 UJ	1 U	1 U ^c	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Bromomethane	10	10		7.5	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 UJ	1 UJ	2 U
Carbon Disulfide	1500	6200		810	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U ^c	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U ^c	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Carbon Tetrachloride	5	5	5	0.46	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Chlorobenzene	100	100	100	78	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Chlorodibromomethane	80	80		0.87	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Chloroethane	250	1200		21000	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 UJ	1 UJ	2 U
Chloroform	80	80		0.22	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1.4	1 U	0.92 J	0.83 J	0.91 J	0.67 J	0.93 J	5 U	5 U	1.2 J	1.4	1.3	1.1 J
Chloromethane	30	30		190	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	0.28 J	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
cis-1,2-Dichloroethene	70	70	70	36	1.9	2.1	4.5	4.6	12	12	6.3	32	19	20 J	24 J	35	28	41	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.5 J	3.7 J	2	2	1.9 J
cis-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Ethylbenzene	700	700	700	1.5	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Methyl tert-butyl ether	20	20		14	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Methylene chloride	5	5		11	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	1.8 J	5 U	1.0 UJ	1 U	1 U	2 U
Styrene	100	100	100	1200	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Tetrachloroethene	5	5	5	11	2.5	7.4	24	15	41	31	11	120	36	22 J	40 J	46	37	42	1 U	0.6 J	0.85 J	1	0.76 J	1.1	1	1.4 J	4.3 J	5.5 J	8.6	9.2	5.6
Toluene	1000	1000	1000	1100	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
trans-1,2-Dichloroethene	100	100	100	360	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	0.89 J	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
trans-1,3-Dichloropropene	7.3	34		0.47	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 U	1 U	2 U
Trichloroethene	5	5	5	0.49	4.1	5.4	8.2	5.3	12	9.4	5.6	18	7.4	5.5 J	7.5 J	11	9	13	4.3	1.5	0.76 J	0.76 J	1	1 U	9.8	81	160	89	130	120	86
Vinyl Chloride	2	2	2	0.019	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	8 U	1 U	1.0 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1 U	1 U	1 U	5 U	5 U	1.0 UJ	1 UJ	1 UJ	2 U
Xylenes (Total)	10000	10000	10000	190	3 U	3 U	3.0 U	3 U	2 U	2 U	2 U	24 U	3 U	3.0 UJ	3 U	2 U	2 U	2 U	3 U	3 U	3.0 U	3 U	2 U	2 U	2 U	15 U	15 U	3.0 UJ	3 U	3 U	4 U

Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-1
NPBA Groundwater Chemistry Data
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (µg/L)	PA MSC UA NR (µg/L)	Federal MCL (µg/L)	EPA RSL (µg/L)	CW-7A 10/27/17	CW-7A 10/2/18	RW-2 5/29/13	RW-2 9/10/13	RW-2 10/20/14	RW-2 9/16/15	RW-2 10/3/16	RW-2 10/17/17	RW-2 10/2/18	RW-4 Folk 5/30/13	RW-4 Folk 9/11/13	RW-4 Folk 10/24/14	RW-4 Folk 9/16/15	RW-4 Folk 10/1/16	RW-4 Folk 10/24/17	RW-4 Folk 10/2/18	TATE (S-6) 5/29/13	TATE (S-6) 9/11/13	TATE (S-6) 10/22/14	TATE (S-6) 10/2/15	TATE (S-6) 10/6/16	TATE (S-6) 10/26/17	TATE (S-6) 10/4/18
TOTAL VOC																											
TOTAL VOC					55.4	56.9	1.2	2.16	3.27	4.03	8.2	3.4	2.2	0.24	0.53	0	0.5	3.66	0	0	0.25	0.47	0	0.23	5.8	0	0.92
Volatile Organic Compound																											
1,1,1,2-Tetrachloroethane	70	70		0.57	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	8000	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.28	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.8	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	280	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.17	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.85	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.46	R	R	200 U	200 U	200 U	200 U	200 U	R	R	200 U	200 U	200 U	200 U	200 U	R	R	200 U	200 U	200 U	200 U	200 U	R	R
2-Butanone	4000	4000		5600	10 U	25 U	5 U	5 U	5.0 U	5.0 U	5.0 U ^c	5 U	5 U	5 U	5 U	5.0 U	5 UJ	5.0 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U ^c	5 U	5 U
2-Hexanone	63	260		38	10 U	25 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U
4-Methyl-2-Pentanone	3300	9300		6300	10 U	25 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Acetone	38000	110000		14000	10 U	25 U	5 U	5 U	5.0 U	5.0 U	4.5 J ^c	5 U	5 U	5 U	5 U	5.0 U	5 UJ	3.2 J ^c	5 U	5 U	5 U	5 U	5 U	5.0 U	5.8 ^c	5 U	5 U
Acrylonitrile	0.72	3.7		0.052	40 U	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U ^c	20 U	20 U
Benzene	5	5	5	0.46	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromochloromethane	90	90		83	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.13	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromoform	80	80		3.3	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
Bromomethane	10	10		7.5	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
Carbon Disulfide	1500	6200		810	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.46	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	78	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.87	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chloroethane	250	1200		21000	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
Chloroform	80	80		0.22	2 U	5 U	1 U	1 U	0.17 J	0.23 J	1.0 U	1 U	1 U	0.24 J	0.53 J	1.0 U	0.50 J	0.46 J	1 U	1 U	0.25 J	0.47 J	1 U	0.23 J	1 U	1 U	0.92 J
Chloromethane	30	30		190	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	1 U	1.0 U	1 UJ	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U ^c	1 UJ	1 U
cis-1,2-Dichloroethene	70	70	70	36	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	7.3	34		0.47	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		14	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Methylene chloride	5	5		11	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Styrene	100	100	100	1200	2 U	5 UJ	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	11	3.4	4.9 J	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Toluene	1000	1000	1000	1100	2 U	5 UJ	1 U	0.26 J	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	100	100	360	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	7.3	34		0.47	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U ^c	1 U	1 U
Trichloroethene	5	5	5	0.49	52	52	1.2	1.9	3.1	3.8	3.7	3.4	2.2	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Vinyl Chloride	2	2	2	0.019	2 U	5 U	1 U	1 U	1.0 U	1.0 U	1.0 U ^c *	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U ^c	1 U	1 U
Xylenes (Total)	10000	10000	10000	190	4 U	10 UJ	3 U	3 U	3.0 U	3.0 U	2.0 U	2 U	2 U	3 U	3 U	3.0 U	3.0 U	2.0 U	2 U	2 U	3 U	3 U	3 U	3.0 U	2 U	2 U	2 U

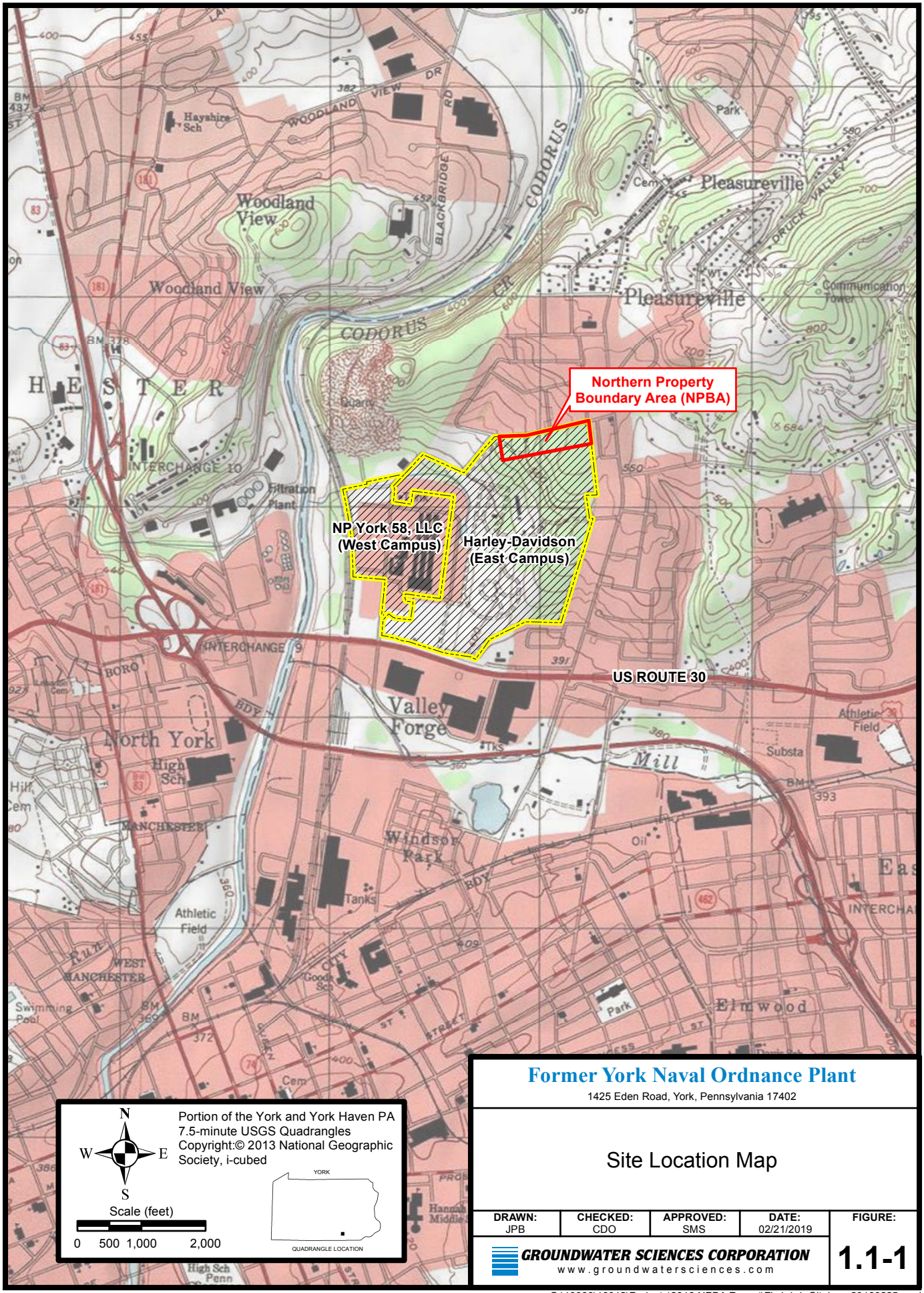
Notes:
J = Indicates an estimated value. This flag is used when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
U = Indicates sample was analyzed for, but not detected. Report with the detection limit value.
^c = CCV Recovery is outside acceptance limits.
R = Rejected.
PADEP Medium Specific Concentration (MSC); Used Aquifer (UA); Total Dissolved Solids (TDS) ≤ 2,500 µg/l; Residential.
PADEP MSC; UA; TDS ≤ 2,500 µg/l; Non-Residential (NR).
EPA Maximum Contaminant Level (MCL).
EPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=1) November 2018.

Table 2.2-2
NPBA Groundwater Chemistry Trends
Former York Naval Ordnance Plant - York, PA

On-Site NPBA Monitoring Locations (23)				Off-Site NPBA Monitoring Locations to the North (3)				On-Site NPBA Monitoring Locations to the Southwest (7)			
Location	TCE	PCE	cis12DCE	Location	TCE	PCE	cis12DCE	Location	TCE	PCE	cis12DCE
MW-9	Decreasing	No Trend*	No Trend*	RW-2	No Trend*	No Trend*	No Trend*	MW-3	No Trend	No Trend*	Increasing*
MW-11	No Trend*	Increasing*	No Trend*	RW-4 (Folk)	No Trend*	No Trend*	No Trend*	MW-82	Decreasing	No Trend*	Decreasing*
MW-12	Decreasing	No Trend	No Trend*	S-6 Tate	No Trend*	No Trend*	No Trend*	MW-77	No Trend*	No Trend*	No Trend*
MW-16D	No Trend	No Trend*	No Trend*					MW-102D	Decreasing	No Trend	No Trend*
MW-16S	No Trend	Decreasing	Decreasing*					MW-102S	No Trend	Increasing	No Trend
MW-18D	Decreasing	No Trend*	No Trend*					MW-103D	Decreasing	No Trend	No Trend*
MW-18S	No Trend	No Trend*	No Trend*					MW-103S	Decreasing	No Trend	No Trend*
MW-20D	No Trend*	No Trend*	No Trend*								
MW-20M	No Trend	No Trend*	No Trend*								
MW-20S	No Trend	No Trend	No Trend*								
MW-142D	No Trend*	No Trend*	Decreasing*								
MW-142S	No Trend*	No Trend*	Increasing*								
MW-143D	No Trend*	No Trend*	Increasing*								
MW-143S	Decreasing*	Decreasing*	No Trend*								
CW-1	Decreasing	No Trend*	Decreasing*								
CW-1A	No Trend	No Trend*	No Trend*								
CW-2	No Trend	No Trend*	No Trend*								
CW-3	No Trend	No Trend*	No Trend*								
CW-4	Decreasing	Decreasing*	No Trend*								
CW-5	No Trend	No Trend	Increasing*								
CW-6	Increasing	No Trend	Increasing*								
CW-7	No Trend	Increasing*	No Trend*								
CW-7A	Decreasing	No Trend	No Trend*								

Notes:
Trend analyses generated using ProUCL 5.1.002 (EPA) on the post-shutdown samples (September 2013 through October 2018).
All analyses run at 90% confidence interval (CI).
Non-detect values were input at 1/2 the detection limit.
No Trend - No statistically significant trend detected at a 90% CI.
Increasing - Statistically significant increasing trend detected at a 90% CI.
Decreasing - Statistically significant decreasing trend detected at a 90% CI.
* -All post-shutdown concentrations are below the PADEP Statewide Health Standard Medium Specific Concentration (MSC).

Figures



Former York Naval Ordnance Plant

1425 Eden Road, York, Pennsylvania 17402

Site Location Map

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	02/21/2019	1.1-1

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LEGEND

- Collection Well (Inactive)
- Monitoring Well
- Residential Well (Non-Potable)
- Spring
- Surface Water
- Abandoned Monitoring Well
- Abandoned Residential Well
- NP York 58, LLC Property Boundary (West Campus)
- Harley-Davidson Property Boundary (East Campus)
- CW-3 On-Site NPBA Sample Locations
- MW-82 On-Site Sample Locations to the Southwest of the NPBA
- RW-2 Off-Site Sample Locations to the North of the NPBA

N / W / E / S

Satellite imagery from Digital Globe, dated May 2018.

Scale (feet)

0 100 200 400

TATE (S-6) Staff Gauge
TATE (S-6)
RW-4 (Folk)
RW-3
RW-2
RW-1
PARADISE ROAD
CW-7
MW-20D
CW-7A
MW-20M
MW-20S
CW-1A
CW-1
CW-2
MW-9
MW-11
MW-10
CW-4
Herman (S-7)
MW-16S
MW-16D
CW-3
CW-5
CW-6
MW-18S
MW-18D
MW-12
EDEN ROAD
MW-142S
MW-142D
MW-82
MW-3
MW-143S
MW-143D
MW-70S
MW-70D
MW-78
MW-84
MW-4
MW-102S
MW-102D
JOHNSON 2
MW-71S
MW-71D
MW-19
MW-65S
MW-65D
MW-36S
MW-36D
MW-31S
MW-31D
MW-53
MW-52
MW-123
MW-104
MW-60
MW-120
MW-119
MW-118
MW-117
MW-77
MW-121
MW-122
MW-103S
MW-103D
MW-26
MW-125
MW-124
MW-83
MW-160
MW-86S
MW-86D
MW-17
MW-68
MW-27
JOHNSON 1
MW-131
MW-69
MW-114
MW-115
S-10

Former York Naval Ordnance Plant
1425 Eden Road, York, Pennsylvania 17402

Northern Property Boundary Area (NPBA) Monitoring Locations

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	02/21/2019	1.1-2

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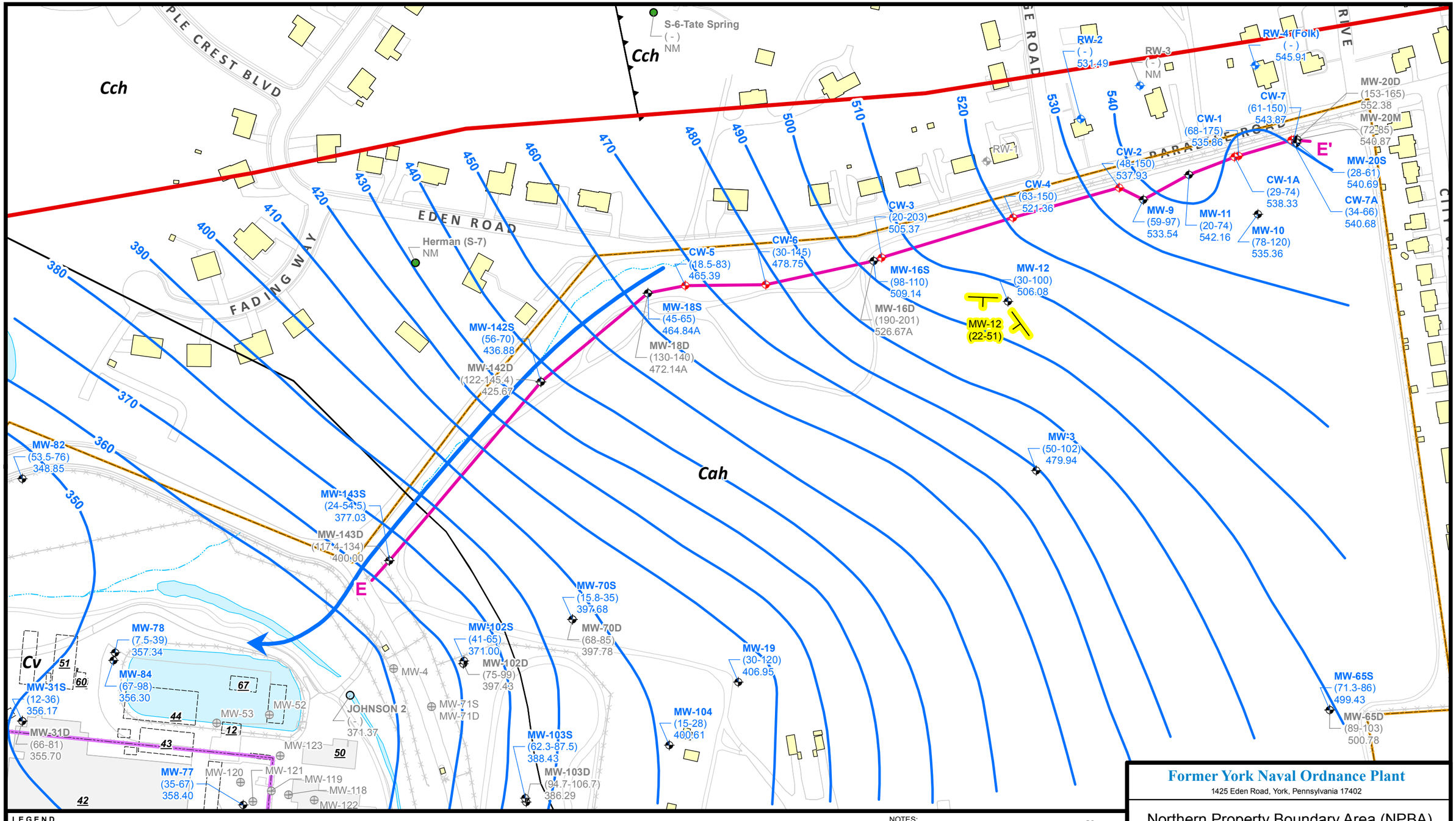

LEGEND

- Collection Well (Inactive)
- Monitoring Well
- Residential Well (Non-Potable)
- Spring
- Surface Water
- Abandoned Monitoring Well
- Abandoned Residential Well
- Strike and Dip (with Degree of Dip Angle)
- Groundwater Contour (Feet AMSL)
- Groundwater Flow Path (Isotropic Aquifer)
- Cross SectionTransect
- Block Fault
- Thrust Fault
- (Cah) Antietam & Harpers Formation, undiv.
- (Cch) Chickies Formation
- (Cv) Vintage Formation
- NP York 58, LLC Property Boundary (West Campus)
- Harley-Davidson Property Boundary (East Campus)
- Road, Curb or Walkway
- Fenceline
- Existing Water Feature
- Existing Stream

MW-20S (28-61) 540.69 Location ID, Screened or Open Interval (Feet BGS), Groundwater Elevation (Feet AMSL), Used in Contouring

MW-20M (72-85) 540.87 Location ID, Screened or Open Interval (Feet BGS), Groundwater Elevation (Feet AMSL), Not Used in Contouring

NOTES:
AMSL- Above mean sea level
BGS - Below Ground Surface
A - Artesian
NM - Groundwater Level Not Measured
Well screen intervals for RW-2 and RW-4 shown as (-) are unknown.
Water level at RW-4 (Folk) was measured on September 29,2018.

N W E S

Scale (feet)
0 87.5 175 350

Former York Naval Ordnance Plant

1425 Eden Road, York, Pennsylvania 17402

Northern Property Boundary Area (NPBA) Groundwater Elevation Contour Map September 27, 2018

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	02/21/2019	1.1-3

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E
West

E'
East

MW-20M
MW-20D
MW-20S
CW-7
CW-7A
CW-1
CW-1A
MW-9
MW-11
CW-2
CW-4
MW-16S
MW-16D
CW-3
CW-6
CW-5
MW-18S
MW-18D
MW-142S
MW-142D
MW-143S
MW-143D

MW-11 542.16
CW-1A 538.33
MW-20S 540.69
CW-7A 540.68
MW-20M 540.87
MW-9 533.54
CW-7 543.87
CW-2 537.93
CW-1 535.86
CW-4 521.36
MW-20D 552.38
MW-16S 509.14
CW-3 505.37
CW-6 478.75
CW-5 465.39
MW-18S 464.84 A
MW-142S 436.88
MW-18D 472.14 A
MW-16D 526.67 A
MW-142D 425.67
MW-143S 377.03
MW-143D 400.00

370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550

ELEVATION (FEET AMSL)

200
250
300
350
400
450
500
550

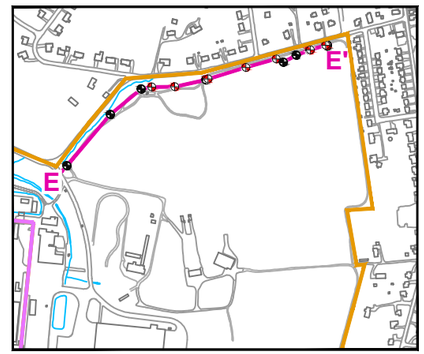
0
200
400
600
800
1000
1200
1400
1600
1800
2000

DISTANCE (FEET)

LEGEND

- Existing Grade
- Collection or Monitoring Well
- Screened Interval
- Inferred Stratigraphy
- MW-143S 377.03 — Piezometric Level on Sept. 27, 2018 (feet amsl) (A = Artesian Conditions) (NM = Not Measured)
- Groundwater Elevation (feet amsl) (Dashed Where Inferred)
- Vertical Gradient
- Overburden
- Limestone/Dolostone
- Sandstone/Quartzite

Approximate Horizontal Scale: 0 — 200'
Approximate Vertical Scale: 0 — 50'
Vertical Exaggeration 4X



Location Map
Scale: 1"=1000'

Former York Naval Ordnance Plant
1425 Eden Road, York, Pennsylvania 17402

Northern Property Boundary Area (NPBA)
Cross Section E-E'
Piezometric Levels on September 27, 2018

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	4/3/2019	2.1-1

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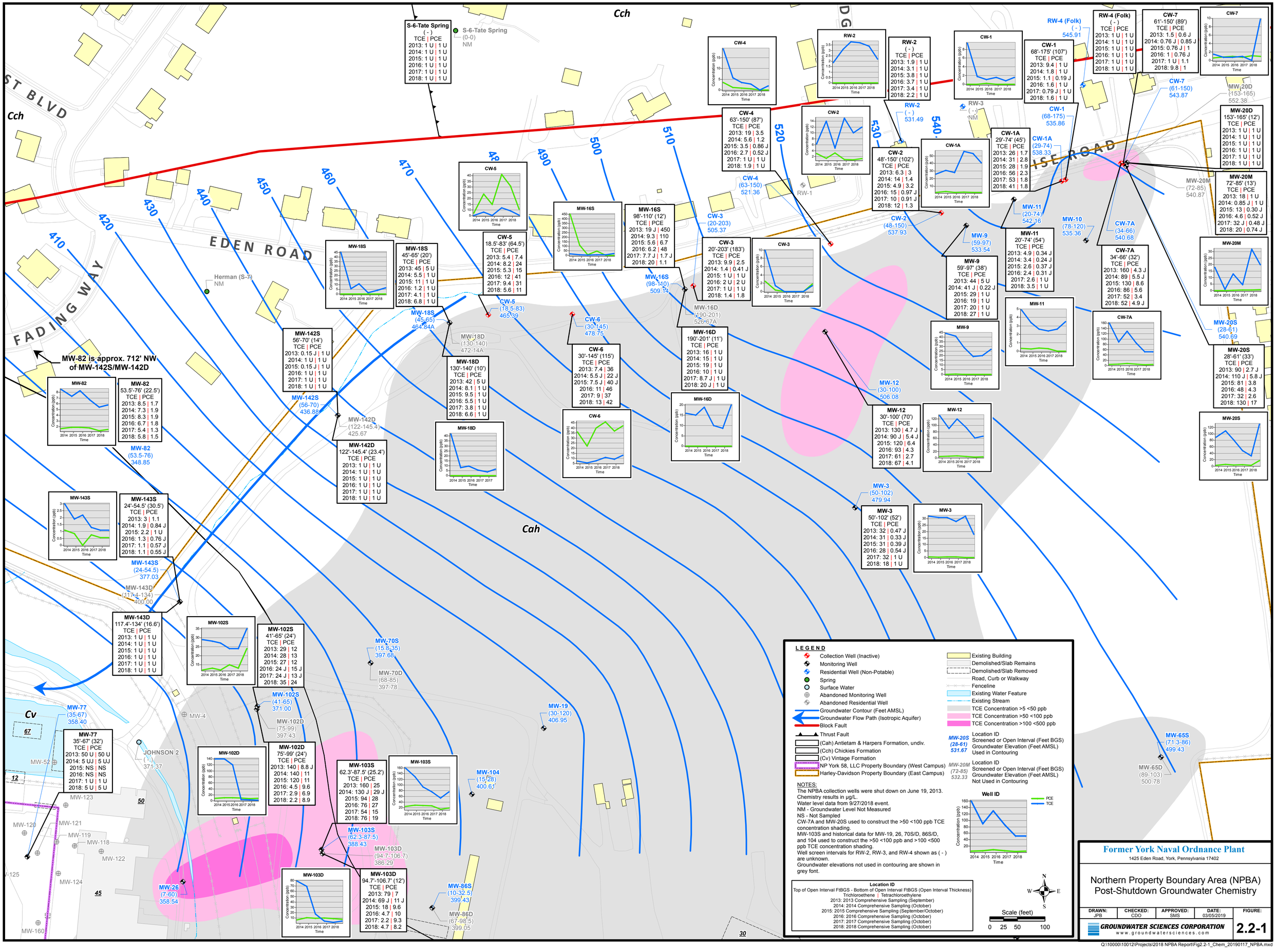

LEGEND

- Collection Well (Inactive)
- Monitoring Well
- Residential Well (Non-Potable)
- Spring
- Surface Water
- Abandoned Monitoring Well
- Abandoned Residential Well
- Groundwater Contour (Feet AMSL)
- Groundwater Flow Path (Isotropic Aquifer)
- Block Fault
- Thrust Fault
- (Cah) Antietam & Harpers Formation, undiv.
- (Cch) Chickies Formation
- (Cv) Vintage Formation
- NP York 58, LLC Property Boundary (West Campus)
- Harley-Davidson Property Boundary (East Campus)
- Existing Building
- Demolished/Slab Remains
- Demolished/Slab Removed
- Road, Curb or Walkway
- Fenceline
- Existing Water Feature
- Existing Stream
- TCE Concentration >5 <50 ppb
- TCE Concentration >50 <100 ppb
- TCE Concentration >100 <500 ppb

MW-20S (28-61) 531.67 — Location ID, Screened or Open Interval (Feet BGS), Groundwater Elevation (Feet AMSL), Used in Contouring

MW-20M (72-85) 532.33 — Location ID, Screened or Open Interval (Feet BGS), Groundwater Elevation (Feet AMSL), Not Used in Contouring

Well ID

NOTES:
The NPBA collection wells were shut down on June 19, 2013.
Chemistry results in µg/L.
Water level data from 9/27/2018 event.
NM - Groundwater Level Not Measured
NS - Not Sampled
CW-7A and MW-20S used to construct the >50 <100 ppb TCE concentration shading.
MW-103S and historical data for MW-19, 26, 70S/D, 86S/D, and 104 used to construct the >50 <100 ppb and >100 <500 ppb TCE concentration shading.
Well screen intervals for RW-2, RW-3, and RW-4 shown as (-) are unknown.
Groundwater elevations not used in contouring are shown in grey font.

Location ID
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene | Tetrachloroethylene
2013: 2013 Comprehensive Sampling (September)
2014: 2014 Comprehensive Sampling (October)
2015: 2015 Comprehensive Sampling (September/October)
2016: 2016 Comprehensive Sampling (October)
2017: 2017 Comprehensive Sampling (October)
2018: 2018 Comprehensive Sampling (October)

N W E S

Scale (feet)
0 25 50 100

Former York Naval Ordnance Plant
1425 Eden Road, York, Pennsylvania 17402

Northern Property Boundary Area (NPBA) Post-Shutdown Groundwater Chemistry

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	03/05/2019	2.2-1

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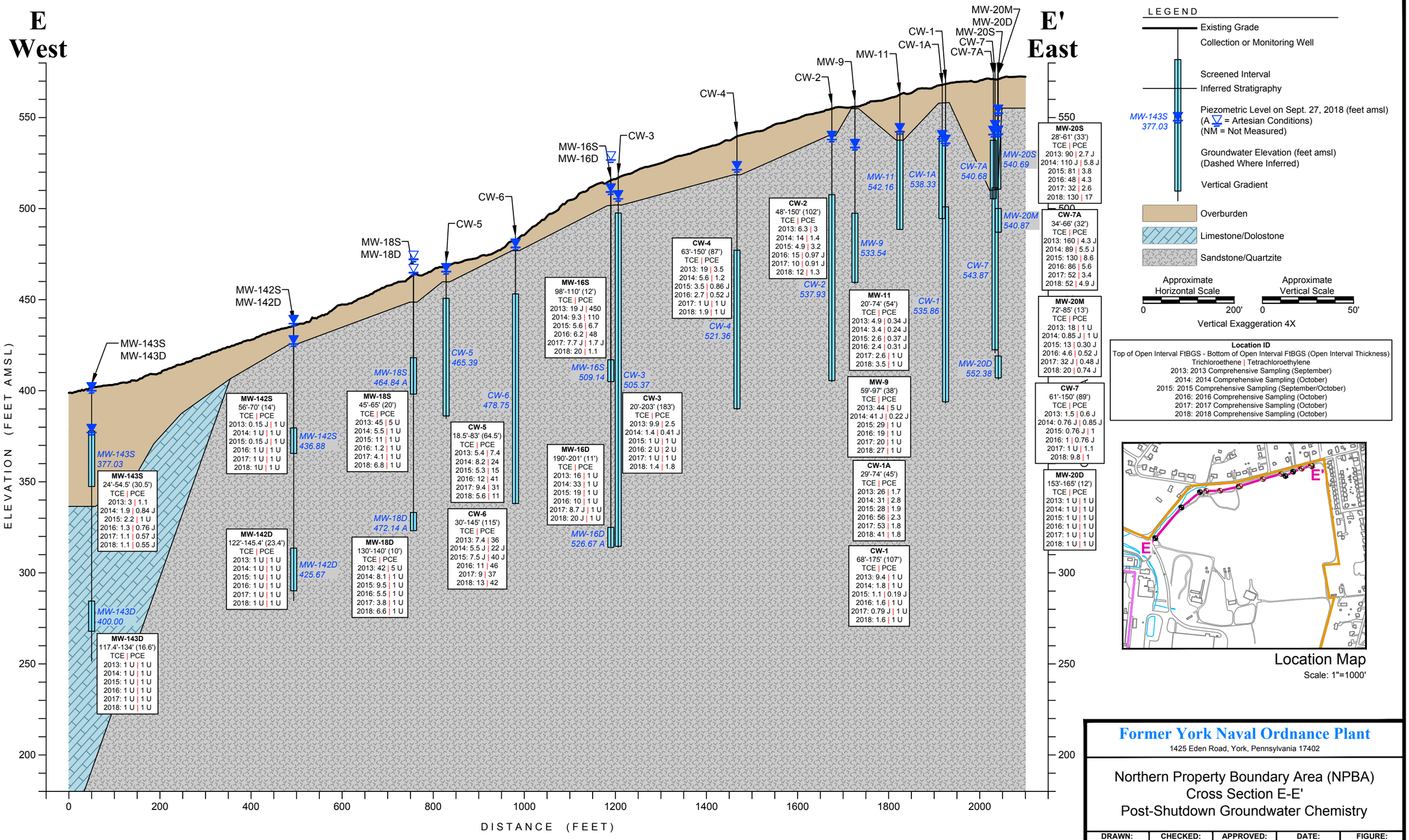
E West — E' East



LEGEND

- Existing Grade
- Collection or Monitoring Well
- Screened Interval
- Inferred Stratigraphy
- Piezometric Level on Sept. 27, 2018 (feet amsl) (A = Artesian Conditions) (NM = Not Measured)
- Groundwater Elevation (feet amsl) (Dashed Where Inferred)
- Vertical Gradient
- Overburden
- Limestone/Dolostone
- Sandstone/Quartzite

MW-143S 377.03

Approximate Horizontal Scale: 0 — 200'

Approximate Vertical Scale: 0 — 50'

Vertical Exaggeration 4X

Location ID
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene | Tetrachloroethylene
2013: 2013 Comprehensive Sampling (September)
2014: 2014 Comprehensive Sampling (October)
2015: 2015 Comprehensive Sampling (September/October)
2016: 2016 Comprehensive Sampling (October)
2017: 2017 Comprehensive Sampling (October)
2018: 2018 Comprehensive Sampling (October)

Location Map
Scale: 1"=1000'

Former York Naval Ordnance Plant
1425 Eden Road, York, Pennsylvania 17402

Northern Property Boundary Area (NPBA)
Cross Section E-E'
Post-Shutdown Groundwater Chemistry

DRAWN:	CHECKED:	APPROVED:	DATE:	FIGURE:
JPB	CDO	SMS	4/3/2019	2.2-2

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Figure 2.2-3
NPBA Post-Shutdown Water Level Elevations
Versus TCE and PCE Concentrations for MW-20S
Former York Naval Ordnance Plant

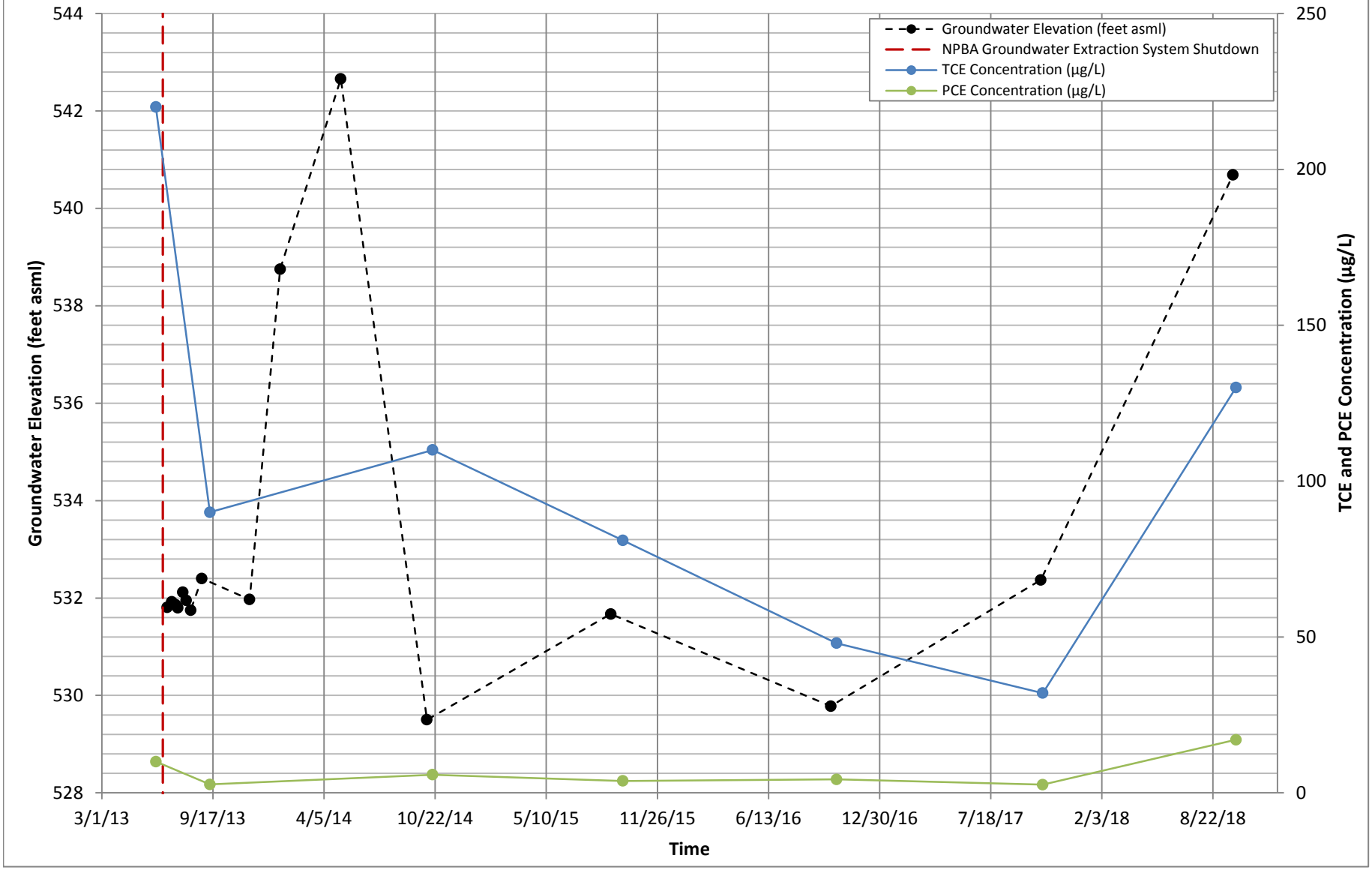

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Figure 2.2-4
NPBA Post-Shutdown Water Level Elevations
Versus TCE and PCE Concentrations for CW-7
Former York Naval Ordnance Plant

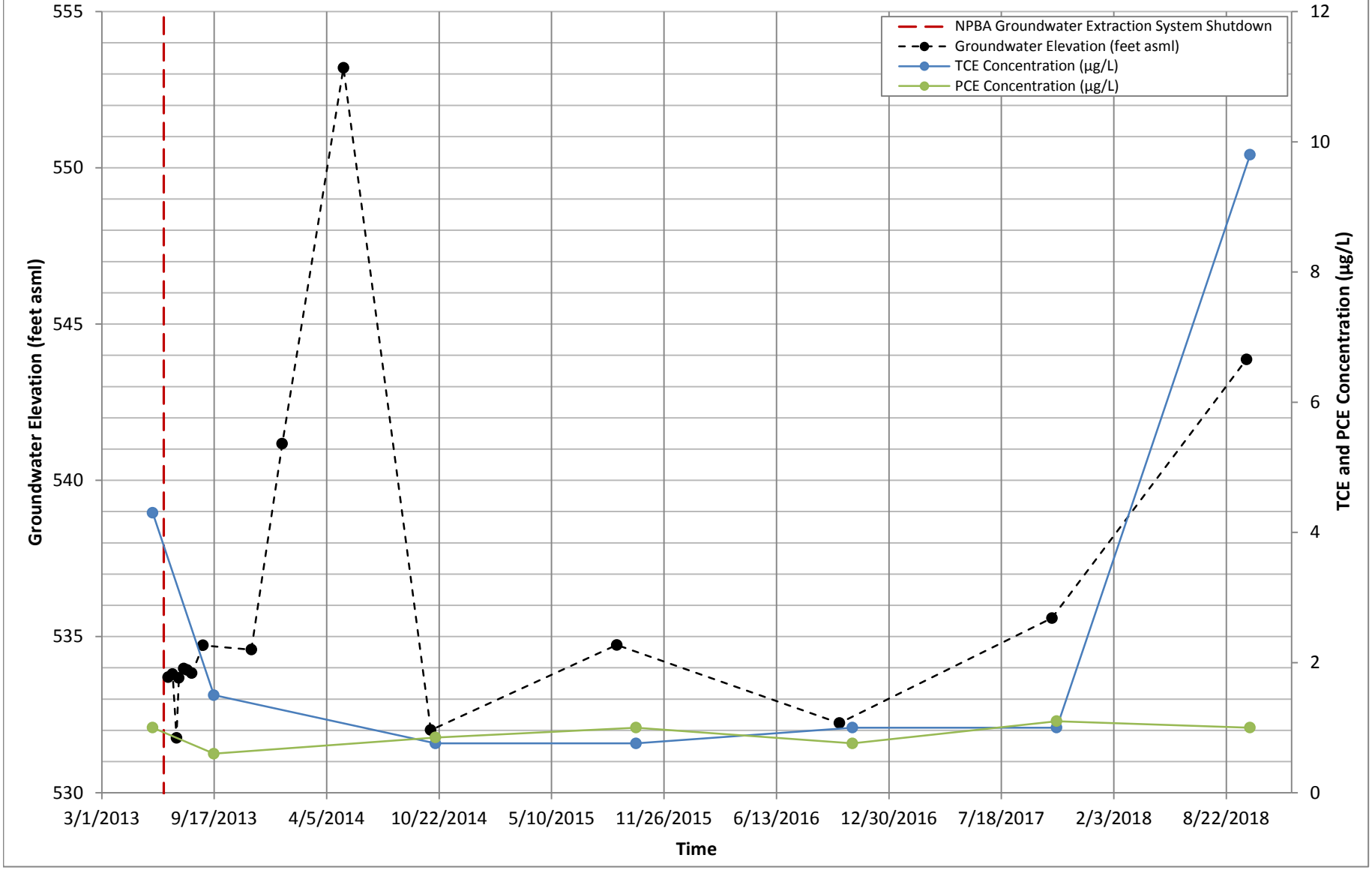

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Figure 2.2-5
NPBA Post-Shutdown Water Level Elevations Versus COC Concentrations for On-Site Well MW-102S Located to the Southwest (Downgradient) of the NPBA Former York Naval Ordnance Plant

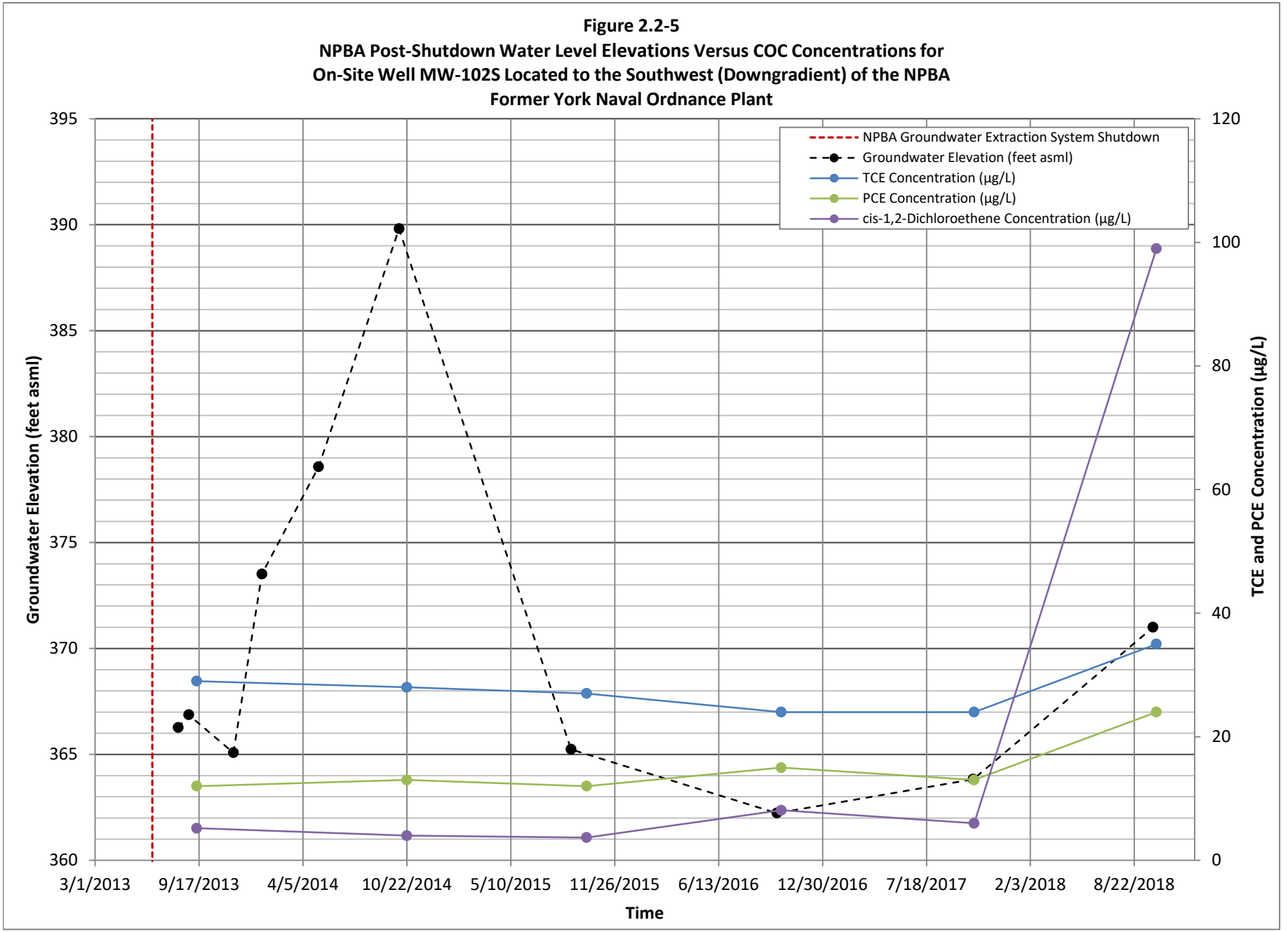

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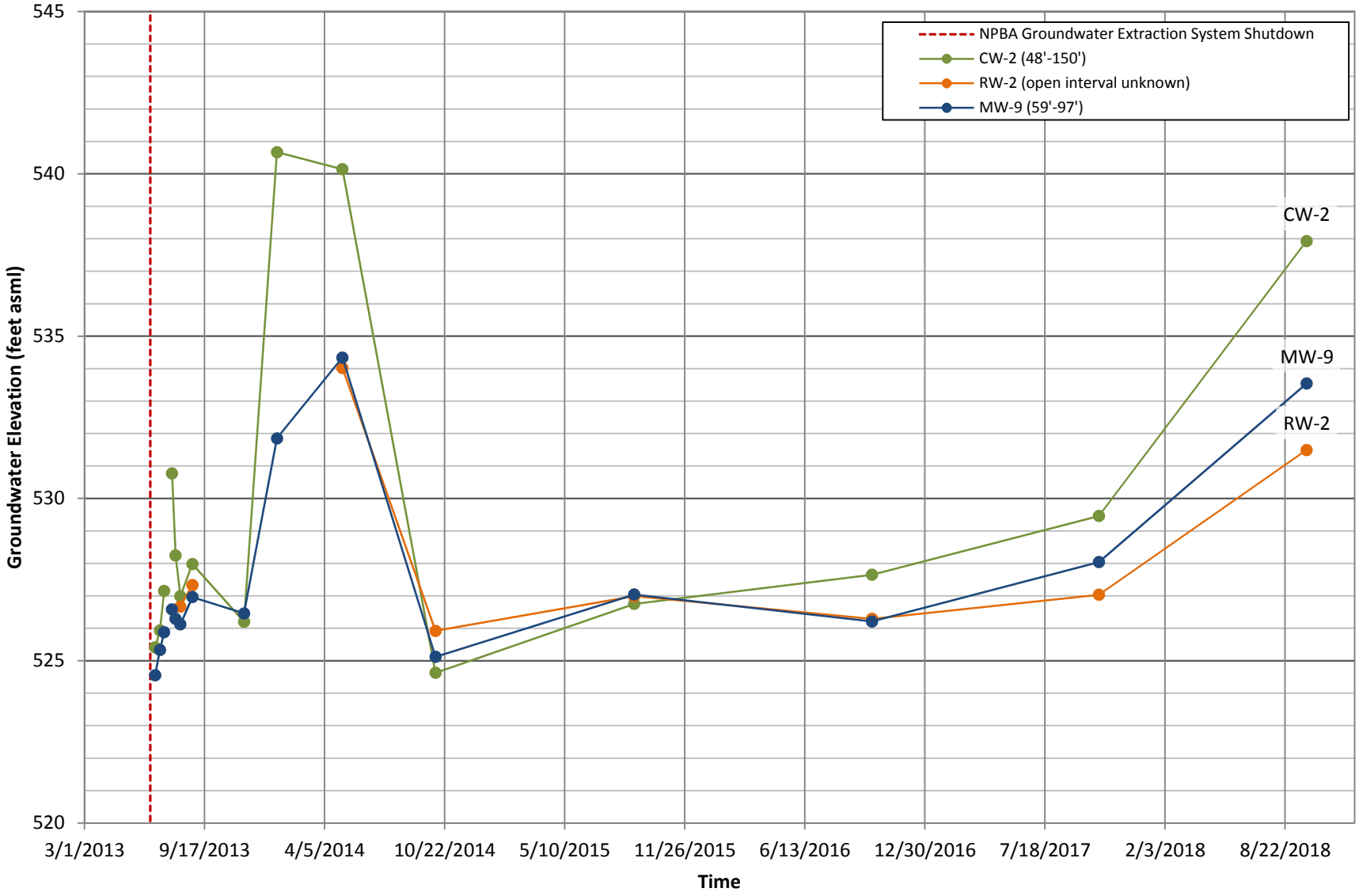
Figure 2.3-1
NPBA Post-Shutdown Water Level Elevations for
Off-Site Residential Supply Well RW-2 and On-Site Wells CW-2 and MW-9
Former York Naval Ordnance Plant



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Appendix A

Groundwater Sample Purge Logs

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-1
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 225
Pump Set Depth (Ft BGS) : 114.5
Total Depth of Well (Ft BGS): 175
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/2/2018
Unit ID:
Sample Time: 8:00
Duplicate ID:
Sample ID: HD-CW-1-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	8:00	19.13	5.14	148	0.244	4.82	0.01	326				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-1A
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/1/2018
Pump ID: mega monsoon 82775
Purged By: Dave Baldwin
Water Quality Inst: horiba u-50
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 82419
Purge Method: Positive Displacement
Total Purge Vol (gal) 12.85
Pump Set Depth (Ft BGS) : 73
Total Depth of Well (Ft BGS): 75
Initial Depth to Water (Ft BGS): 29.02

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/1/2018
Unit ID: mega monsoon 82775
Sample Time: 15:10
Duplicate ID:
Sample ID: HD-CW-1A-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/1/2018	13:50	16.97	5.38	0	0.974	7.3	0	278	0.13		28.8	
10/1/2018	14:00	15.73	5.41	0	1	6.35	0	240	0.13	0.65	29.72	
10/1/2018	14:05	16.17	5.19	0	0.968	5.55	0	280	0.21	0.65	31.05	
10/1/2018	14:10	15.83	5.12	0	0.953	5.73	0	291	0.21	1.05	31.11	
10/1/2018	14:15	16.55	5.11	0	0.941	5.01	0	296	0.21	1.05	31.02	
10/1/2018	14:20	16.24	5.09	0	0.929	5.52	0	301	0.21	1.05	31.04	
10/1/2018	14:25	16.26	5.09	0	0.925	5.6	0	303	0.21	1.05	31.18	
10/1/2018	14:30	16.12	5.32	0	0.914	5.32	0	295	0.21	1.05	31.25	
10/1/2018	14:35	15.79	5.34	0	0.911	5.72	0	297	0.21	1.05	31.45	
10/1/2018	14:40	15.83	5.37	0	0.904	5.62	0	301	0.21	1.05	31.75	
10/1/2018	14:45	15.75	5.34	0	0.902	5.72	0	302	0.21	1.05	31.9	
10/1/2018	14:50	15.71	5.36	0	0.899	5.6	0	303	0.21	1.05	32.15	
10/1/2018	14:55	15.49	5.37	0	0.899	5.75	0	304	0.21	1.05	32.12	
10/1/2018	15:00	15.81	5.38	0	0.898	5.65	0	303	0.21	1.05	32.15	
10/1/2018	15:05	15.81	5.39	0	0.895	5.66	0	304	0.21		32.15	
10/1/2018	15:10											sample

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-2
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 276
Pump Set Depth (Ft BGS) : 94
Total Depth of Well (Ft BGS): 150
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/3/2018
Unit ID:
Sample Time: 6:30
Duplicate ID:
Sample ID: HD-CW-2-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	6:30	19.28	5.78	0	0.774	8.94	0.04	361				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-3
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 295
Pump Set Depth (Ft BGS) : 109.5
Total Depth of Well (Ft BGS): 203
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/3/2018
Unit ID:
Sample Time: 9:10
Duplicate ID:
Sample ID: HD-CW-3-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	9:10	15.24	3.52	0	0.413	8.35	0.02	238				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-4
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 346
Pump Set Depth (Ft BGS) : 100
Total Depth of Well (Ft BGS): 150
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/2/2018
Unit ID:
Sample Time: 7:22
Duplicate ID:
Sample ID: HD-CW-4-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	7:22	9.42	5.14	169	0.504	7.92	0.02	273				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-5
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 150
Pump Set Depth (Ft BGS) : 66.8
Total Depth of Well (Ft BGS): 83
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/2/2018
Unit ID:
Sample Time: 10:10
Duplicate ID:
Sample ID: HD-CW-5-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	10:10	18.85	4.06	93.9	0.311	6.5	0.01	357				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-6
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 347
Pump Set Depth (Ft BGS) : 92
Total Depth of Well (Ft BGS): 145
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/2/2018
Unit ID:
Sample Time: 10:16
Duplicate ID:
Sample ID: HD-CW-6-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	10:16	17.57	4.05	78.5	0.414	8.86	0.02	332				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-7
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Treatment System Dedicated Pump
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 370
Pump Set Depth (Ft BGS) : 97
Total Depth of Well (Ft BGS): 150
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/3/2018
Unit ID:
Sample Time: 6:37
Duplicate ID:
Sample ID: HD-CW-7-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purging, but were collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	6:37	19.28	5	5	0.185	9.96	0.01	405				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: CW-7A
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Grab
Purged By: Scott Linn
Water Quality Inst: Horiba U-52
Purge Technique: 3 Well Volumes
Water Quality Inst ID: HTG Horiba U-52
Purge Method: Treatment System Pump
Total Purge Vol (gal) 102
Pump Set Depth (Ft BGS) : 62.9
Total Depth of Well (Ft BGS): 66
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Scott Linn
Sampled Method: Treatment System Pump
Sample Date: 10/2/2018
Unit ID:
Sample Time: 7:09
Duplicate ID:
Sample ID: HD-CW-7A-0/1-0
MS/MSD ID:

Notes: Purged and sampled by Scott Linn and Bobby Lewis (HTG)
Water levels were not collected prior to purge, but collected during the site wide water level event.
Sample collected from the NPBA building piping manifold.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	7:09	20.18	5	294	0.62	9.26	0.03	349				

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: FOLK (RW-4)
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Residental
Purged By: Casey Littlefield
Water Quality Inst: Horiba U-50
Purge Technique:
Water Quality Inst ID: 82916
Purge Method: Positive Displacement
Total Purge Vol (gal)
Pump Set Depth (Ft BGS) :
Total Depth of Well (Ft BGS):
Initial Depth to Water (Ft BGS):

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: Residental Well
Sample Time: 9:15
Duplicate ID:
Sample ID: HD-FOLK (RW-4)-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	8:45	15.91	4.93	3.1	0.213	5.92	0	223	1.32	6.6		
10/2/2018	8:50	14.39	4.9	2.5	0.213	5.69	0	226	1.32	6.6		
10/2/2018	8:55	14.12	4.9	1.5	0.212	4.72	0	230	1	6.6		Water pressure flux due to pump kicking on.
10/2/2018	9:00	14.05	4.83	1	0.213	4.27	0	235	1	5		
10/2/2018	9:05	14.02	4.88	2.9	0.211	4.06	0	235	1	5		
10/2/2018	9:10	14.01	4.91	6.6	0.209	4.02	0	234	1	5		

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-102D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba U-50
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 13.4
Pump Set Depth (Ft BGS) : 87
Total Depth of Well (Ft BGS): 99
Initial Depth to Water (Ft BGS): 7.22

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Grundfos 83037
Sample Time: 12:50
Duplicate ID:
Sample ID: HD-MW-102D-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	12:08	16.07	7.53	2.8	0.256	0.84	0	-67	0.57		7.63	
10/3/2018	12:13	15.26	6.57	134	0.264	0	0	-28	0.4	2.85	8.2	
10/3/2018	12:18	15.92	6.24	77.2	0.265	0	0	29	0.28	2	8.37	
10/3/2018	12:23	15.65	6	39.2	0.268	0	0	36	0.3	1.4	8.47	
10/3/2018	12:28	15.59	5.99	22.1	0.266	0	0	26	0.33	1.5	9.1	
10/3/2018	12:33	15.46	5.93	18.7	0.267	0	0	31	0.3	1.65	9.19	
10/3/2018	12:38	15.99	5.91	17	0.265	0	0	32	0.25	1.5	9.18	
10/3/2018	12:43	16.18	5.86	15.3	0.266	0	0	37	0.25	1.25	9.15	
10/3/2018	12:48	16.21	5.83	14.5	0.266	0	0	41	0.25	1.25	9.13	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-102S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba 82910
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: Horiba 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 13.4
Pump Set Depth (Ft BGS) : 53
Total Depth of Well (Ft BGS): 65
Initial Depth to Water (Ft BGS): 30.93

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Grundfos 83037
Sample Time: 13:50
Duplicate ID:
Sample ID: HD-MW-102S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	13:10	15.6	4.65	-5	0.203	2.36	0	145	0.5		31.82	
10/3/2018	13:15	15.47	4.23	1000	0.205	2.12	0	173	0.5	2.5	31.91	
10/3/2018	13:20	15.98	4.04	698	0.207	1.59	0	199	0.28	2.5	31.69	
10/3/2018	13:25	16	3.96	133	0.208	1.55	0	215	0.28	1.4	31.71	
10/3/2018	13:30	15.96	3.93	31.8	0.207	1.59	0	221	0.28	1.4	31.75	
10/3/2018	13:35	16.04	3.86	3.2	0.207	1.48	0	233	0.28	1.4	31.77	
10/3/2018	13:40	15.84	3.81	2.2	0.206	1.48	0	240	0.28	1.4	31.78	
10/3/2018	13:45	15.94	3.77	0.8	0.206	1.45	0	248	0.28	1.4	31.78	
10/3/2018	13:50	15.95	3.74	0.2	0.205	1.46	0	253	0.28	1.4	31.78	Sample

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-103D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba U-50
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 10.8
Pump Set Depth (Ft BGS) : 99
Total Depth of Well (Ft BGS): 111
Initial Depth to Water (Ft BGS): 15.42

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Grundfos 83037
Sample Time: 10:55
Duplicate ID:
Sample ID: HD-MW-103D-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	10:18	17.29	6.18	8.9	0.328	4.31	0	115	0.33		15.6	
10/3/2018	10:23	14.94	9.26	16.5	0.38	2.46	0	76	0.33	1.65	16.31	
10/3/2018	10:28	14.97	7.73	10.8	0.415	3.21	0	128	0.3	1.65	16.5	
10/3/2018	10:33	15	6.92	5.3	0.415	3.24	0	158	0.3	1.5	16.6	
10/3/2018	10:38	15.01	6.65	3.2	0.416	3.33	0	169	0.3	1.5	16.65	
10/3/2018	10:43	15.03	6.58	2.5	0.416	3.33	0	170	0.3	1.5	16.67	
10/3/2018	10:48	15.04	6.51	1.8	0.416	3.36	0	170	0.3	1.5	16.68	
10/3/2018	10:53	15.03	6.54	1.6	0.416	3.33	0	167	0.3	1.5	16.67	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-103S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba U50
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 10.05
Pump Set Depth (Ft BGS) : 79
Total Depth of Well (Ft BGS): 91
Initial Depth to Water (Ft BGS): 13.37

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Grundfos 83037
Sample Time: 10:00
Duplicate ID:
Sample ID: HD-MW-103S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	9:25	15.75	5.14	-5	0.211	5.81	0	204	0.33		14.54	
10/3/2018	9:30	16.38	5.16	392	0.232	4.83	0	205	0.28	1.65	16.38	
10/3/2018	9:35	15.42	5.47	34.9	0.304	4.94	0	202	0.3	1.4	17.1	
10/3/2018	9:40	15.45	5.52	8.9	0.311	4.77	0	204	0.28	1.5	17.3	
10/3/2018	9:45	15.47	5.53	5.4	0.312	4.68	0	206	0.28	1.4	17.34	
10/3/2018	9:50	15.44	5.54	2.7	0.313	4.61	0	206	0.28	1.4	17.36	
10/3/2018	9:55	15.44	5.55	1.2	0.314	4.58	0	207	0.26	1.4	17.36	
10/3/2018	10:00	15.47	5.56	0.8	0.313	4.59	0	207	0.26	1.3	17.35	Sample

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-11
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 29.4
Pump Set Depth (Ft BGS) : 72
Total Depth of Well (Ft BGS): 74
Initial Depth to Water (Ft BGS): 19.56

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/3/2018
Unit ID:
Sample Time: 8:35
Duplicate ID:
Sample ID: HD-MW-11-0/1-0
MS/MSD ID:

Notes: RWL = 21.31

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	10:58											Start Purge
10/2/2018	11:03	14.04	5.94	19	1.65	8.25	0	294	0.24	1.2	23.84	
10/2/2018	11:08	14.18	5.93	19.8	1.63	7.19	0	304	0.21	1.05	26.17	
10/2/2018	11:13	14.16	5.9	39.9	1.49	7.02	0	307	0.17	0.85	27.37	
10/2/2018	11:18	14.02	5.89	26.3	1.46	7.16	0	311	0.26	1.3	28.57	
10/2/2018	11:21	13.98	5.91	18.7	1.48	6.86	0	312	0.22	1.1	30.27	
10/2/2018	11:26	13.83	5.9	20.6	1.49	6.56	0	312	0.26	1.3	31.76	
10/2/2018	11:31	13.76	5.96	21.1	1.49	6.55	0	312	0.26	1.3	32.94	
10/2/2018	11:36	13.74	5.89	23.6	1.58	6.49	0	312	0.26	1.3	34.67	
10/2/2018	11:41	13.78	5.89	32.2	1.68	6.44	0	313	0.26	1.3	36.4	
10/2/2018	11:46	13.82	5.87	33.7	1.87	6.28	0	313	0.26	1.3	37.68	
10/2/2018	11:51	13.85	5.84	19.4	1.39	6.71	0	309	0.26	1.3	39.49	
10/2/2018	11:56	13.95	5.87	20.6	1.5	6.42	0	308	0.26	1.3	41.42	
10/2/2018	12:01	13.91	5.84	22.3	1.51	6.4	0	309	0.26	1.3	43.45	
10/2/2018	12:06	14	5.84	25.2	1.54	6.46	0	309	0.26	1.3	45.47	
10/2/2018	12:11	14.02	5.85	33.2	1.57	6.54	0	308	0.26	1.3	46.45	
10/2/2018	12:16	14.02	5.84	24.9	1.58	6.49	0	309	0.26	1.3	48.6	
10/2/2018	12:21	14.1	5.83	61.3	1.62	6.56	0	308	0.26	1.3	49.89	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-11
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 29.4
Pump Set Depth (Ft BGS) : 72
Total Depth of Well (Ft BGS): 74
Initial Depth to Water (Ft BGS): 19.56

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/3/2018
Unit ID:
Sample Time: 8:35
Duplicate ID:
Sample ID: HD-MW-11-0/1-0
MS/MSD ID:

Notes: RWL = 21.31

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	12:26	14.17	5.83	64.1	1.63	6.55	0	305	0.26	1.3	53.44	
10/2/2018	12:31	14.17	5.83	66	1.63	6.38	0	305	0.26	1.3	56.58	
10/2/2018	12:36	14.24	5.82	92	1.64	6.22	0	304	0.24	1.2	60.38	
10/2/2018	12:41	14.41	5.83	51.5	1.64	5.86	0	299	0.22	1.1	63.38	
10/2/2018	12:46	14.7	5.89	33.6	1.62	3.69	0	289	0.44	2.2	65.8	
10/2/2018	12:51	14.77	5.92	51.7	1.63	4.08	0	286	0.24	1.2	68.72	
10/2/2018	12:53											Well Cavitated

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-12
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 106.95
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 100
Initial Depth to Water (Ft BGS): 29.35

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/3/2018
Unit ID:
Sample Time: 8:41
Duplicate ID:
Sample ID: HD-MW-12-0/1-0
MS/MSD ID:

Notes: RWL = 59.29

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	13:40											Start Purge
10/2/2018	13:45	13.19	7.17	6.3	0.293	3.08	0	-27	0.44	2.2	31.3	
10/2/2018	13:50	13.3	7.24	15	0.292	0	0	-34	0.61	3.05	33.65	
10/2/2018	13:55	13.33	7.25	13.8	0.292	0	0	-33	0.4	2	36.27	
10/2/2018	14:00	13.54	7.24	12.1	0.291	0	0	-36	0.44	2.2	37.3	
10/2/2018	14:05	13.45	7.25	10.9	0.29	0	0	-38	0.4	2	38.02	
10/2/2018	14:10	13.24	7.26	16.5	0.288	0	0	-39	0.57	2.85	39.41	
10/2/2018	14:15	13.17	7.26	15.5	0.285	0	0	-42	0.66	3.3	41.44	
10/2/2018	14:20	13.28	7.23	12.8	0.279	0	0	-45	0.66	3.3	43.92	
10/2/2018	14:25	13.19	7.26	14.4	0.276	0	0	-48	0.72	3.6	45.29	
10/2/2018	14:30	13.12	7.27	12	0.271	0	0	-52	0.61	3.05	47.98	
10/2/2018	14:35	13.23	7.27	12.1	0.266	0	0	-54	0.61	3.05	49.4	
10/2/2018	14:40	13.47	7.28	13.6	0.258	0	0	-58	0.57	2.85	51.98	
10/2/2018	14:45	13.25	7.28	13.1	0.254	0	0	-61	0.68	3.4	53.65	
10/2/2018	14:50	13.39	7.3	15.9	0.249	0	0	-65	0.66	3.3	54.96	
10/2/2018	14:55	13.26	7.31	15.6	0.248	0	0	-67	0.79	3.95	57.43	
10/2/2018	15:00	13.29	7.31	15.8	0.243	0	0	-71	0.79	3.95	60.42	
10/2/2018	15:05	13.38	7.32	15.4	0.239	0	0	-75	0.79	3.95	62.96	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-12
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 106.95
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 100
Initial Depth to Water (Ft BGS): 29.35

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/3/2018
Unit ID:
Sample Time: 8:41
Duplicate ID:
Sample ID: HD-MW-12-0/1-0
MS/MSD ID:

Notes: RWL = 59.29

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	15:10	13.41	7.34	17.4	0.237	0	0	-79	0.72	3.6	65.42	
10/2/2018	15:15	13.4	7.36	21.2	0.237	0	0	-82	0.79	3.95	67.88	
10/2/2018	15:20	13.52	7.37	19.1	0.237	0	0	-85	0.79	3.95	70.93	
10/2/2018	15:25	13.42	7.4	20.8	0.237	0	0	-88	0.79	3.95	73.62	
10/2/2018	15:30	13.53	7.42	16.1	0.236	0	0	-89	0.79	3.95	77.8	
10/2/2018	15:35	13.55	7.45	14.9	0.235	0	0	-88	0.79	3.95	79.22	
10/2/2018	15:40	13.62	7.45	15.2	0.234	0	0	-86	0.79	3.95	81.8	
10/2/2018	15:45	13.68	7.46	15.8	0.232	0	0	-81	0.79	3.95	84.68	
10/2/2018	15:50	13.64	7.46	16.8	0.231	0	0	-78	0.79	3.95	86.85	
10/2/2018	15:55	13.7	7.44	14.6	0.229	0	0	-75	0.79	3.95	89.78	
10/2/2018	16:00	13.58	7.44	15.3	0.227	0	0	-72	0.79	3.95	92.54	
10/2/2018	16:05	13.76	7.44	14.3	0.225	0	0	-70	0.79	3.95	94.65	
10/2/2018	16:10	13.84	7.42	18.8	0.208	0	0	-48	0.79	3.95	97.12	
10/2/2018	16:15					0	0		0.79	3.95		

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-142D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 17.35
Pump Set Depth (Ft BGS) : 135
Total Depth of Well (Ft BGS): 151
Initial Depth to Water (Ft BGS): 10.45

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Mega Monsoon 82660
Sample Time: 13:58
Duplicate ID:
Sample ID: HD-MW-142D-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	12:23											Start Purge
10/3/2018	12:28	14.34	5.39	1.7	0.331	0	0	66	0.36	1.8	25.11	
10/3/2018	12:33	14.42	5.49	2.2	0.33	0	0	60	0.15	0.75	32.67	
10/3/2018	12:38	14.64	5.66	2.6	0.329	0	0	57	0.14	0.7	36.67	
10/3/2018	12:43	14.92	5.82	2.7	0.33	0	0	56	0.14	0.7	38.7	
10/3/2018	12:48	14.49	5.88	3	0.33	0	0	56	0.23	1.15	42.94	
10/3/2018	12:53	14.83	6.06	2.3	0.329	0	0	56	0.18	0.9	47	
10/3/2018	12:58	14.76	6.18	1.9	0.329	0	0	56	0.2	1	50.38	
10/3/2018	13:03	14.81	6.31	2.3	0.327	0	0	57	0.2	1	53.93	
10/3/2018	13:08	15.11	6.4	1.7	0.326	0	0	55	0.18	0.9	58.7	
10/3/2018	13:13	15	6.42	1.5	0.326	0	0	56	0.23	1.15	61.6	
10/3/2018	13:18	15.32	6.53	1.4	0.327	0	0	56	0.18	0.9	64.35	
10/3/2018	13:23	15.37	6.58	1.4	0.325	0	0	54	0.16	0.8	67.41	
10/3/2018	13:28	15.41	6.64	1.3	0.324	0	0	51	0.18	0.8	70.38	
10/3/2018	13:33	15.25	6.74	1.7	0.324	0	0	50	0.11	0.55	73.08	
10/3/2018	13:38	15.29	6.8	2.1	0.327	0	0	36	0.23	1.15	77.41	
10/3/2018	13:43	15.51	6.87	2.2	0.328	0	0	43	0.17	0.85	79.72	
10/3/2018	13:48	15.74	6.95	2.4	0.326	0	0	45	0.14	0.7	81.55	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-142D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 17.35
Pump Set Depth (Ft BGS) : 135
Total Depth of Well (Ft BGS): 151
Initial Depth to Water (Ft BGS): 10.45

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Mega Monsoon 82660
Sample Time: 13:58
Duplicate ID:
Sample ID: HD-MW-142D-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	13:53	15.63	6.96	2	0.325	0	0	33	0.18	0.9	83.58	
10/3/2018	13:58	15.87	7.07	2.5	0.326	0	0	34	0.13	0.65	84.92	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-142S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 11.75
Pump Set Depth (Ft BGS) : 63
Total Depth of Well (Ft BGS): 68
Initial Depth to Water (Ft BGS): 0.58

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Mega Monsoon 82660
Sample Time: 15:37
Duplicate ID:
Sample ID: HD-MW-142S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	14:17											Start Purge
10/3/2018	14:22	16.35	6.54	0	0.403	5.84	0	-109	0.16	0.8	6.19	
10/3/2018	14:27	16.26	6.56	0	0.398	4.81	0	-114	0.14	0.7	8.44	
10/3/2018	14:32	16.07	6.57	0	0.395	4.11	0	-115	0.15	0.75	9.62	
10/3/2018	14:37	16.15	6.65	0	0.395	3.32	0	-117	0.15	0.75	10.28	
10/3/2018	14:42	16.06	6.67	0	0.393	2.8	0	-117	0.17	0.85	10.97	
10/3/2018	14:47	15.97	6.7	0	0.395	2.47	0	-118	0.16	0.8	11.35	
10/3/2018	14:52	16.23	6.76	0	0.395	1.99	0	-120	0.13	0.65	11.5	
10/3/2018	14:57	16.27	6.8	0	0.397	1.61	0	-121	0.11	0.55	11.28	
10/3/2018	15:02	15.87	6.82	0	0.394	1.25	0	-120	0.17	0.85	12.37	
10/3/2018	15:07	15.96	6.88	0	0.395	0.91	0	-121	0.17	0.85	12.75	
10/3/2018	15:12	15.93	6.91	0	0.395	0.63	0	-122	0.17	0.85	13.05	
10/3/2018	15:17	15.95	6.94	0	0.397	0.44	0	-123	0.14	0.7	12.67	
10/3/2018	15:22	15.89	6.93	0	0.397	0.27	0	-122	0.15	0.75	12.86	
10/3/2018	15:27	16.02	6.97	0	0.398	0.02	0	-123	0.12	0.6	12.79	
10/3/2018	15:32	15.91	6.98	0	0.398	0	0	-123	0.13	0.65	12.6	
10/3/2018	15:37	16.04	7	0	0.397	0	0	-123	0.13	0.65	12.48	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-143D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 9
Pump Set Depth (Ft BGS) : 125
Total Depth of Well (Ft BGS): 130
Initial Depth to Water (Ft BGS): 2.72

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: MEGA MONSOON 82775
Sample Time: 13:15
Duplicate ID:
Sample ID: HD-MW-143D-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	12:31								0.31	1.55		
10/3/2018	12:35	16.04	7.12	0	0.273	5.06	0	3	0.2	1	9.43	
10/3/2018	12:40	16.07	7.17	0	0.278	0.6	0	-119	0.2	1	9.66	
10/3/2018	12:45	16.08	7.17	0	0.276	0.3	0	-124	0.18	0.9	9.52	
10/3/2018	12:50	15.87	7.15	0	0.274	0.21	0	-125	0.19	0.95	9.65	
10/3/2018	12:55	15.84	7.15	0	0.273	0.18	0	-127	0.18	0.9	9.59	
10/3/2018	13:00	15.81	7.14	0	0.273	0.16	0	-128	0.18	0.9	9.52	
10/3/2018	13:05	15.79	7.13	0	0.272	0.2	0	-128	0.18	0.9	9.53	
10/3/2018	13:10	15.8	7.13	0	0.272	0.21	0	-129	0.18	0.9	9.52	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-143S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 21.25
Pump Set Depth (Ft BGS) : 52.5
Total Depth of Well (Ft BGS): 54.5
Initial Depth to Water (Ft BGS): 26.02

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: MEGA MONSOON 82775
Sample Time: 15:15
Duplicate ID:
Sample ID: HD-MW-143S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	14:06								0.32	1.6		
10/3/2018	14:10	15.1	5.1	1000	0.31	1.73	0	125	0.26	1.3	28.31	
10/3/2018	14:15	15.08	5.1	1000	0.306	1.41	0	137	0.27	1.35	28.5	
10/3/2018	14:20	15.08	5.09	54	0.32	1.02	0	150	0.32	1.6	28.87	
10/3/2018	14:25	14.98	5.1	47.2	0.322	0.97	0	152	0.32	1.6	29.17	
10/3/2018	14:30	14.87	5.11	28.1	0.325	0.95	0	157	0.32	1.6	29.33	
10/3/2018	14:35	14.89	5.12	21.3	0.328	0.94	0	160	0.32	1.6	29.54	
10/3/2018	14:40	14.74	5.12	17.9	0.33	0.94	0	164	0.34	1.7	29.65	
10/3/2018	14:45	14.89	5.13	15.6	0.33	0.96	0	170	0.3	1.5	29.53	
10/3/2018	14:50	14.92	5.13	7	0.333	0.96	0	175	0.32	1.6	29.62	
10/3/2018	14:55	14.94	5.13	6.7	0.332	0.93	0	181	0.29	1.45	29.61	
10/3/2018	15:00	15.02	5.14	6.6	0.334	0.93	0	185	0.29	1.45	29.43	
10/3/2018	15:05	15.14	5.14	4.9	0.336	0.94	0	188	0.29	1.45	29.41	
10/3/2018	15:10	15.08	5.13	4.9	0.336	0.93	0	191	0.29	1.45	29.42	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-16D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID:
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82775
Purge Method: Positive Displacement
Total Purge Vol (gal) 12.65
Pump Set Depth (Ft BGS) :
Total Depth of Well (Ft BGS):
Initial Depth to Water (Ft BGS): 6.46

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Grab
Sample Date: 10/2/2018
Unit ID:
Sample Time: 15:10
Duplicate ID: HD-QC1-0/1-1
Sample ID: HD-MW-16D-0/1-0
MS/MSD ID: HD-MW-16D-0/1-0MSHD-MW-

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	14:22											
10/2/2018	14:25	19.48	7.23	0	0.328	5.46	0	-132	0.32	1.6		
10/2/2018	14:30	17.77	7.26	0	0.325	4.46	0	-150	0.32	1.6		
10/2/2018	14:35	16.62	7.25	0	0.323	3.6	0	-156	0.3	1.5		
10/2/2018	14:40	15.97	7.26	0	0.322	2.7	0	-159	0.3	1.5		
10/2/2018	14:45	15.79	7.24	0	0.323	2.53	0	-159	0.3	1.5		
10/2/2018	14:50	15.85	7.24	0.2	0.325	2.31	0	-159	0.24	1.2		
10/2/2018	14:55	15.72	7.25	0.3	0.327	2.15	0	-159	0.25	1.25		
10/2/2018	15:00	15.8	7.27	0.2	0.329	2.1	0	-159	0.25	1.25		
10/2/2018	15:05	15.84	7.26	0.4	0.33	1.97	0	-158	0.25	1.25		

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-16S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba U-50
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 50.3
Pump Set Depth (Ft BGS) : 104
Total Depth of Well (Ft BGS): 108
Initial Depth to Water (Ft BGS): 9.09

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: Grundfos 83037
Sample Time: 13:15
Duplicate ID:
Sample ID: HD-MW-16S-0/1-0
MS/MSD ID:

Notes: Historically this well's Turbitity never stablizes. In the past once all parameters are stable with the exception of Turbitity the sample can be collected.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	10:15	14.53	6.33	240	0.347	0	0	84	0.53	2	14.6	
10/2/2018	10:20	14.76	6.39	192	0.35	0	0	26	0.2	2.65	16.6	
10/2/2018	10:25	15.32	6.69	128	0.344	0	0	-26	0.36	1	21.28	
10/2/2018	10:30	14.98	6.79	83.1	0.341	0	0	-39	0.33	1.8	26.05	
10/2/2018	10:35	15	6.81	879	0.339	0	0	-46	0.36	1.65	28.44	
10/2/2018	10:40	14.88	6.8	217	0.342	0	0	-60	0.33	1.8	29.52	
10/2/2018	10:45	14.88	6.78	143	0.342	0	0	-71	0.36	1.65	30.95	
10/2/2018	10:50	14.99	6.76	487	0.343	0	0	-75	0.3	1.8	32.34	
10/2/2018	10:55	14.81	6.74	203	0.344	0	0	-79	0.26	1.5	33.55	
10/2/2018	11:00	15.01	6.72	202	0.342	0	0	-80	0.26	1.3	34.3	
10/2/2018	11:05	15.09	6.71	268	0.343	0	0	-81	0.23	1.3	34.85	
10/2/2018	11:10	15.27	6.68	838	0.344	0	0	-87	0.23	1.15	37.22	
10/2/2018	11:15	15.17	6.68	687	0.343	0	0	-87	0.22	1.15	38.4	
10/2/2018	11:20	15.26	6.64	323	0.339	0	0	-81	0.25	1.1	40.66	
10/2/2018	11:25	15.39	6.62	561	0.339	0	0	-78	0.23	1.25	41.35	
10/2/2018	11:30	15.22	6.6	-5	0.341	0	0	-76	0.3	1.25	42.12	
10/2/2018	11:35	15.23	6.57	-5	0.343	0	0	-79	0.3	1.5	42.38	
10/2/2018	11:40	15.15	6.56	-5	0.345	0	0	-81	0.3	1.5	43.1	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-16S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Grundfos 83037
Purged By: Casey Littlefield
Water Quality Inst: Horiba U-50
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 82910
Purge Method: Positive Displacement
Total Purge Vol (gal) 50.3
Pump Set Depth (Ft BGS) : 104
Total Depth of Well (Ft BGS): 108
Initial Depth to Water (Ft BGS): 9.09

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: Grundfos 83037
Sample Time: 13:15
Duplicate ID:
Sample ID: HD-MW-16S-0/1-0
MS/MSD ID:

Notes: Historically this well's Turbitity never stablizes. In the past once all parameters are stable with the exception of Turbitity the sample can be collected.

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	11:45	15.17	6.55	-5	0.345	0	0	-84	0.3	1.5	43.6	
10/2/2018	11:50	15.23	6.54	-5	0.344	0	0	-86	0.3	1.5	44.1	
10/2/2018	11:55	15.27	6.52	-5	0.344	0	0	-87	0.26	1.5	44.28	
10/2/2018	12:00	15.39	6.5	-5	0.344	0	0	-89	0.25	1.3	44.72	
10/2/2018	12:05	15.45	6.5	-5	0.344	0	0	-89	0.25	1.25	44.82	
10/2/2018	12:10	15.54	6.49	581	0.345	0	0	-90	0.23	1.25	44.91	
10/2/2018	12:15	15.6	6.48	563	0.345	0	0	-91	0.23	1.15	44.95	
10/2/2018	12:20	15.66	6.48	518	0.345	0	0	-91	0.23	1.15	45.2	
10/2/2018	12:25	15.52	6.47	514	0.346	0	0	-91	0.28	1.15	45.6	
10/2/2018	12:30	15.52	6.46	491	0.345	0	0	-90	0.26	1.4	45.73	
10/2/2018	12:35	15.57	6.45	398	0.346	0	0	-90	0.26	1.3	45.74	
10/2/2018	12:40	15.59	6.44	372	0.347	0	0	-90	0.26	1.3	45.85	
10/2/2018	12:45	15.65	6.42	501	0.347	0	0	-90	0.26	1.3	45.98	
10/2/2018	12:50	15.66	6.41	756	0.348	0	0	-90	0.23	1.3	45.98	
10/2/2018	12:55	15.65	6.4	627	0.349	0	0	-90	0.23	1.15	46	
10/2/2018	13:00	15.74	6.39	617	0.35	0	0	-90	0.23	1.15	46	
10/2/2018	13:05	15.76	6.38	851	0.35	0	0	-90	0.23	1.15	46	
10/2/2018	13:10	15.76	6.38	908	0.351	0	0	-90	0.23	1.15	46	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-18D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID:
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 6.2
Pump Set Depth (Ft BGS) :
Total Depth of Well (Ft BGS): 140
Initial Depth to Water (Ft BGS): 7.98

Sample Information

Sampled By: Janis Ronis
Sampled Method: Grab
Sample Date: 10/3/2018
Unit ID:
Sample Time: 9:17
Duplicate ID:
Sample ID: HD-MW-18D-0/1-0
MS/MSD ID:

Notes: Well is Artesian

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	8:22											Start Purge
10/3/2018	8:27	18.82	8.6	0	0.348	1.3	0	-99	0.13	0.65	0	Artesian
10/3/2018	8:32	17.95	9.03	0	0.345	0.47	0	-73	0.12	0.6	0	
10/3/2018	8:37	17.18	8.34	0	0.346	0.21	0	-39	0.11	0.55	0	
10/3/2018	8:42	16.46	8.1	0	0.345	0	0	-110	0.11	0.55	0	
10/3/2018	8:47	16.02	8.01	0	0.347	0	0	-114	0.11	0.55	0	
10/3/2018	8:52	16.02	7.52	0	0.355	0	0	-113	0.11	0.55	0	
10/3/2018	8:57	15.84	7.74	0	0.356	0	0	-115	0.11	0.55	0	
10/3/2018	9:02	15.86	7.86	0	0.354	0	0	-115	0.11	0.55	0	
10/3/2018	9:07	15.86	7.82	0	0.355	0	0	-117	0.11	0.55	0	
10/3/2018	9:12	15.72	7.8	0	0.354	0	0	-118	0.11	0.55	0	
10/3/2018	9:17	15.79	7.81	0	0.355	0	0	-119	0.11	0.55	0	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-18S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 12.95
Pump Set Depth (Ft BGS) : 133
Total Depth of Well (Ft BGS): 60
Initial Depth to Water (Ft BGS): 0

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: Mega Monsoon 82660
Sample Time: 11:23
Duplicate ID:
Sample ID: HD-MW-18S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	9:51											Start Purge
10/3/2018	9:56	16.67	8.47	8.7	0.347	4.18	0	-125	0.23	1.15	18.47	
10/3/2018	10:01	16.39	8.2	19.1	0.361	3.56	0	-127	0.1	0.5	19.12	
10/3/2018	10:18	15.11	6.12	37.7	0.357	7.4	0	-115	0.34	1.7	29.47	
10/3/2018	10:23	15.32	6.09	132	0.359	6.37	0	-116	0.2	1	32.5	
10/3/2018	10:28	15.9	6	526	0.364	5.14	0	-115	0.16	0.9	33.9	
10/3/2018	10:33	15.73	5.9	547	0.365	4.25	0	-115	0.19	0.95	35.98	
10/3/2018	10:38	15.88	5.82	420	0.365	3.42	0	-113	0.14	0.7	37.1	
10/3/2018	10:43	16.06	5.77	270	0.365	2.77	0	-115	0.13	0.65	37.72	
10/3/2018	10:48	16.08	5.76	112	0.365	2.09	0	-118	0.12	0.6	38.4	
10/3/2018	10:53	16.09	5.73	78.6	0.364	1.59	0	-120	0.12	0.6	38.98	
10/3/2018	10:58	16.06	5.71	36.5	0.365	1.34	0	-121	0.13	0.65	39.47	
10/3/2018	11:03	16.04	5.7	18.1	0.364	1.07	0	-121	0.13	0.65	39.78	
10/3/2018	11:08	15.96	5.71	11.4	0.363	0.87	0	-123	0.14	0.7	39.98	
10/3/2018	11:13	16.19	5.72	6.7	0.363	0.37	0	-124	0.15	0.75	40.08	
10/3/2018	11:18	16.08	5.71	3.7	0.363	0.3	0	-125	0.16	0.8	40.22	
10/3/2018	11:23	16.04	5.71	3.3	0.363	0.25	0	-125	0.13	0.65	40.26	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-20D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/1/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 22.6
Pump Set Depth (Ft BGS) : 158
Total Depth of Well (Ft BGS): 163
Initial Depth to Water (Ft BGS): 16.05

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/2/2018
Unit ID:
Sample Time: 9:45
Duplicate ID:
Sample ID: HD-MW-20D-0/1-0
MS/MSD ID:

Notes: RWL = 30.64

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/1/2018	14:20	15.79	6.39	0	0.1	3.16	0	199	1.3	1.5	27.43	
10/1/2018	14:25										29.55	Reset Pump Tubing
10/1/2018	14:40	16.33	5.96	3.2	0.099	8.7	0	231	0.21	1.05	34.45	
10/1/2018	14:45	17.36	6.01	3.8	0.099	7.87	0	227	0.18	0.9	37.18	
10/1/2018	14:50	15.61	6.04	1.6	0.099	0.41	0	223	0.16	0.8	43.08	
10/1/2018	14:55	15.73	6.05	3.5	0.099	9.79	0	236	0.16	0.8	44.03	
10/1/2018	15:00	16.53	6.19	2.7	0.1	1	0	231	0.21	1.05	49.3	
10/1/2018	15:05	16.36	6.22	0	0.1	0.9	0	229	0.1	0.5	57.02	
10/1/2018	15:10	16.58	6.15	0	0.1	9.12	0	235	0.11	0.55	58.5	
10/1/2018	15:15	15.49	6.18	0	0.1	7.8	0	235	0.26	1.3	62.8	
10/1/2018	15:20	15.42	6.23	0	0.101	4.71	0	229	0.24	1.2	73.29	
10/1/2018	15:25	15.8	6.21	0	0.1	3.7	0	233	0.24	1.2	79.42	
10/1/2018	15:30	16.16	6.25	0	0.101	3.02	0	232	0.22	1.1	84.88	
10/1/2018	15:35	15.38	6.23	0	0.101	2.43	0	230	0.13	0.65	89.03	
10/1/2018	15:40	15.13	6.23	0	0.102	2.13	0	230	0.4	2	98.85	
10/1/2018	15:45	15.23	6.24	0	0.103	1.87	0	228	0.34	1.7	108.08	
10/1/2018	15:50	15.5	6.25	0	0.103	1.73	0	227	0.29	1.45	117.5	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-20D
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/1/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 22.6
Pump Set Depth (Ft BGS) : 158
Total Depth of Well (Ft BGS): 163
Initial Depth to Water (Ft BGS): 16.05

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/2/2018
Unit ID:
Sample Time: 9:45
Duplicate ID:
Sample ID: HD-MW-20D-0/1-0
MS/MSD ID:

Notes: RWL = 30.64

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/1/2018	15:55	15.82	6.29	0	0.103	1.67	0	223	0.19	0.95	124.58	
10/1/2018	16:00	15.73	6.23	0	0.102	1.67	0	220	0.38	1.9	133.2	
10/1/2018	16:05	15.6	6.25	0	0.103	1.7	0	217	0.4	2	145.54	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-20M
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 7.55
Pump Set Depth (Ft BGS) : 81
Total Depth of Well (Ft BGS): 85.7
Initial Depth to Water (Ft BGS): 32.92

Sample Information

Sampled By: Casey Littlefield
Sampled Method: Hand Bailer
Sample Date: 10/3/2018
Unit ID:
Sample Time: 8:25
Duplicate ID:
Sample ID: HD-MW-20M-0/1-0
MS/MSD ID:

Notes: RWL = 34.13

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	8:24											Start vPurge
10/2/2018	8:29	14.51	6.84	768	0.165	0.41	0	153	0.26	1.3	45.45	
10/2/2018	8:34	14.75	6.79	783	0.165	0.25	0	154	0.18	0.9	48.8	
10/2/2018	8:39	14.95	6.7	1000	0.186	2.68	0	173	0.18	0.9	55.35	
10/2/2018	8:44	14.99	6.66	-5	0.19	3.5	0	179	0.26	1.3	60.51	
10/2/2018	8:49	14.92	6.64	-5	0.192	3.82	0	179	0.24	1.2	65.49	
10/2/2018	8:54	14.96	6.71	-5	0.193	3.98	0	180	0.19	0.95	70.04	
10/2/2018	8:59	15.22	6.83	-5	0.186	4.14	0	127	0.2	1	79.14	
10/2/2018	9:02											Well Cavitated

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-20S
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: Mega Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U052
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 14.6
Pump Set Depth (Ft BGS) : 59
Total Depth of Well (Ft BGS): 61
Initial Depth to Water (Ft BGS): 33.68

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID:
Sample Time: 10:19
Duplicate ID:
Sample ID: HD-MW-20S-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	9:24											Start Purge
10/2/2018	9:29	14.29	5.73	177	0.6	11.79	0	254	0.32	1.6	37.32	
10/2/2018	9:34	14.42	5.58	82.7	0.603	9.58	0	267	0.29	1.45	38.4	
10/2/2018	9:39	14.37	5.55	64.6	0.586	9.34	0	268	0.26	1.3	39.6	
10/2/2018	9:44	14.45	5.5	33.3	0.57	9.12	0	271	0.26	1.3	40.14	
10/2/2018	9:49	14.5	6.06	22.5	0.577	9.34	0	271	0.23	1.15	40.47	
10/2/2018	9:54	14.38	6.16	16.4	0.574	8.88	0	271	0.26	1.3	41.27	
10/2/2018	9:59	14.44	6.17	10.7	0.575	8.54	0	273	0.26	1.3	41.57	
10/2/2018	10:04	14.43	6.16	11.8	0.573	8.23	0	273	0.26	1.3	41.98	
10/2/2018	10:09	14.59	6.16	7.6	0.57	7.82	0	273	0.26	1.3	42.23	
10/2/2018	10:14	14.58	6.15	6.1	0.566	7.79	0	273	0.26	1.3	42.29	
10/2/2018	10:19	14.53	6.16	3.1	0.567	7.73	0	273	0.26	1.3	42.46	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-3
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/1/2018
Pump ID: mega monsoon/24682
Purged By: Dave Baldwin
Water Quality Inst: horiba U-22
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 12.6
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 102
Initial Depth to Water (Ft BGS): 61.07

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/1/2018
Unit ID: mega monsoon 24682
Sample Time: 16:30
Duplicate ID:
Sample ID: HD-MW-3-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/1/2018	16:00	13.35	5.04	0.7	0.195	6.12	0	281	0.42	2.1	61.41	
10/1/2018	16:05	13.43	4.99	0	0.19	5.51	0	294	0.42	2.1	61.42	
10/1/2018	16:10	13.43	4.94	0	0.189	5.44	0	304	0.42	2.1	61.44	
10/1/2018	16:15	13.37	4.95	0	0.189	5.46	0	308	0.42	2.1	61.45	
10/1/2018	16:20	13.26	4.95	0	0.189	5.42	0	314	0.42	2.1	61.47	
10/1/2018	16:25	13.33	4.96	0	0.189	5.41	0	318	0.42	2.1	61.45	
10/1/2018	16:30											

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-77
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 30.85
Pump Set Depth (Ft BGS) : 63
Total Depth of Well (Ft BGS): 65
Initial Depth to Water (Ft BGS): 20.04

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: MEGA MONSOON 82909
Sample Time: 10:00
Duplicate ID:
Sample ID: HD-MW-77-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/4/2018	8:22								0.37	1.85		
10/4/2018	8:25	15.62	6.09	17.9	0.651	0	0	-10	0.32	1.6	23.76	
10/4/2018	8:30	15.64	6.12	12.5	0.605	0	0	-26	0.32	1.6	24.01	
10/4/2018	8:35	15.59	6.12	9	0.522	0	0	-26	0.32	1.6	24.47	
10/4/2018	8:40	15.58	6.21	9.3	0.594	0	0	-41	0.32	1.6	24.69	
10/4/2018	8:45	15.57	6.29	7.3	0.623	0	0	-52	0.33	1.65	24.77	
10/4/2018	8:50	15.62	6.33	4.9	0.636	0	0	-59	0.27	1.35	24.37	
10/4/2018	8:55	15.7	6.42	5.1	0.646	0	0	-64	0.31	1.55	24.06	
10/4/2018	9:00	15.68	6.54	3.8	0.663	0	0	-71	0.3	1.5	24.26	
10/4/2018	9:05	15.7	6.64	2.6	0.667	0	0	-74	0.3	1.5	24.15	
10/4/2018	9:10	15.72	6.74	2.3	0.672	0	0	-77	0.3	1.5	24.34	smells like fuel oil
10/4/2018	9:15	15.72	6.82	1.5	0.672	0	0	-79	0.31	1.55	24.36	
10/4/2018	9:20	15.79	6.89	1	0.673	0	0	-81	0.29	1.45	24.05	
10/4/2018	9:25	15.8	6.91	0.7	0.675	0	0	-83	0.3	1.5	23.96	
10/4/2018	9:30	15.77	6.93	0.5	0.679	0	0	-84	0.33	1.65	24.27	
10/4/2018	9:35	15.82	6.95	0.2	0.68	0	0	-86	0.32	1.6	24.36	
10/4/2018	9:40	15.84	6.96	0	0.678	0	0	-87	0.29	1.45	24.23	
10/4/2018	9:45	15.84	6.96	0	0.678	0	0	-87	0.29	1.45	24.18	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-77
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 30.85
Pump Set Depth (Ft BGS) : 63
Total Depth of Well (Ft BGS): 65
Initial Depth to Water (Ft BGS): 20.04

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: MEGA MONSOON 82909
Sample Time: 10:00
Duplicate ID:
Sample ID: HD-MW-77-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/4/2018	9:50	15.96	6.97	0	0.681	0	0	-88	0.29	1.45	24.16	
10/4/2018	9:55	15.89	6.97	0	0.684	0	0	-89	0.29	1.45	24.19	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-82
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/4/2018
Pump ID: Mga Monsoon 82660
Purged By: Janis Ronis
Water Quality Inst: Horiba U-52
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: 16675
Purge Method: Positive Displacement
Total Purge Vol (gal) 25.45
Pump Set Depth (Ft BGS) : 64.5
Total Depth of Well (Ft BGS): 85
Initial Depth to Water (Ft BGS): 33.37

Sample Information

Sampled By: Janis Ronis
Sampled Method: Positive Displacement
Sample Date: 10/4/2018
Unit ID: Mega Monsoon 82660
Sample Time: 9:51
Duplicate ID:
Sample ID: HD-MW-82-0/1-0
MS/MSD ID: HD-MW-82-0/1-0MS

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/4/2018	8:46											Start Purge
10/4/2018	8:51	14.69	6.89	7.5	0.597	0	0	57	0.4	2	33.42	
10/4/2018	8:56	14.6	6.89	7.1	0.597	0	0	39	0.29	1.45	33.44	
10/4/2018	9:01	14.46	6.78	5.8	0.598	0	0	34	0.4	2	33.44	
10/4/2018	9:06	14.45	6.74	4.8	0.597	0	0	37	0.4	2	33.44	
10/4/2018	9:11	14.42	6.64	3.7	0.595	0	0	54	0.4	2	33.45	
10/4/2018	9:16	14.43	6.55	2.9	0.594	0	0	68	0.4	2	33.45	
10/4/2018	9:21	14.42	6.43	2.5	0.589	0	0	80	0.4	2	33.46	
10/4/2018	9:26	14.45	6.35	2.1	0.587	0	0	89	0.4	2	33.46	
10/4/2018	9:31	14.43	6.21	1.7	0.583	0.17	0	100	0.4	2	33.47	
10/4/2018	9:36	14.49	6.12	1.4	0.582	0.33	0	104	0.4	2	33.46	
10/4/2018	9:41	14.48	6.08	1.3	0.581	0.56	0	107	0.4	2	33.47	
10/4/2018	9:46	14.5	6.04	1.3	0.58	0.59	0	109	0.4	2	33.47	
10/4/2018	9:51	14.47	6	1.2	0.579	0.6	0	110	0.4	2	33.47	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-9
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: HORIBA 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 72.05
Pump Set Depth (Ft BGS) : 79
Total Depth of Well (Ft BGS): 97
Initial Depth to Water (Ft BGS): 28.54

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: 82775
Sample Time: 11:35
Duplicate ID:
Sample ID: HD-MW-9-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	8:37										28.54	
10/3/2018	8:40	13.63	7.02	12	0.812	0.28	0	-142	0.53	2.65	32.63	
10/3/2018	8:45	13.56	7.29	12	0.809	0.72	0	-167	0.37	1.85	33.13	
10/3/2018	8:50	13.54	7.51	11.9	0.805	1.12	0	-179	0.51	2.55	34.06	
10/3/2018	8:55	13.55	7.78	10.7	0.792	1.64	0	-191	0.53	2.65	35.75	
10/3/2018	9:00	13.55	7.85	9.2	0.774	2.02	0	-198	0.53	2.65	37.21	
10/3/2018	9:05	13.48	7.83	8.4	0.748	2.12	0	-199	0.53	2.65	38.39	
10/3/2018	9:10	13.51	7.78	7.9	0.739	2.01	0	-197	0.53	2.65	39.86	
10/3/2018	9:15	13.51	7.69	7.7	0.732	1.83	0	-193	0.53	2.65	40.98	
10/3/2018	9:20	13.56	7.61	7.5	0.72	1.65	0	-188	0.53	2.65	42.14	
10/3/2018	9:25	13.57	7.53	7.3	0.714	1.45	0	-182	0.49	2.45	43.21	
10/3/2018	9:30	13.59	7.45	7.3	0.708	1.23	0	-177	0.5	2.5	44.03	
10/3/2018	9:35	13.57	7.37	7	0.699	1.08	0	-170	0.51	2.55	45.07	
10/3/2018	9:40	13.56	7.29	7	0.693	0.9	0	-164	0.51	2.55	45.98	
10/3/2018	9:45	13.57	7.18	6.4	0.683	0.73	0	-156	0.53	2.65	47.23	
10/3/2018	9:50	13.53	7.14	6.5	0.678	0.59	0	-152	0.53	2.65	48.15	
10/3/2018	9:55	13.6	7.08	6.4	0.673	0.44	0	-148	0.53	2.65	48.84	
10/3/2018	10:00	13.65	7.03	6.1	0.668	0.39	0	-143	0.53	2.65	49.72	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: MW-9
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/3/2018
Pump ID: MEGA MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Low Flow Parameter Stabilization
Water Quality Inst ID: HORIBA 82909
Purge Method: Positive Displacement
Total Purge Vol (gal) 72.05
Pump Set Depth (Ft BGS) : 79
Total Depth of Well (Ft BGS): 97
Initial Depth to Water (Ft BGS): 28.54

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/3/2018
Unit ID: 82775
Sample Time: 11:35
Duplicate ID:
Sample ID: HD-MW-9-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/3/2018	10:05	13.62	6.98	6	0.664	0.3	0	-139	0.48	2.4	50.45	
10/3/2018	10:10	13.7	6.94	5.8	0.659	0.25	0	-136	0.44	2.2	51.09	
10/3/2018	10:15	13.79	6.9	5.7	0.654	0.14	0	-132	0.44	2.2	51.58	
10/3/2018	10:20	13.77	6.86	5.4	0.65	0.8	0	-129	0.46	2.3	52.08	
10/3/2018	10:25	13.94	6.83	5.4	0.646	0.05	0	-126	0.32	1.6	52.35	
10/3/2018	10:30	13.96	6.8	5.3	0.641	0	0	-124	0.37	1.85	52.53	
10/3/2018	10:35	13.97	6.76	5	0.635	0	0	-121	0.32	1.6	52.78	
10/3/2018	10:40	14.04	6.75	4.8	0.631	0	0	-119	0.36	1.8	52.9	
10/3/2018	10:45	13.92	6.72	4.6	0.623	0	0	-117	0.3	1.5	53.14	
10/3/2018	10:50	14.15	6.7	4.3	0.621	0	0	-115	0.33	1.65	53.14	
10/3/2018	10:55	14.03	6.68	4.3	0.617	0	0	-113	0.26	1.3	53.24	
10/3/2018	11:00	14.05	6.65	4	0.613	0	0	-112	0.29	1.45	53.24	
10/3/2018	11:05	14.18	6.63	3.8	0.607	0	0	-110	0.22	1.1	53.36	
10/3/2018	11:10	14.45	6.62	3.7	0.605	0	0	-110	0.22	1.1	53.14	
10/3/2018	11:15	14.51	6.6	3.5	0.601	0	0	-108	0.22	1.1	52.9	
10/3/2018	11:20	14.33	6.59	3.4	0.599	0	0	-108	0.22	1.1	52.9	
10/3/2018	11:25	14.17	6.57	3.2	0.593	0	0	-106	0.22	1.1	53	
10/3/2018	11:30	14.4	6.58	3	0.588	0	0	-105	0.22	1.1	52.9	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: RW-2
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: MEGE MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: HORIBA 82775
Purge Method: Positive Displacement
Total Purge Vol (gal) 102.9
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 100
Initial Depth to Water (Ft BGS): 18.2

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: MEGA MONSOON 82775
Sample Time: 12:40
Duplicate ID:
Sample ID: HD-RW-2-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	8:32											
10/2/2018	8:35	14.69	6.25	8.8	0.325	8.84	0	-47	0.42	2.1	19.22	
10/2/2018	8:40	14.87	6.32	6.1	0.324	7.38	0	-54	0.42	2.1	20.22	
10/2/2018	8:45	14.95	6.39	4.9	0.323	6.18	0	-58	0.42	2.1	20.84	
10/2/2018	8:50	15.02	6.41	4	0.321	5.2	0	-58	0.42	2.1	21.67	
10/2/2018	8:55	15.06	6.44	3.3	0.32	4.12	0	-54	0.42	2.1	23.17	
10/2/2018	9:00	15.03	6.44	3.1	0.32	3.44	0	-53	0.42	2.1	23.98	
10/2/2018	9:05	14.96	6.44	2.7	0.319	2.78	0	-52	0.42	2.1	25.06	
10/2/2018	9:10	15.12	6.44	2.4	0.318	2.08	0	-50	0.42	2.1	26.33	
10/2/2018	9:15	15.23	6.45	2	0.317	1.65	0	-48	0.42	2.1	27.46	
10/2/2018	9:20	15.25	6.45	2.1	0.317	1.41	0	-46	0.42	2.1	28.38	
10/2/2018	9:25	15	6.44	1.8	0.316	1.23	0	-45	0.42	2.1	29.31	
10/2/2018	9:30	14.93	6.44	1.7	0.315	0.99	0	-43	0.42	2.1	30.36	
10/2/2018	9:35	15.06	6.44	1.5	0.314	0.75	0	-41	0.42	2.1	31.67	
10/2/2018	9:40	15.21	6.43	1.5	0.313	0.62	0	-39	0.42	2.1	32.54	
10/2/2018	9:45	15.01	6.42	1.4	0.312	0.46	0	-35	0.42	2.1	33.88	
10/2/2018	9:50	15.18	6.42	1.2	0.31	0.32	0	-31	0.42	2.1	34.97	
10/2/2018	9:55	15.5	6.43	1.2	0.308	0.22	0	-27	0.42	2.1	35.86	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: RW-2
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: MEGE MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: HORIBA 82775
Purge Method: Positive Displacement
Total Purge Vol (gal) 102.9
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 100
Initial Depth to Water (Ft BGS): 18.2

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: MEGA MONSOON 82775
Sample Time: 12:40
Duplicate ID:
Sample ID: HD-RW-2-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	10:00	15.48	6.42	1.2	0.306	0.16	0	-22	0.42	2.1	36.67	
10/2/2018	10:05	15.45	6.4	1.2	0.301	0.03	0	-12	0.42	2.1	37.78	
10/2/2018	10:10	15.13	6.35	1	0.29	0	0	7	0.42	2.1	39.09	
10/2/2018	10:15	15.41	6.28	0.9	0.267	0	0	34	0.42	2.1	40.2	
10/2/2018	10:20	15.36	6.16	0.8	0.235	0.03	0	67	0.42	2.1	40.56	
10/2/2018	10:25	15.11	6.03	0.8	0.211	0.21	0	94	0.42	2.1	41.84	
10/2/2018	10:30	15.01	5.91	0.9	0.193	0.44	0	115	0.42	2.1	43.32	
10/2/2018	10:35	15.23	5.82	0.8	0.179	0.74	0	135	0.42	2.1	44.9	
10/2/2018	10:40	15.15	5.74	0.9	0.169	1.04	0	151	0.42	2.1	46.31	
10/2/2018	10:45	15.15	5.67	0.9	0.163	1.26	0	162	0.42	2.1	47.49	
10/2/2018	10:50	15.39	5.63	1.1	0.159	1.48	0	171	0.42	2.1	48.47	
10/2/2018	10:55	15.54	5.58	1.2	0.156	1.76	0	179	0.42	2.1	49.84	
10/2/2018	11:00	15.78	5.56	2.1	0.153	2.73	0	185	0.42	2.1	50.76	
10/2/2018	11:05	15.61	5.5	1.3	0.15	3.01	0	192	0.42	2.1	51.9	
10/2/2018	11:10	15.55	5.46	1.2	0.148	3.11	0	196	0.42	2.1	52.91	
10/2/2018	11:15	15.5	5.42	1.2	0.146	3.17	0	203	0.42	2.1	54.11	
10/2/2018	11:20	15.75	5.4	1.1	0.145	3.28	0	207	0.42	2.1	55.19	
10/2/2018	11:25	15.5	5.39	1.1	0.143	3.33	0	211	0.42	2.1	56.45	

Harley-Davidson Groundwater Sample Purge Log

Sampling Event: 2018 Comprehensive Sampling
Well ID: RW-2
Project NO: 10012
Project Location York, Pa

Purge Information

Purge Date: 10/2/2018
Pump ID: MEGE MONSOON 82775
Purged By: Dave Baldwin
Water Quality Inst: HORIBA
Purge Technique: Well Yield Matched Purge
Water Quality Inst ID: HORIBA 82775
Purge Method: Positive Displacement
Total Purge Vol (gal) 102.9
Pump Set Depth (Ft BGS) : 98
Total Depth of Well (Ft BGS): 100
Initial Depth to Water (Ft BGS): 18.2

Sample Information

Sampled By: Dave Baldwin
Sampled Method: Positive Displacement
Sample Date: 10/2/2018
Unit ID: MEGA MONSOON 82775
Sample Time: 12:40
Duplicate ID:
Sample ID: HD-RW-2-0/1-0
MS/MSD ID:

Notes:

Purge Parameter Information

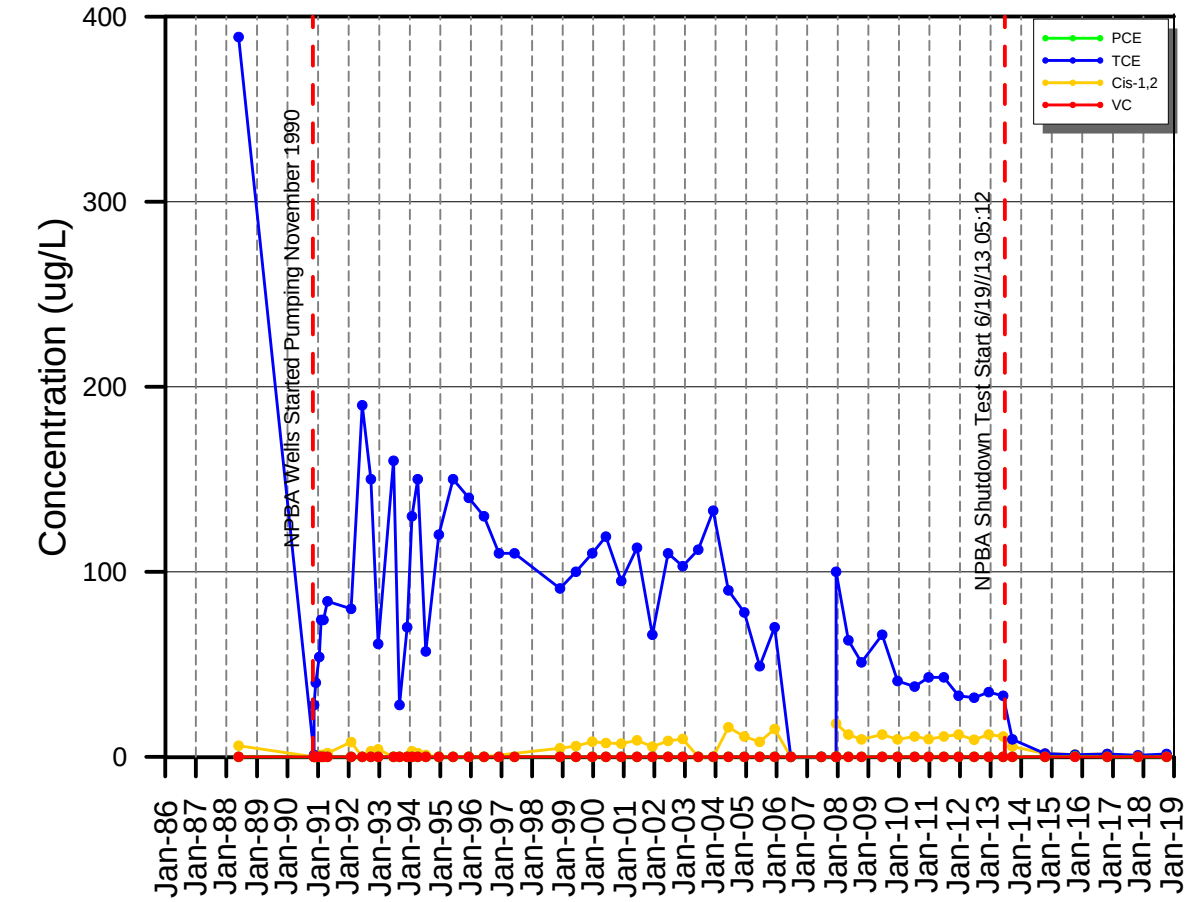
Date	Time	Temp. °C	pH SU	Turb NTU	Con. mS/cm	DO mg/	Sal	ORP	Pr g/m	Pv gal.	DTW feet	Notes
10/2/2018	11:30	15.61	5.37	1.1	0.142	3.33	0	213	0.42	2.1	57.68	
10/2/2018	11:35	15.63	5.35	1.1	0.141	3.38	0	215	0.42	2.1	58.76	
10/2/2018	11:40	15.7	5.7	1.1	0.14	3.42	0	217	0.42	2.1	59.52	
10/2/2018	11:45	15.52	5.34	1.1	0.14	3.44	0	218	0.42	2.1	60.44	
10/2/2018	11:50	15.33	5.32	1.1	0.139	3.52	0	220	0.42	2.1	61.42	
10/2/2018	11:55	15.55	5.3	1	0.138	3.58	0	222	0.42	2.1	63.12	
10/2/2018	12:00	15.82	5.3	1	0.138	3.55	0	224	0.42	2.1	64.13	
10/2/2018	12:05	15.91	5.3	1	0.138	3.59	0	224	0.42	2.1	65.29	
10/2/2018	12:10	15.92	5.3	0.9	0.137	3.63	0	225	0.42	2.1	66.12	
10/2/2018	12:15	16.12	5.29	0.9	0.137	3.57	0	226	0.42	2.1	67.17	
10/2/2018	12:20	16.31	5.29	0.9	0.136	3.66	0	228	0.42	2.1	68.43	
10/2/2018	12:25	16.04	5.29	0.9	0.136	3.69	0	227	0.42	2.1	69.72	
10/2/2018	12:30	16.21	5.3	1	0.136	3.75	0	227	0.42	2.1	70.93	
10/2/2018	12:35	16.04	5.3	1.1	0.136	3.78	0	226	0.42	2.1	71.73	

Appendix B

NPBA Groundwater Chemistry Graphs

Undetected laboratory results are represented on the semi-log graphs as a concentration of 0.01 µg/L, regardless of method detection limit or laboratory reporting limit. "J" qualified (estimated) results were plotted as actual values.

CW-1


Concentration (ug/L)
400
300
200
100
0
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
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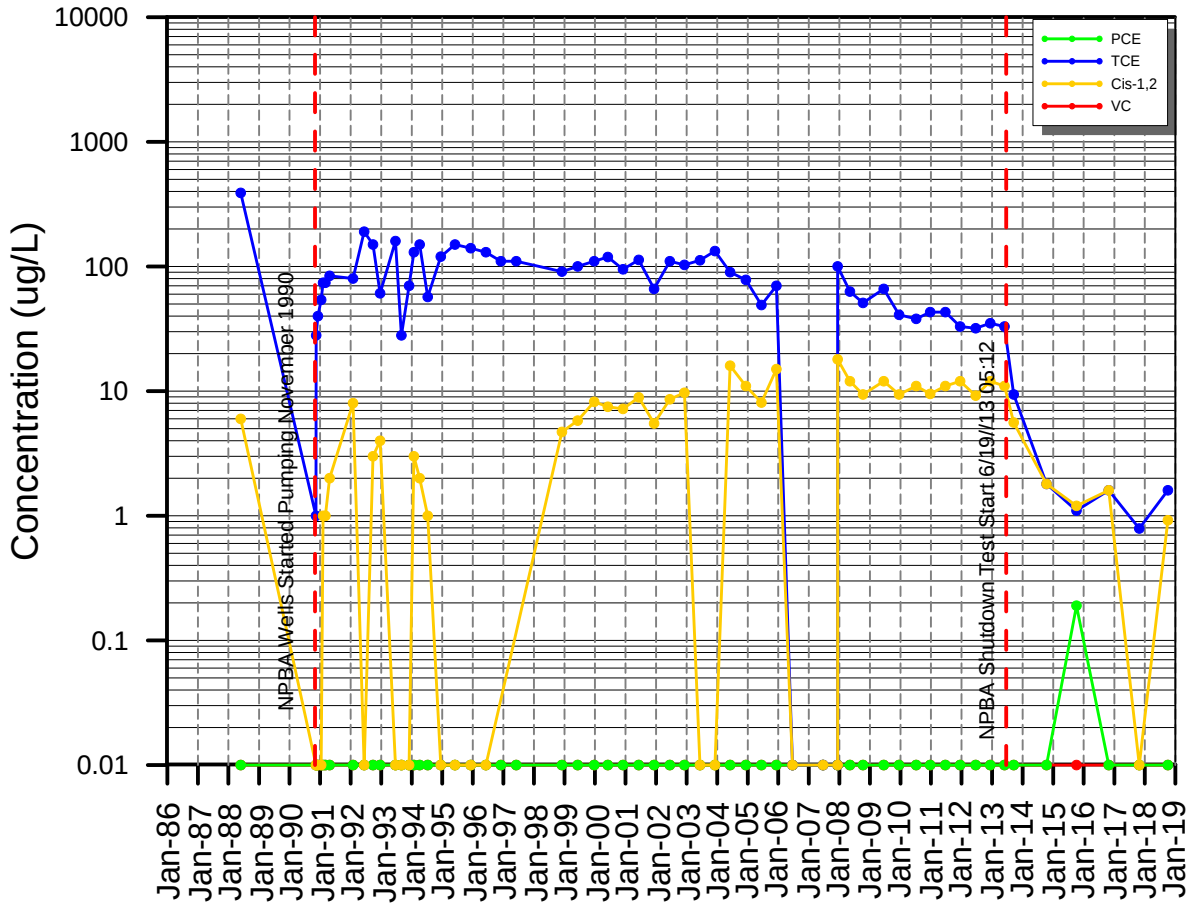
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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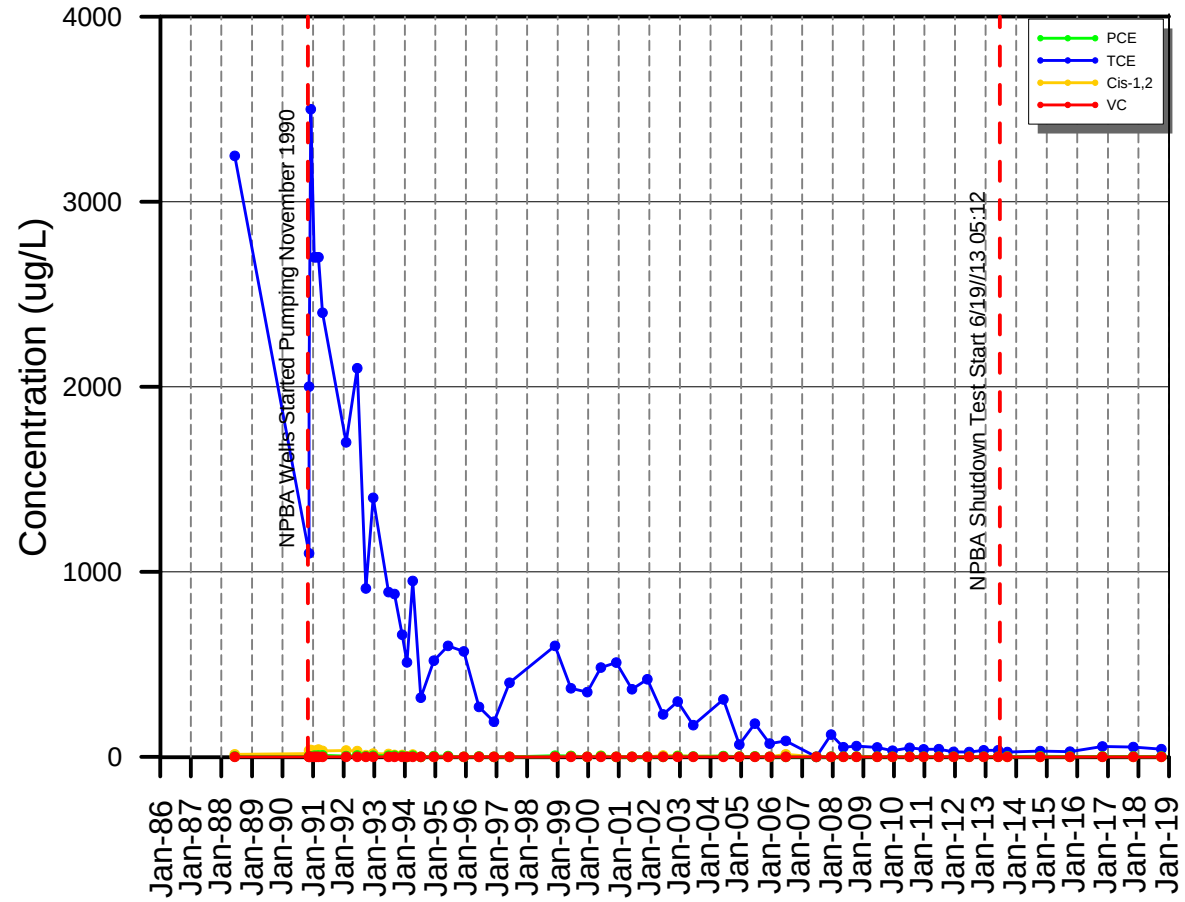
CW-1A


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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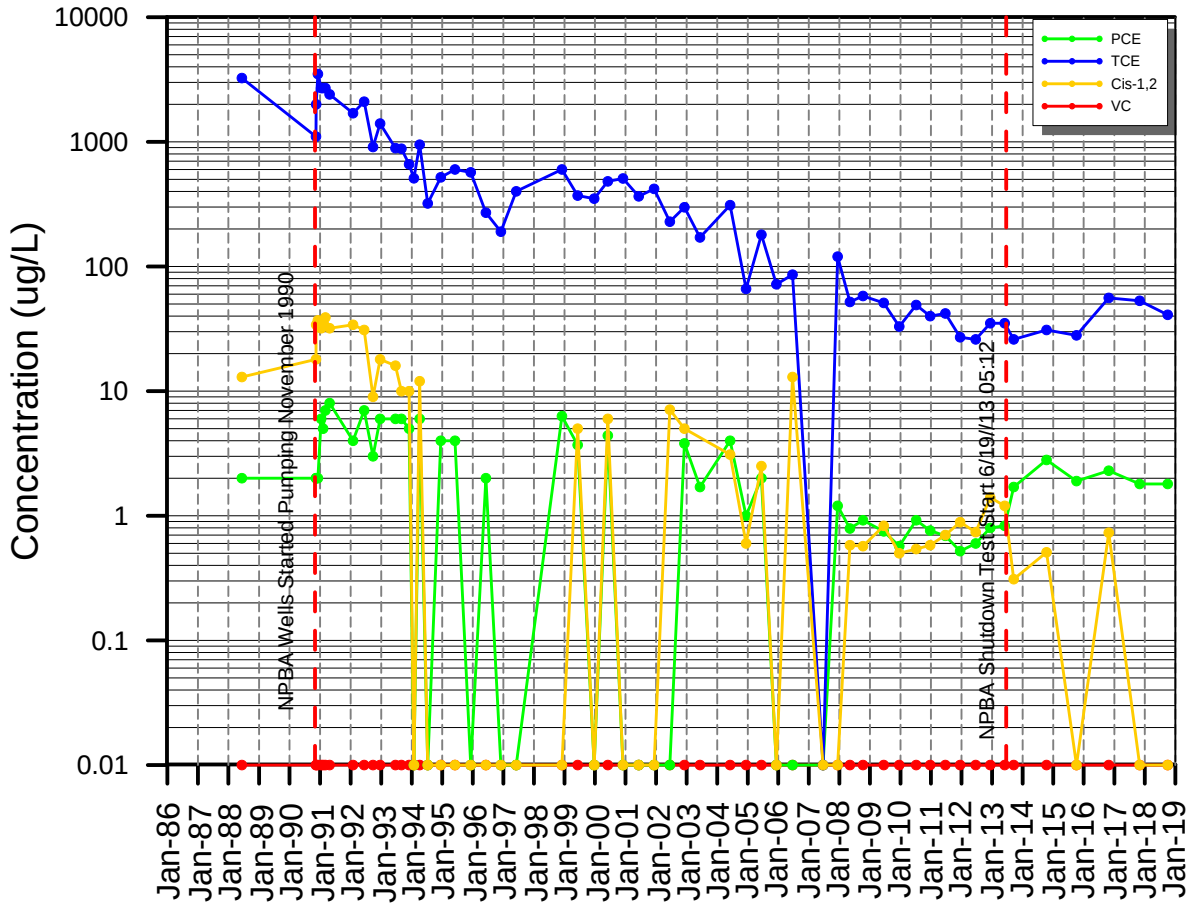
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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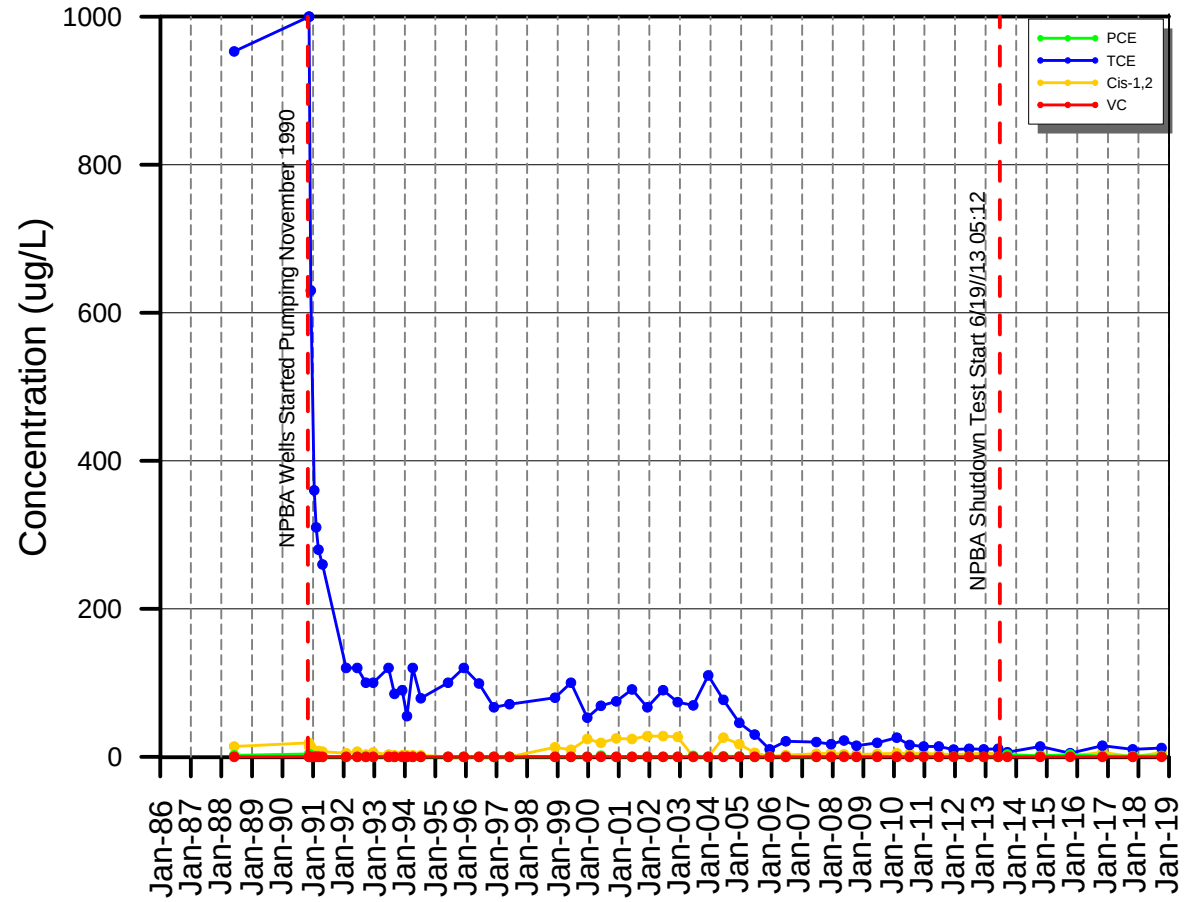
CW-2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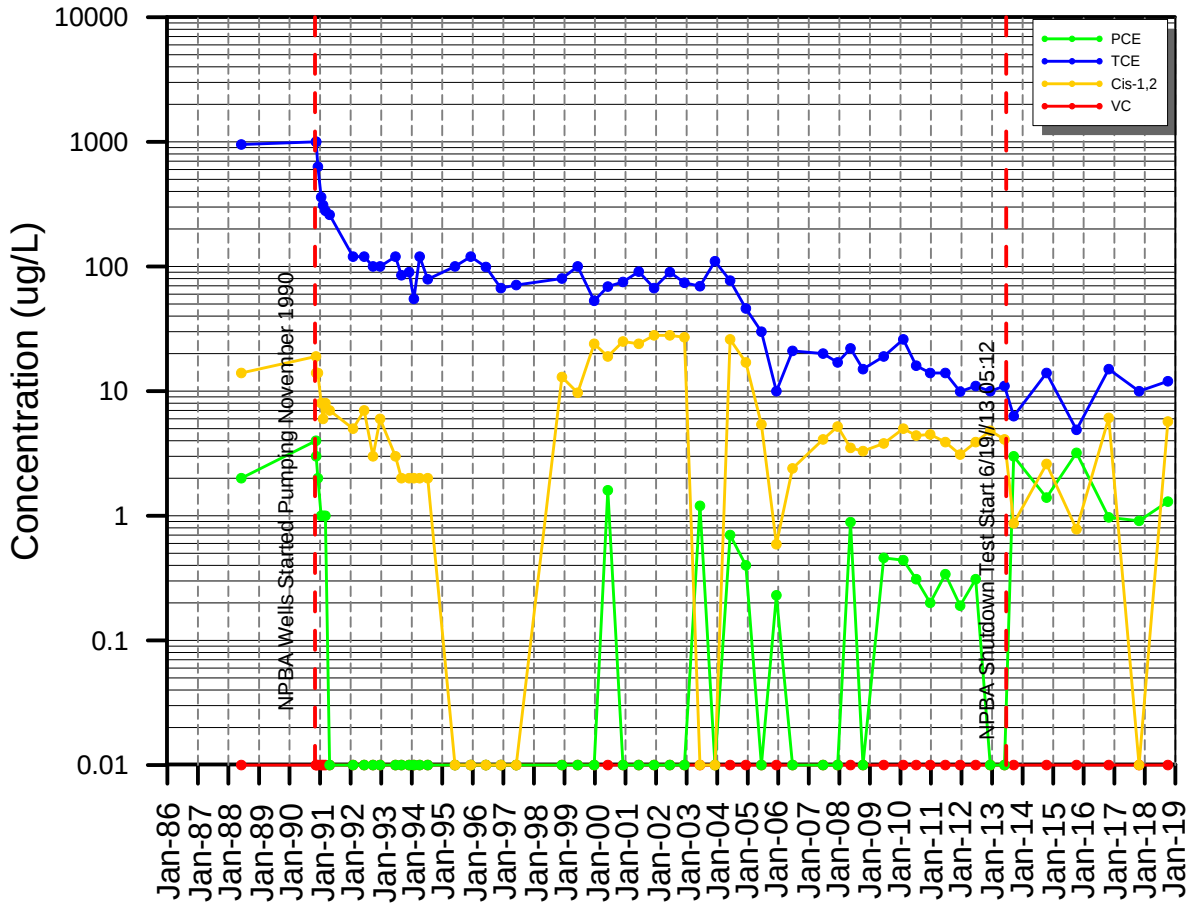
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NPBA Wells Started Pumping November 1990
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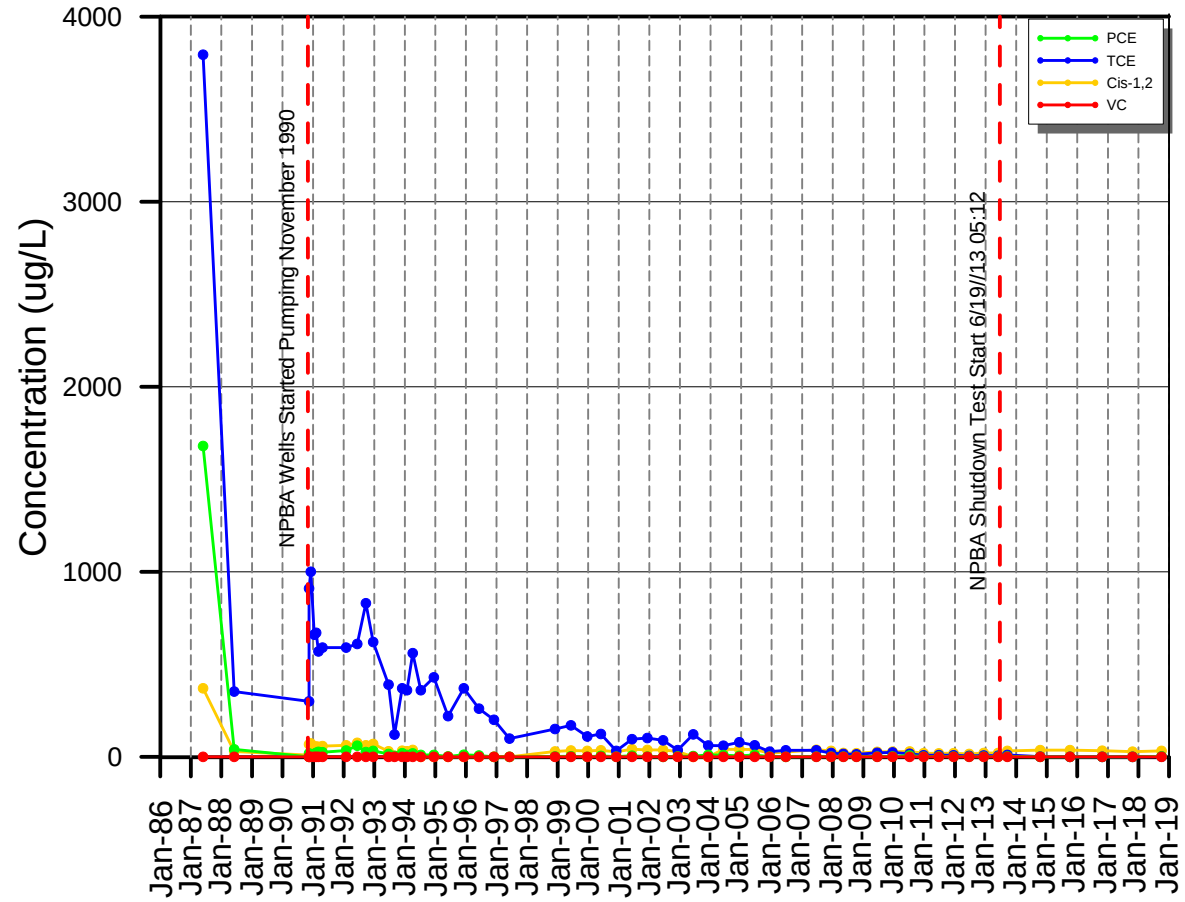
CW-3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NPBA Wells Started Pumping November 1990
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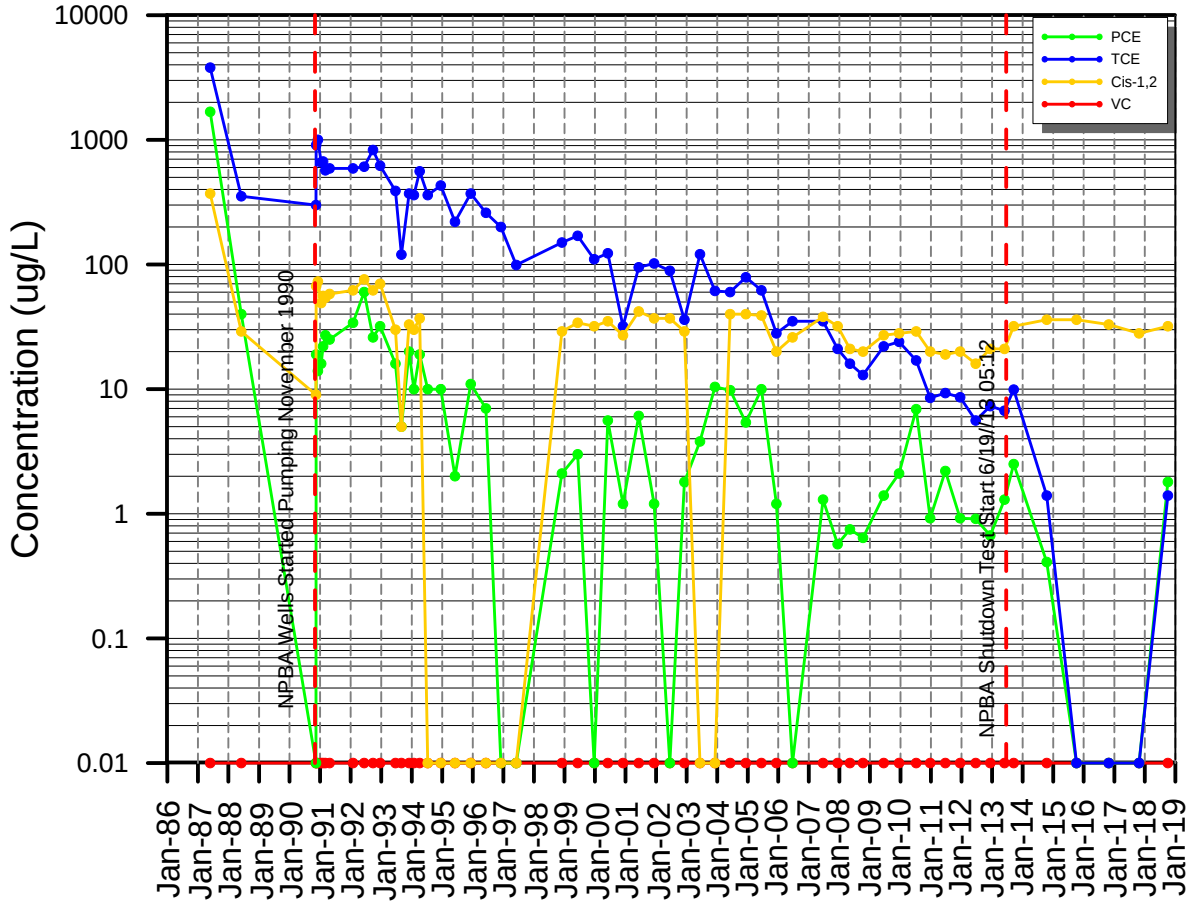
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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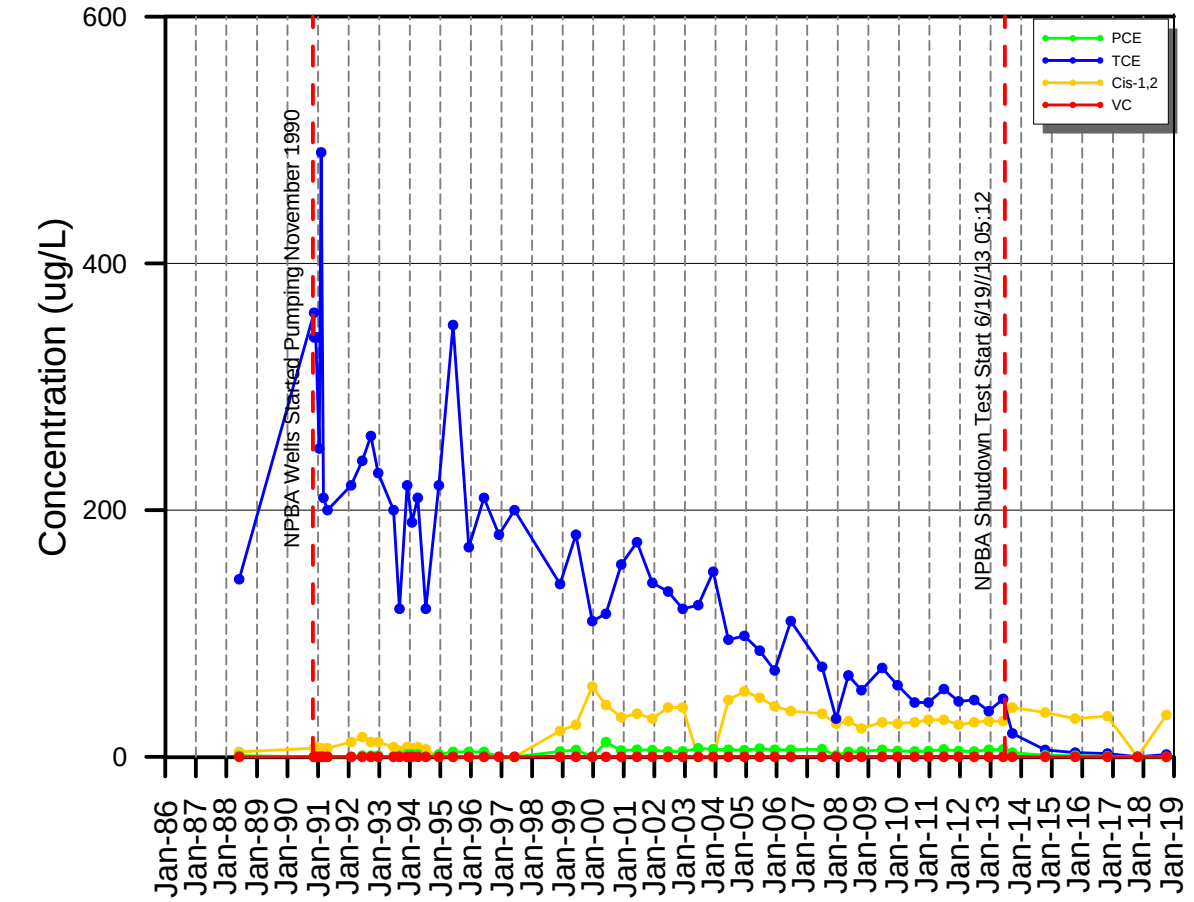
CW-4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Cis-1,2
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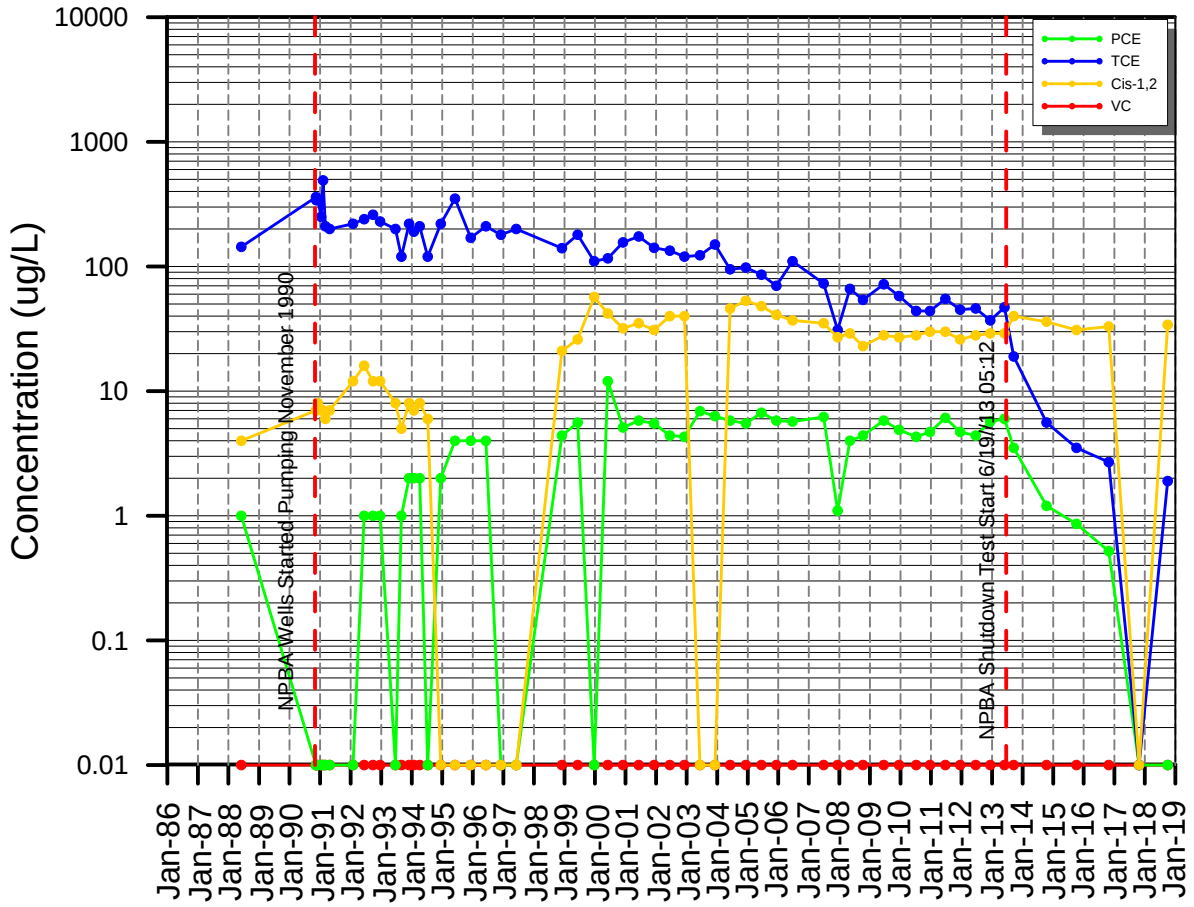
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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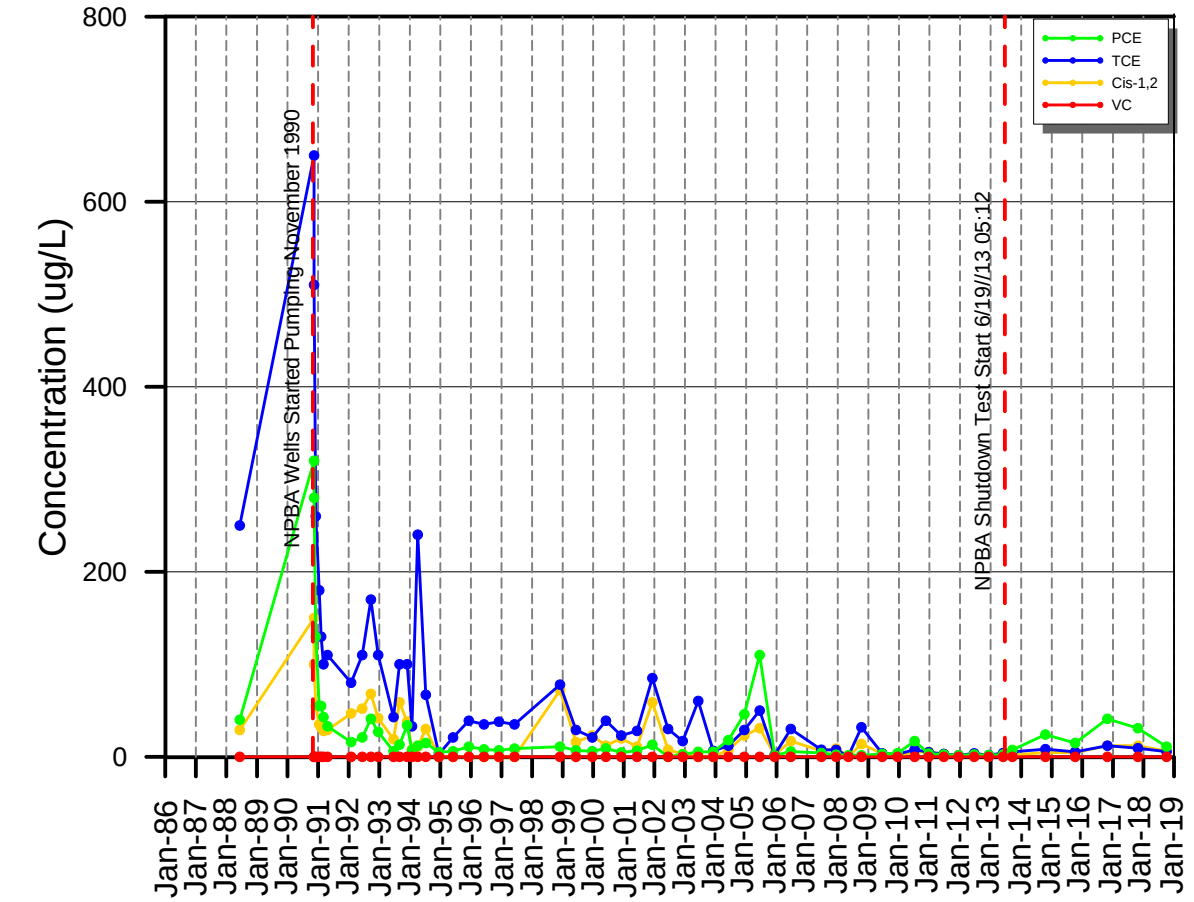
CW-5


Concentration (ug/L)
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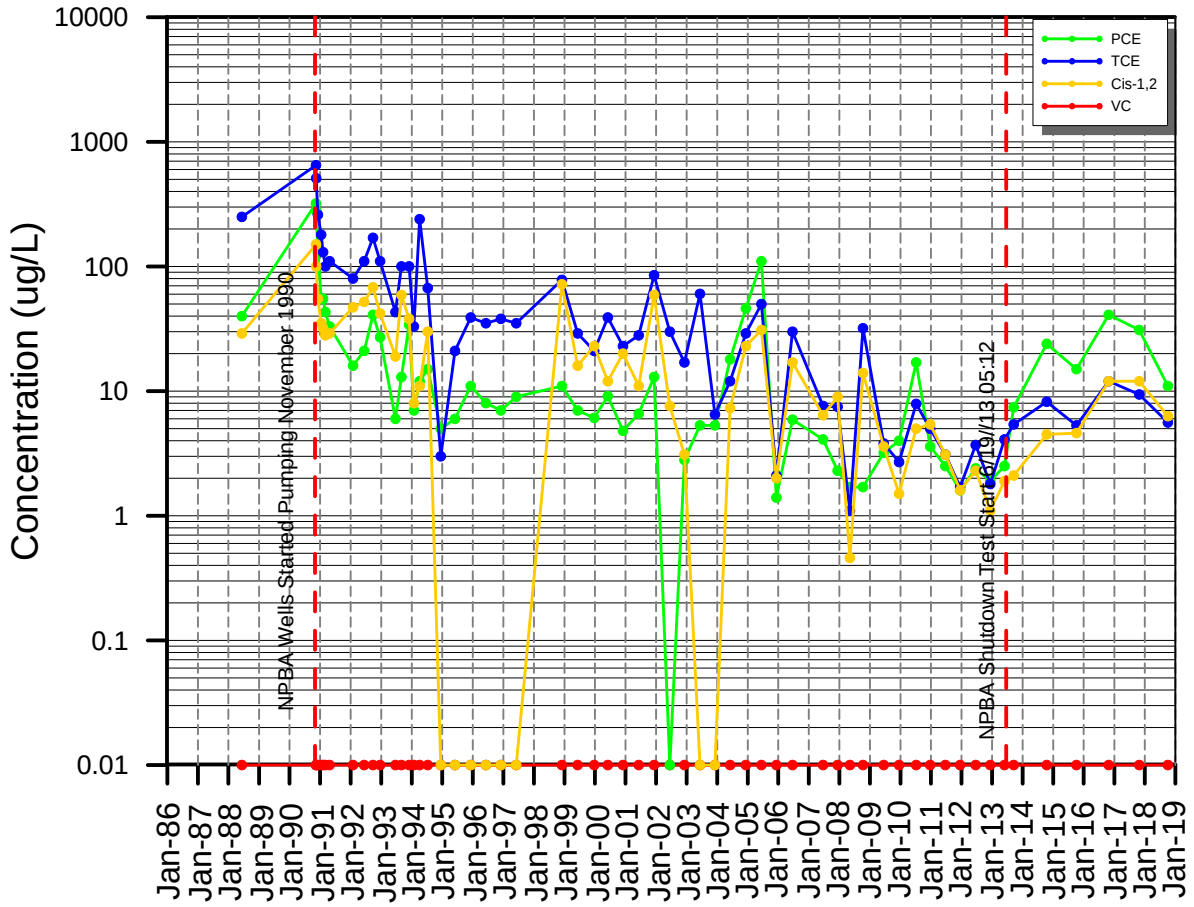
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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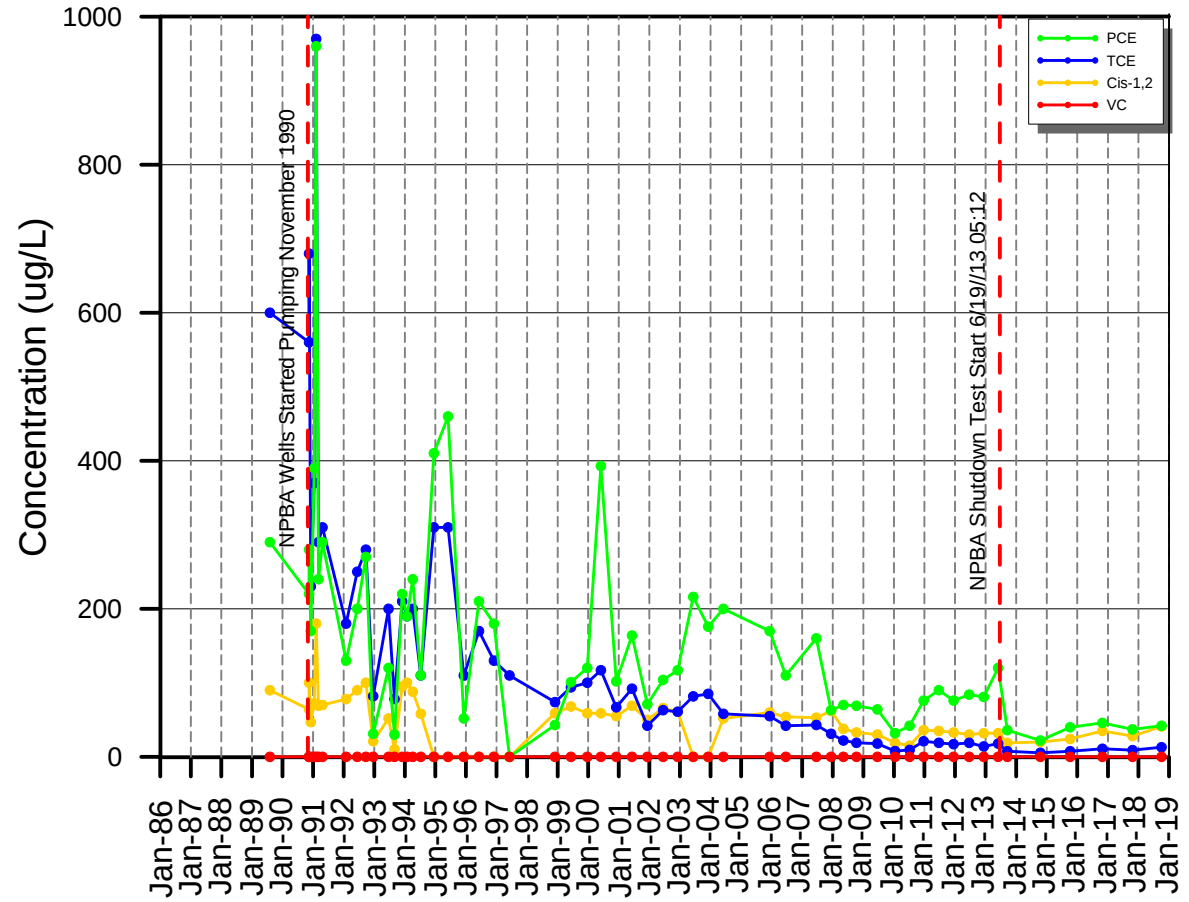
CW-6


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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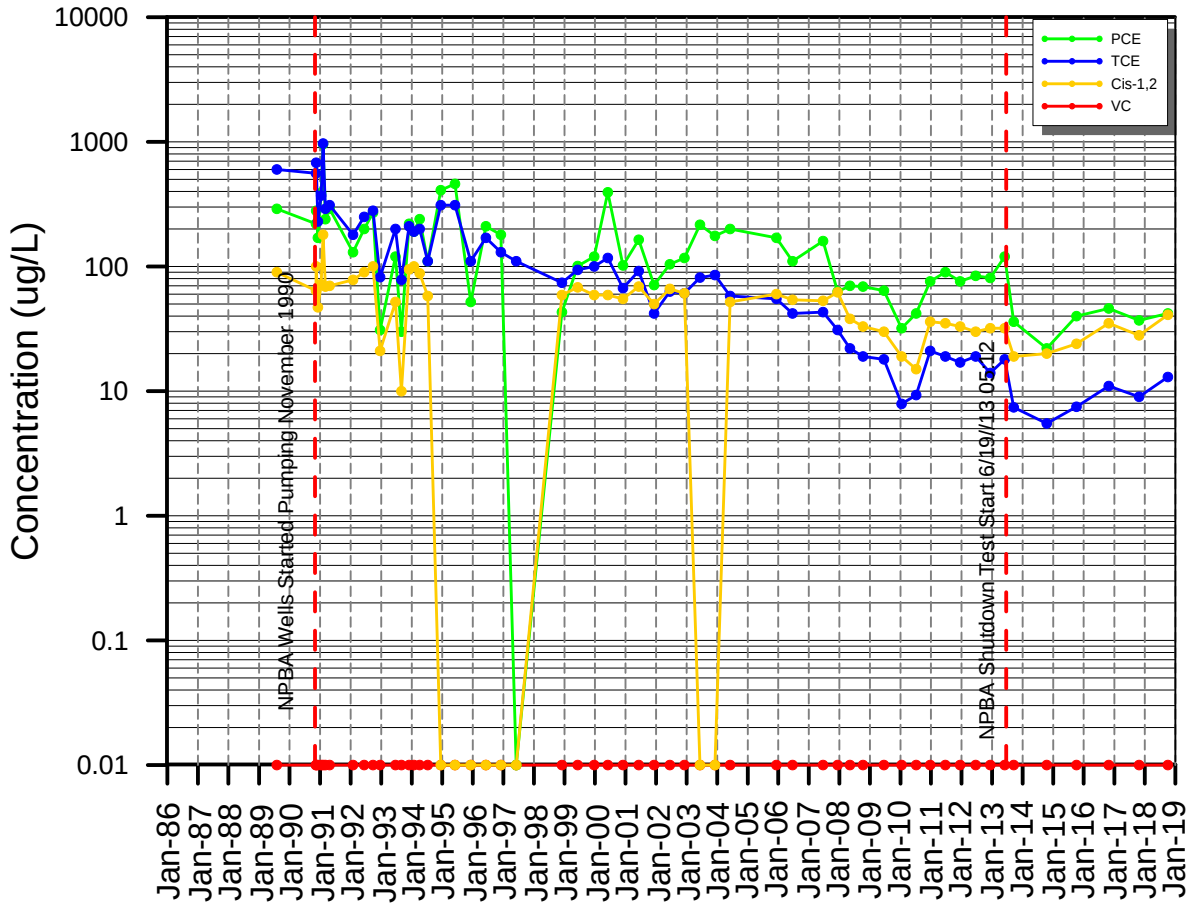
Concentration (ug/L)
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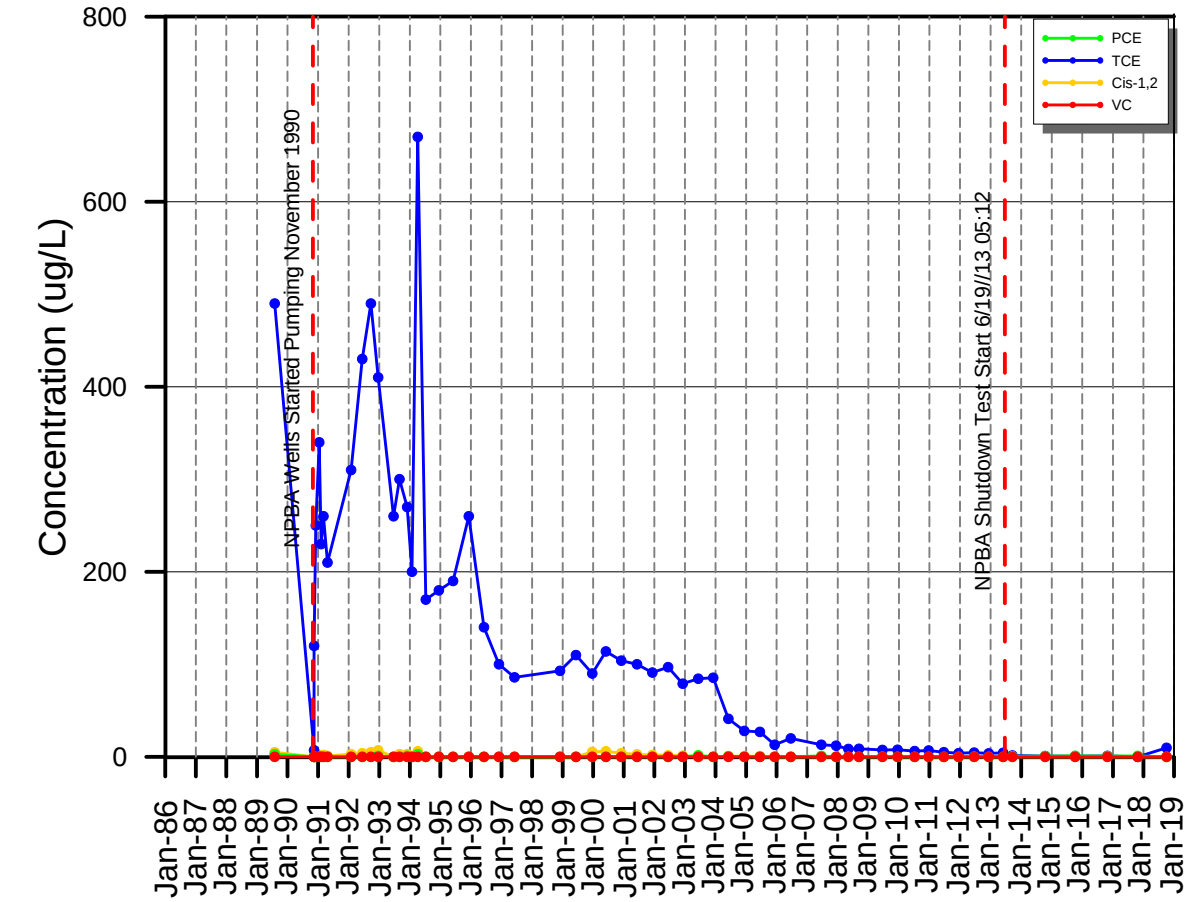
CW-7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NPBA Shutdown Test Start 6/19//13 05:12
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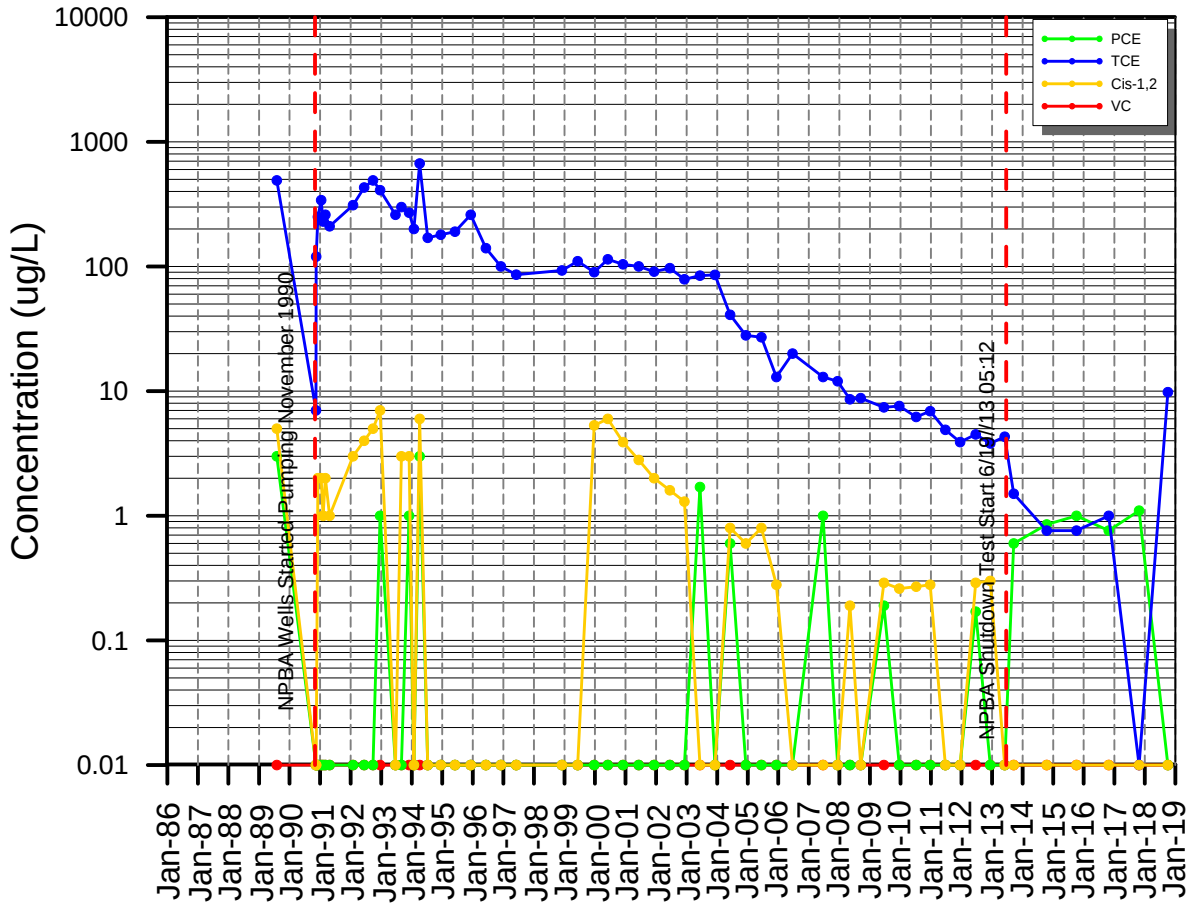
Concentration (ug/L)
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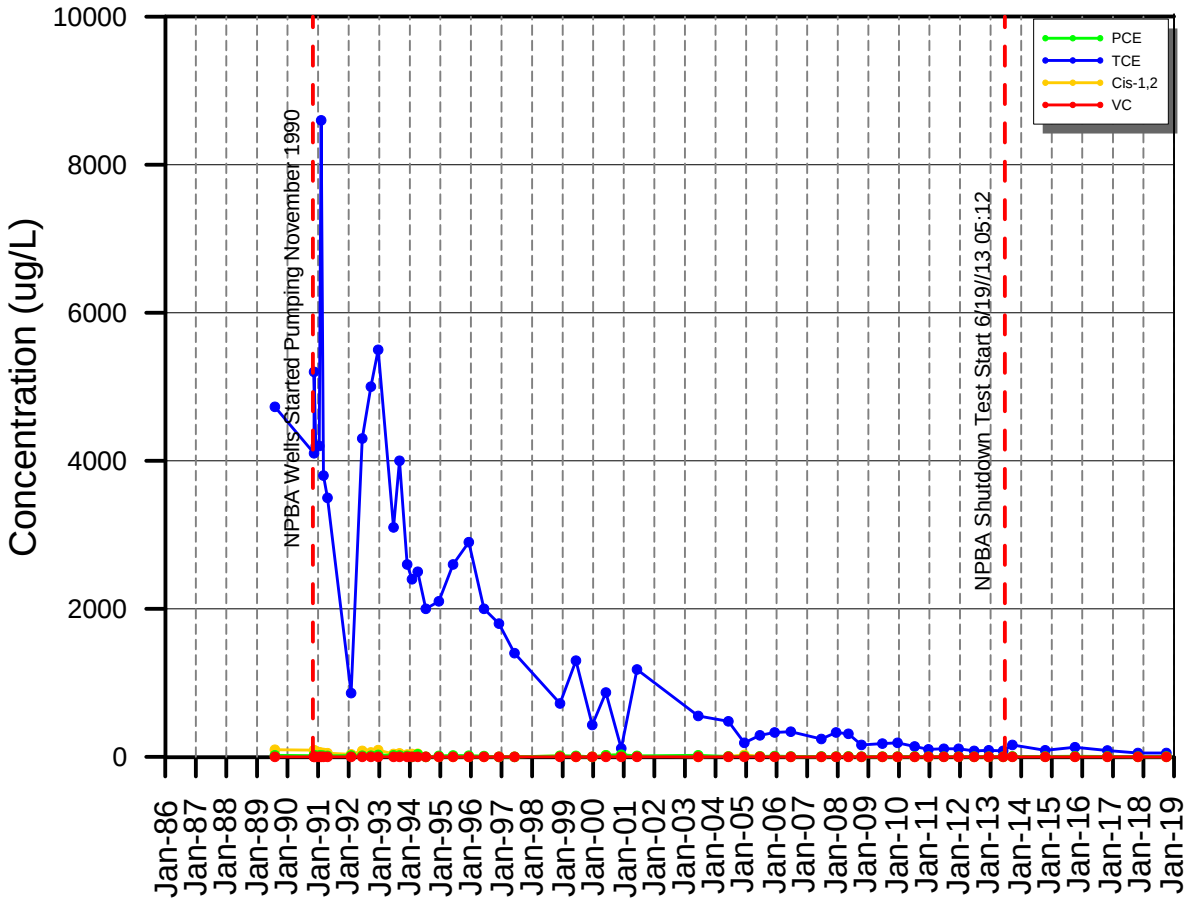
CW-7A


Concentration (ug/L)
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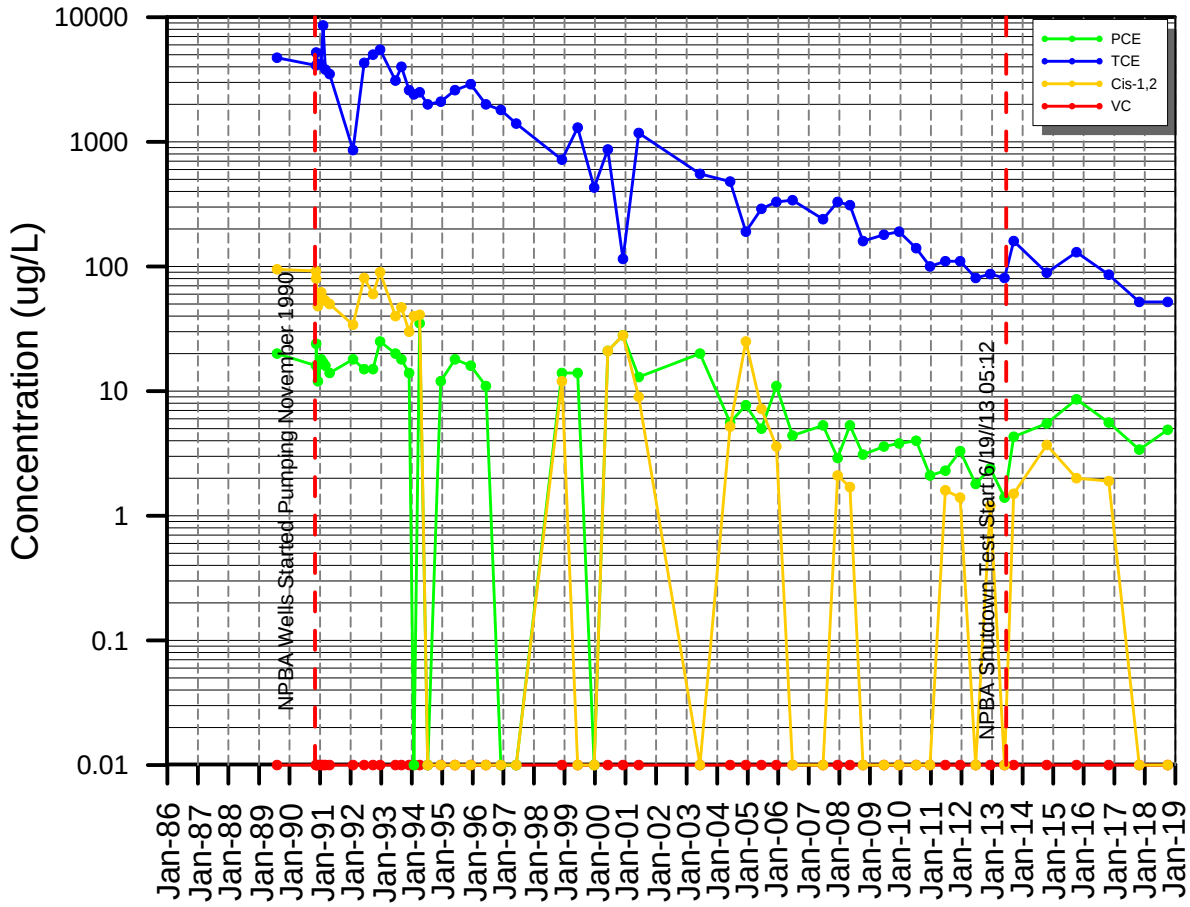
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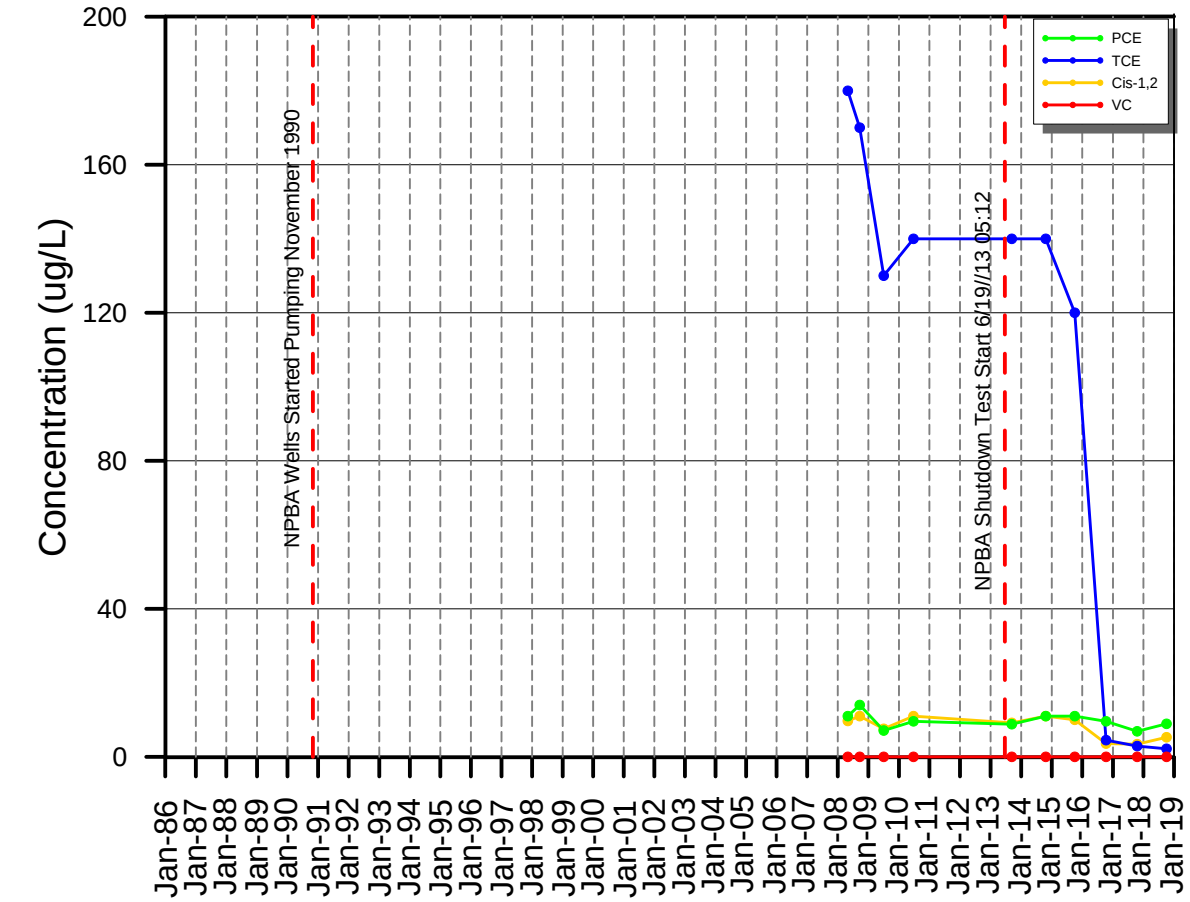
MW-102D


Concentration (ug/L)
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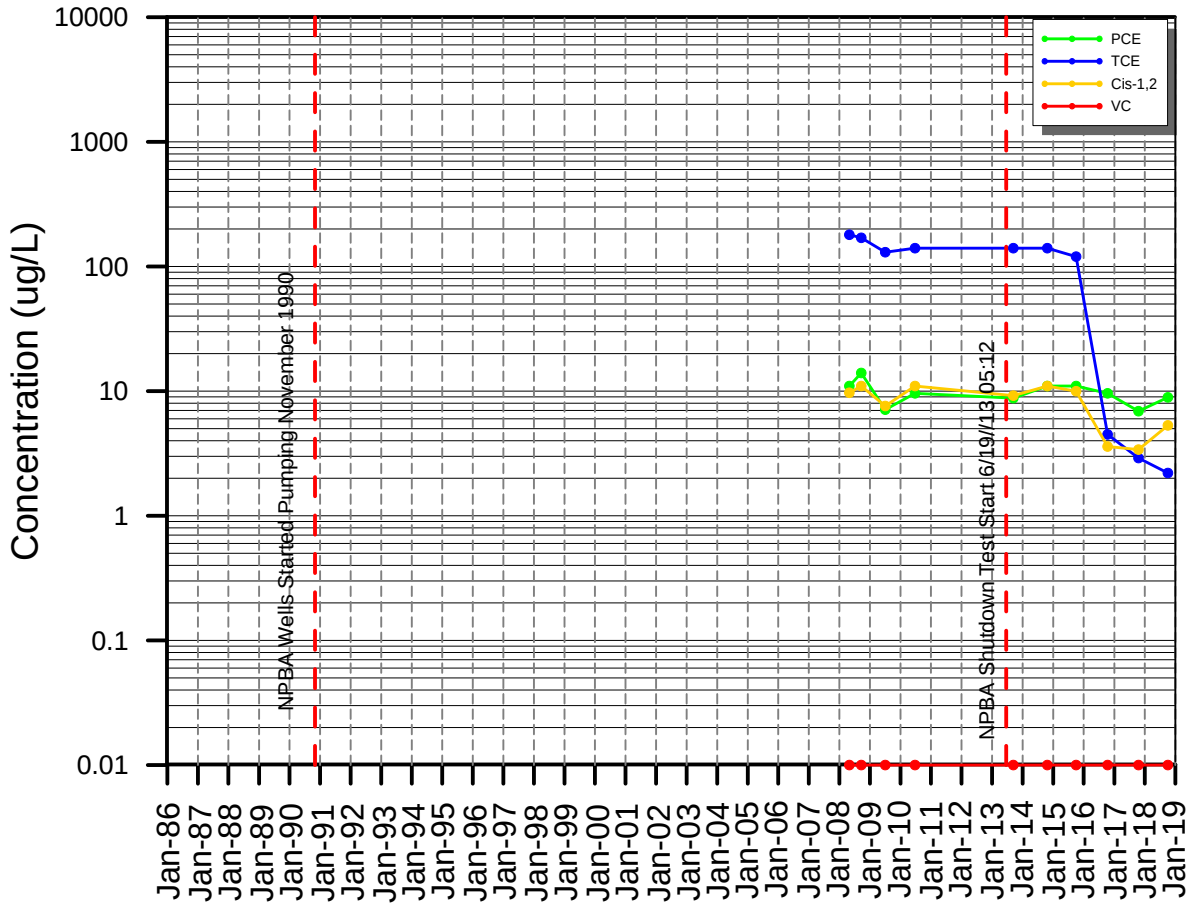
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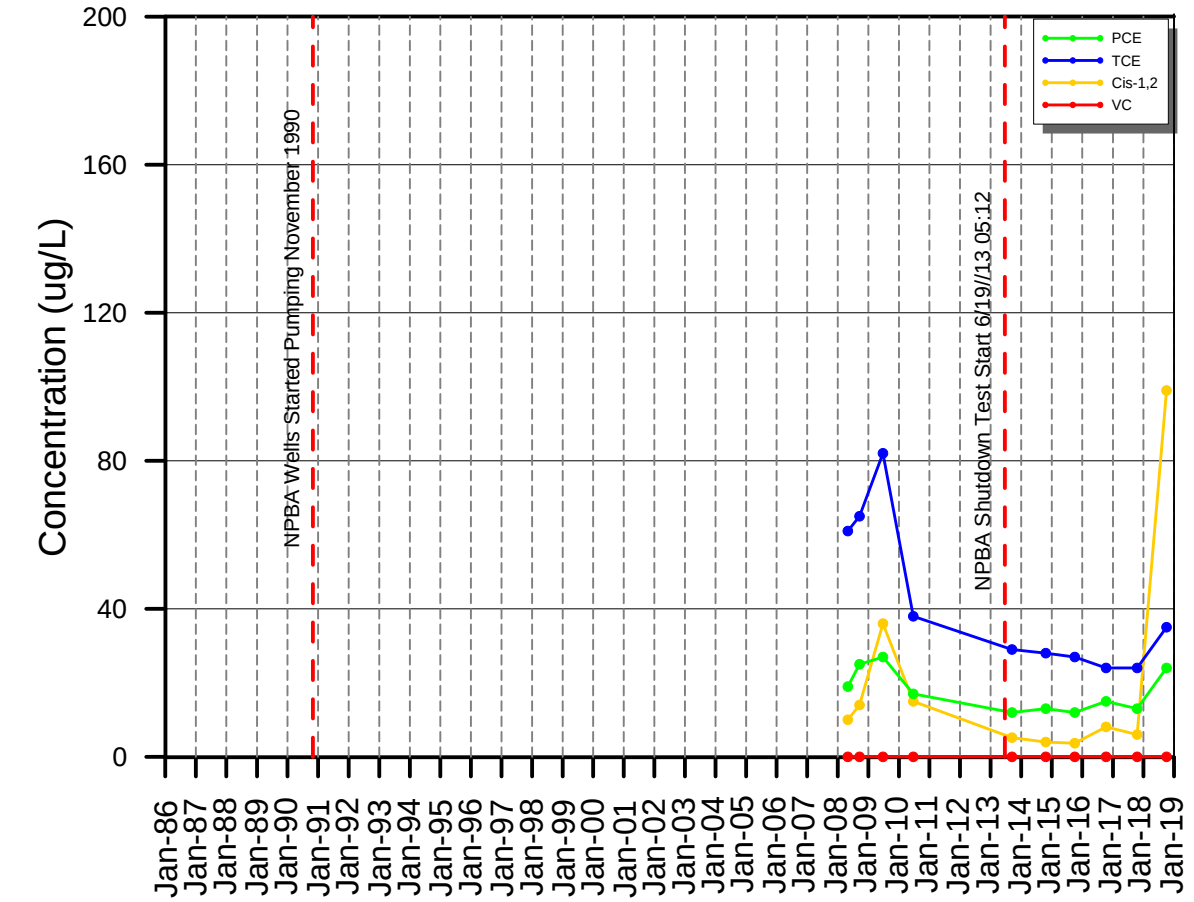
MW-102S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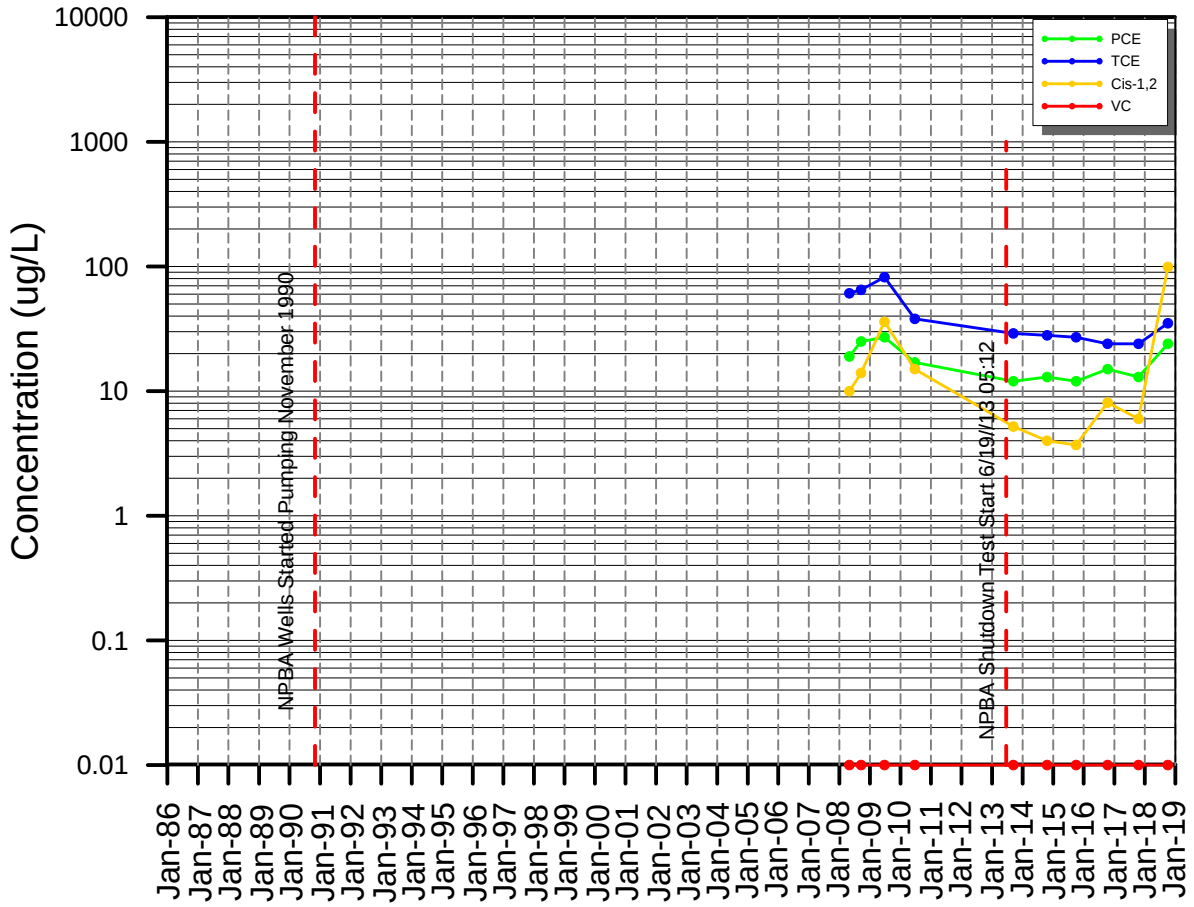
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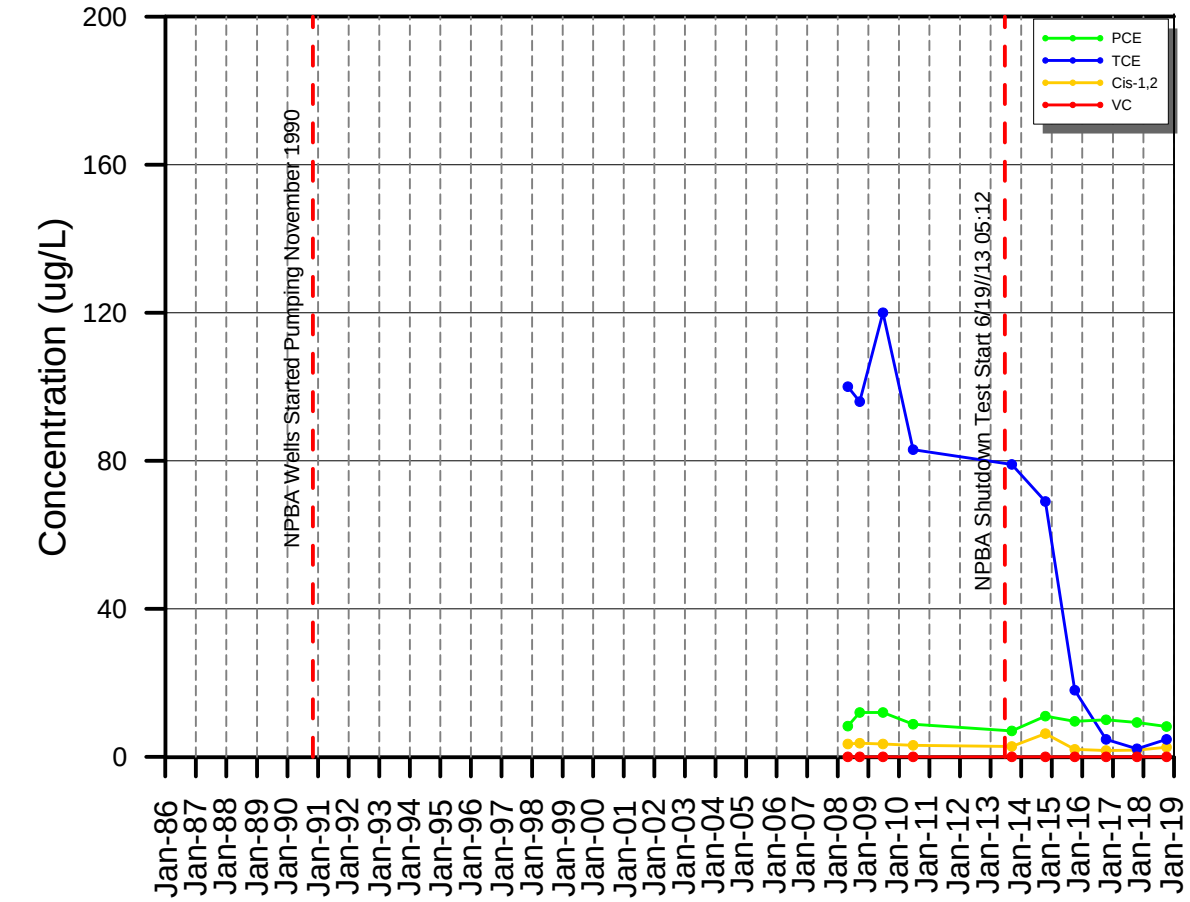
MW-103D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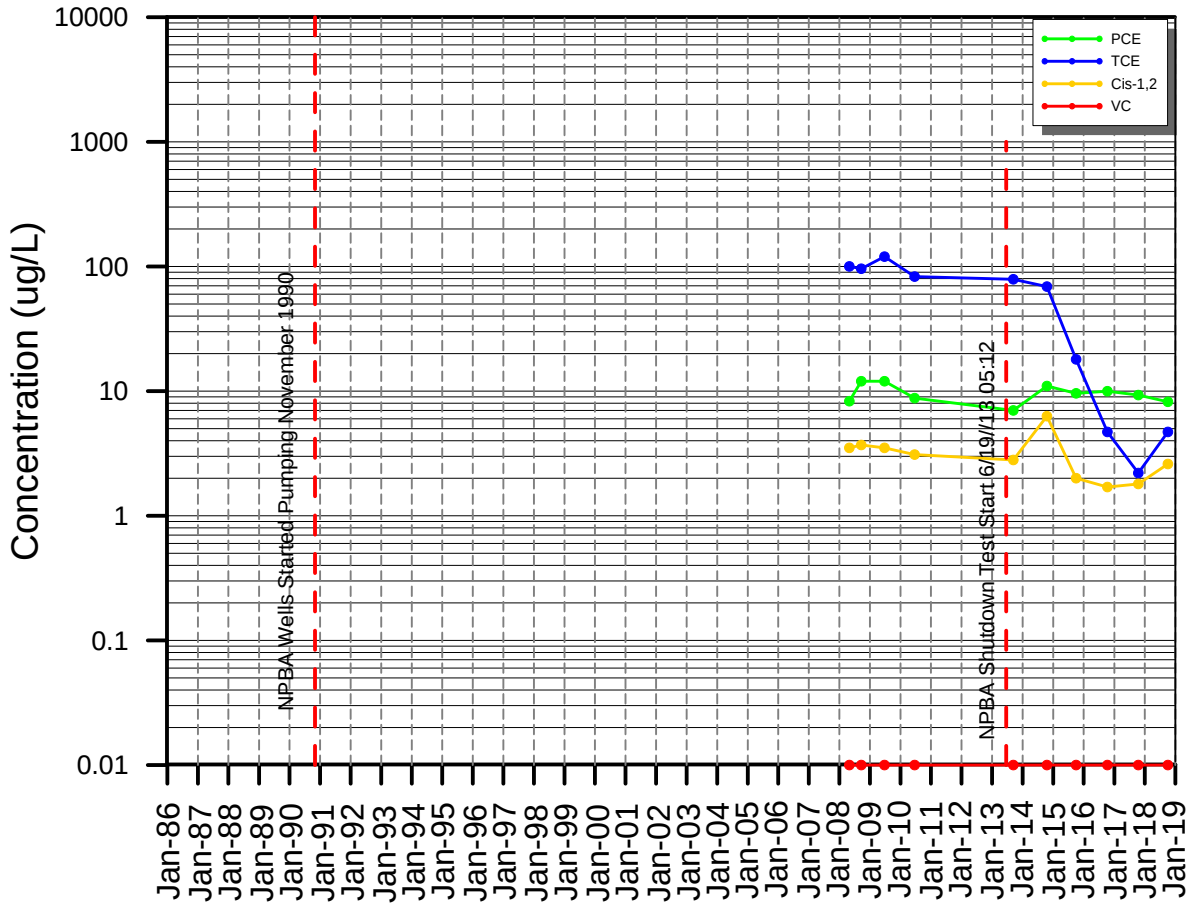
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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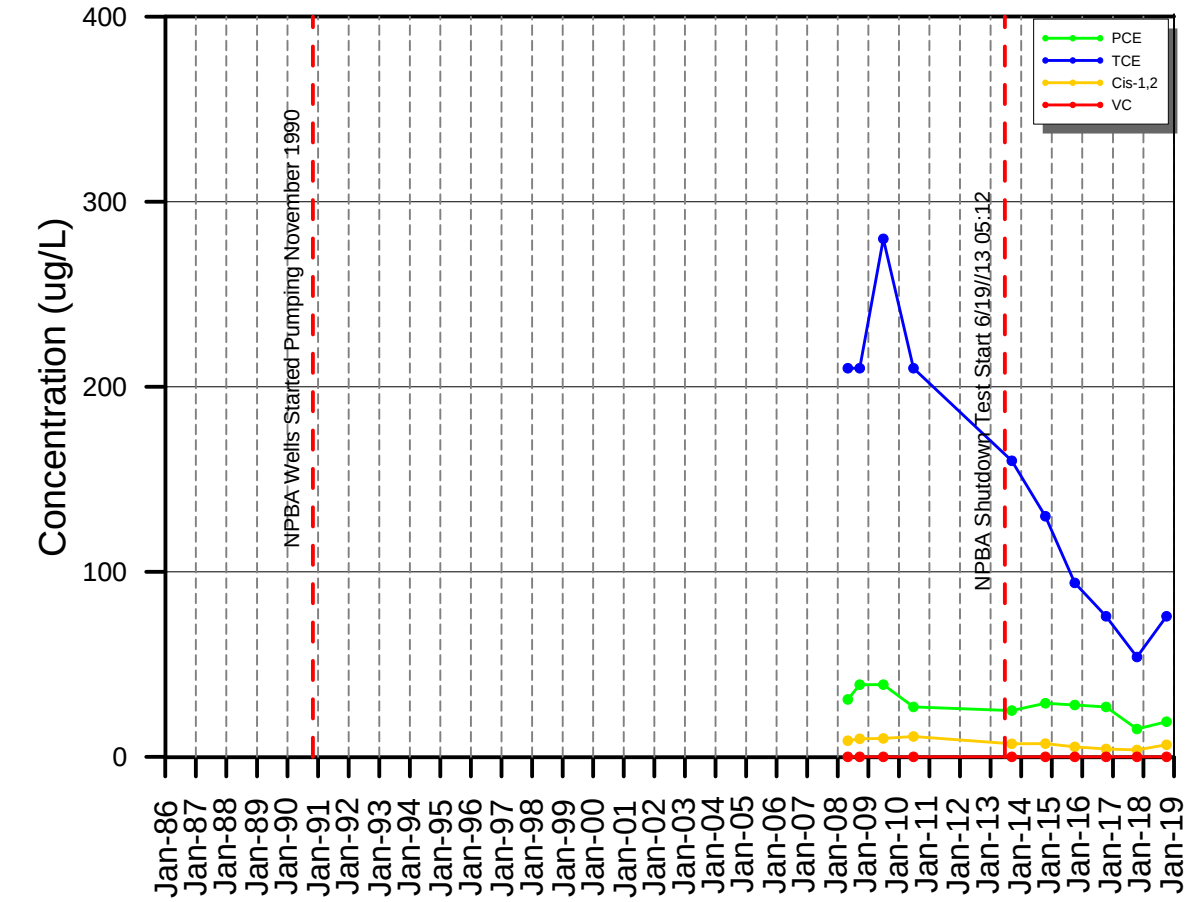
MW-103S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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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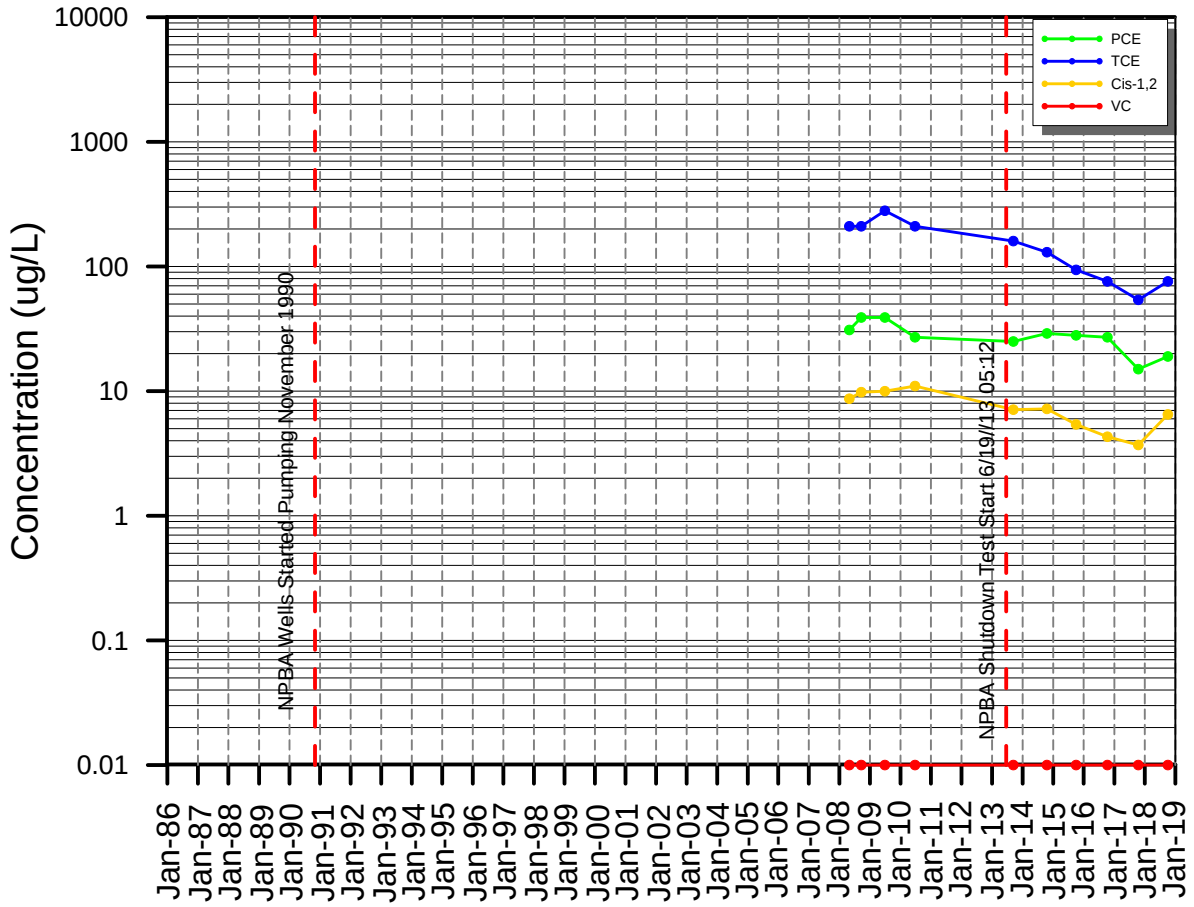
Concentration (ug/L)
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19/13 05:12
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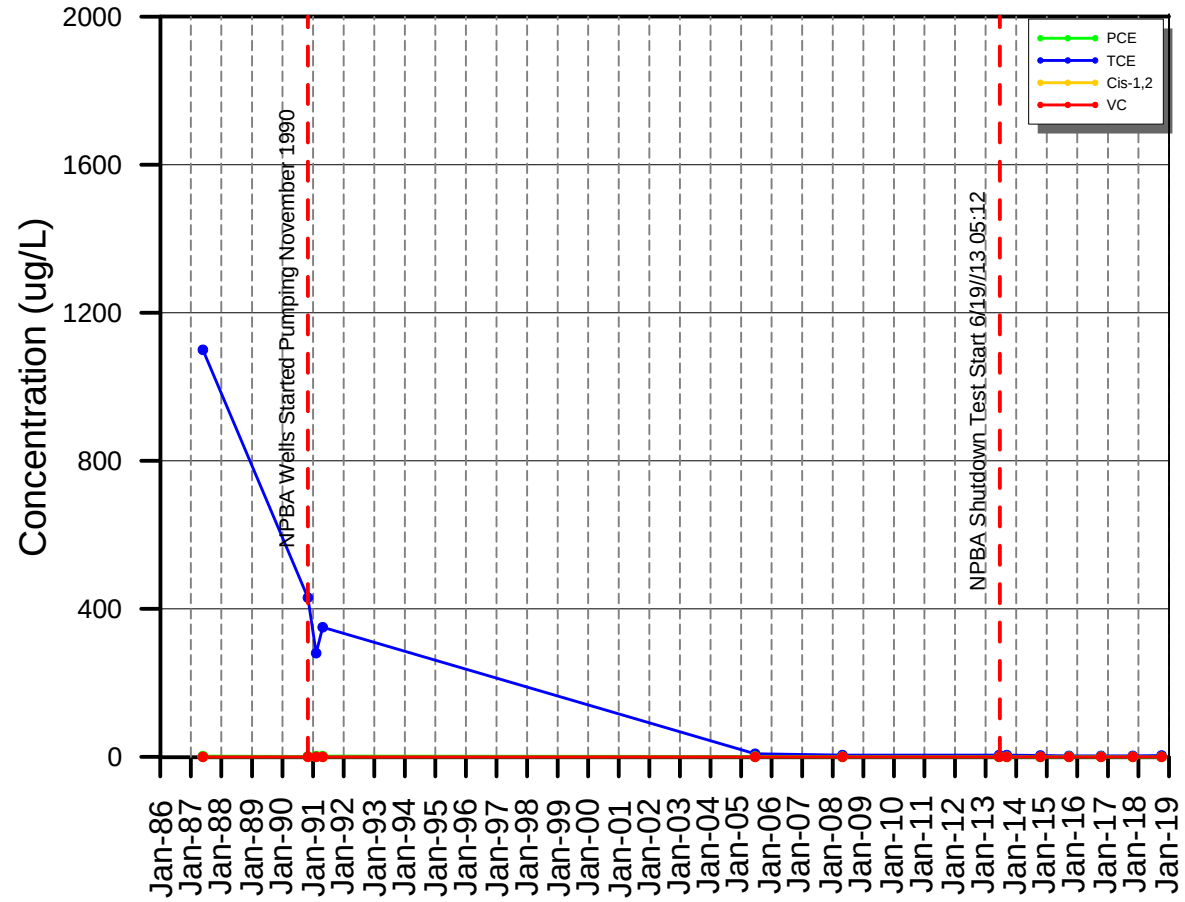
MW-11


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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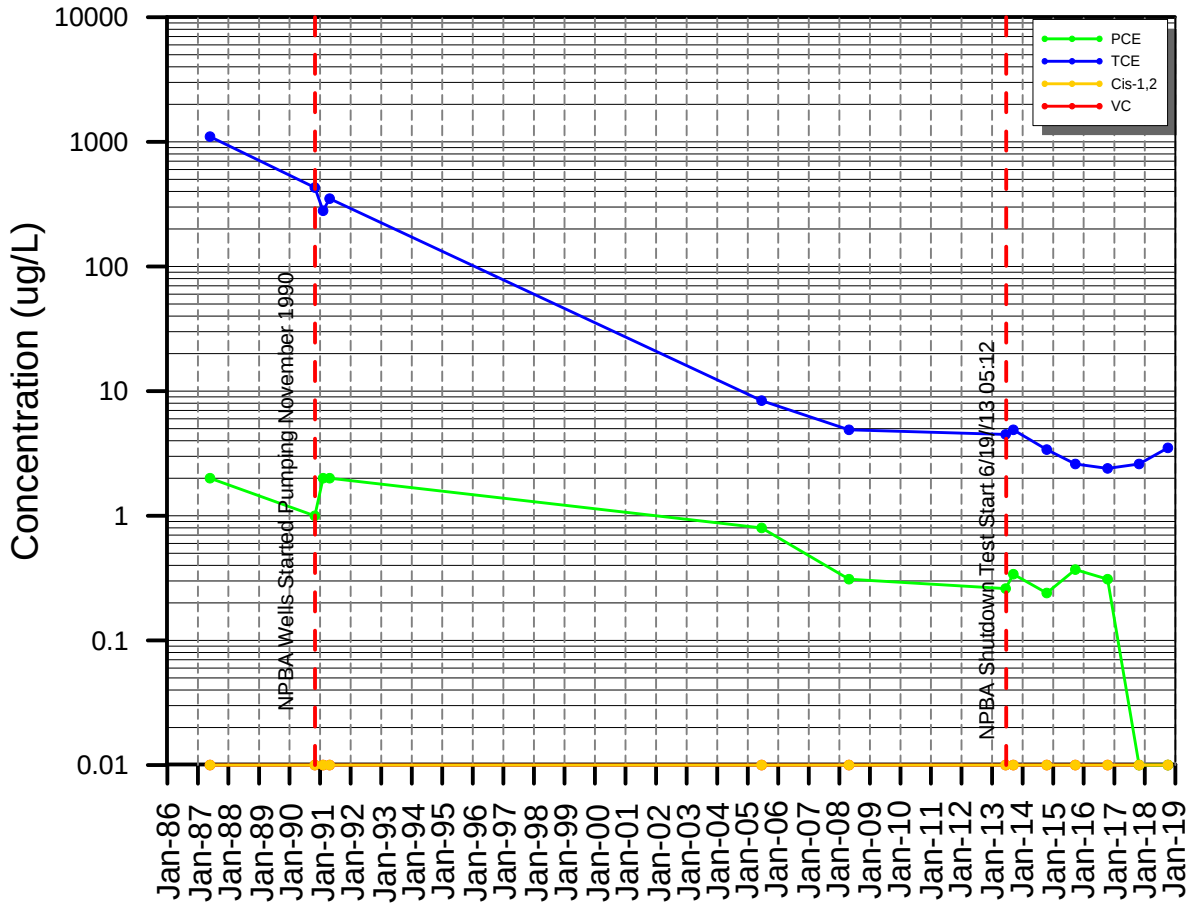
Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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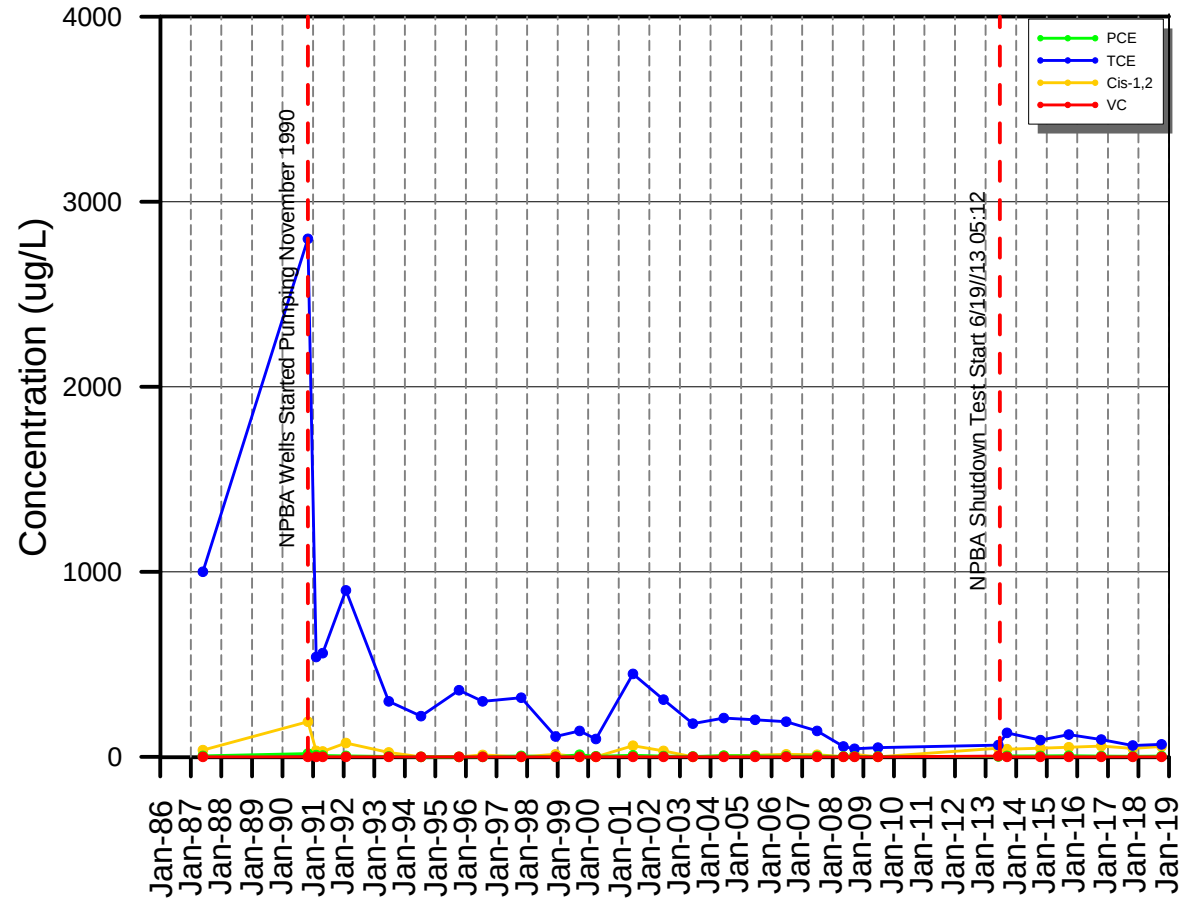
MW-12


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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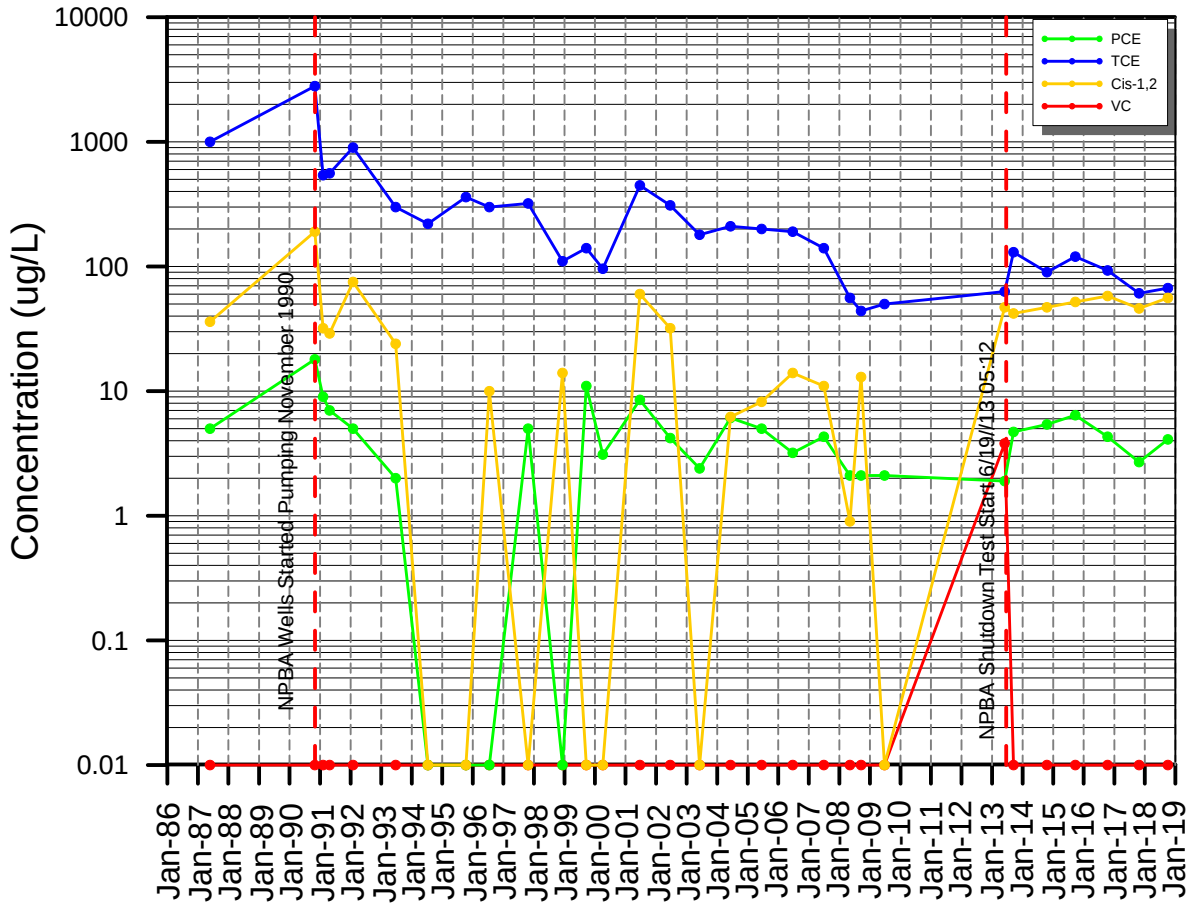
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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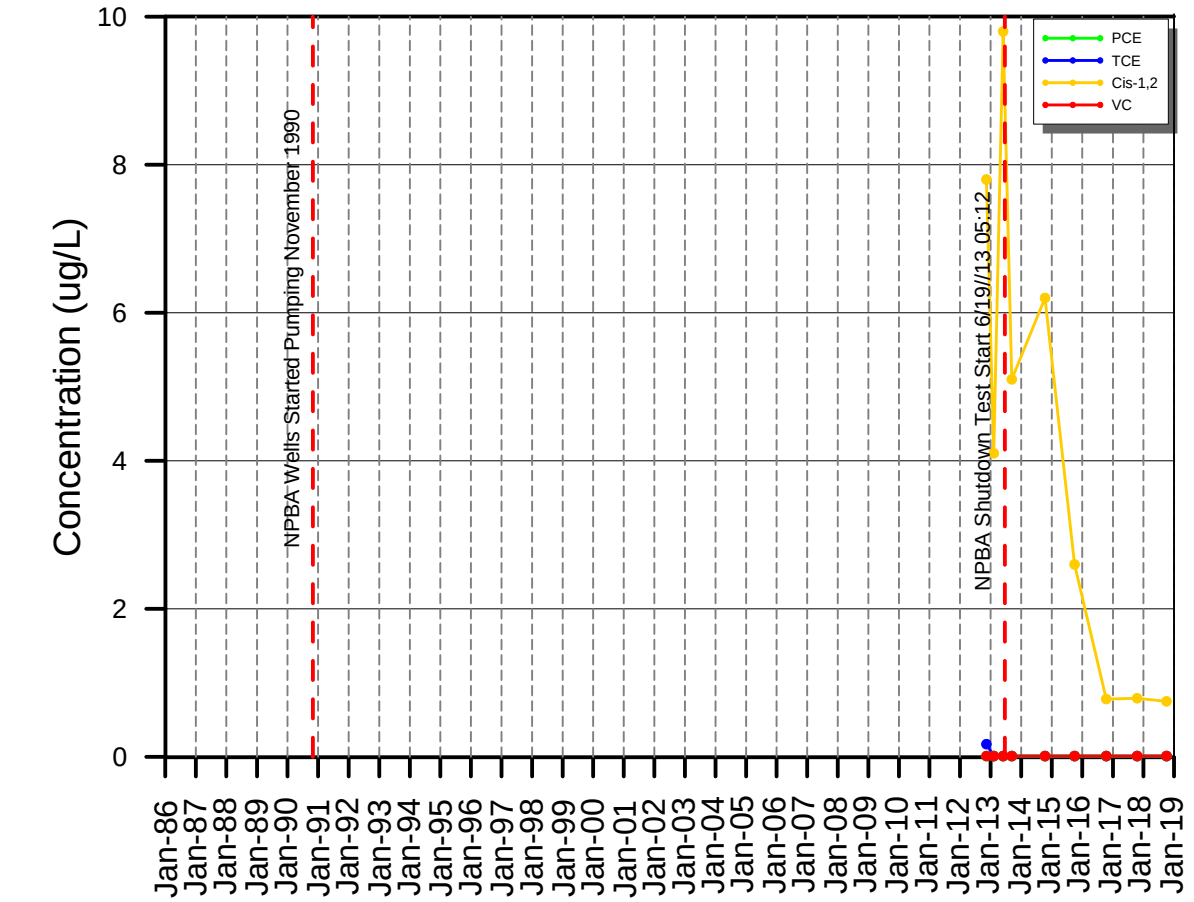
MW-142D


Concentration (ug/L)
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Cis-1,2
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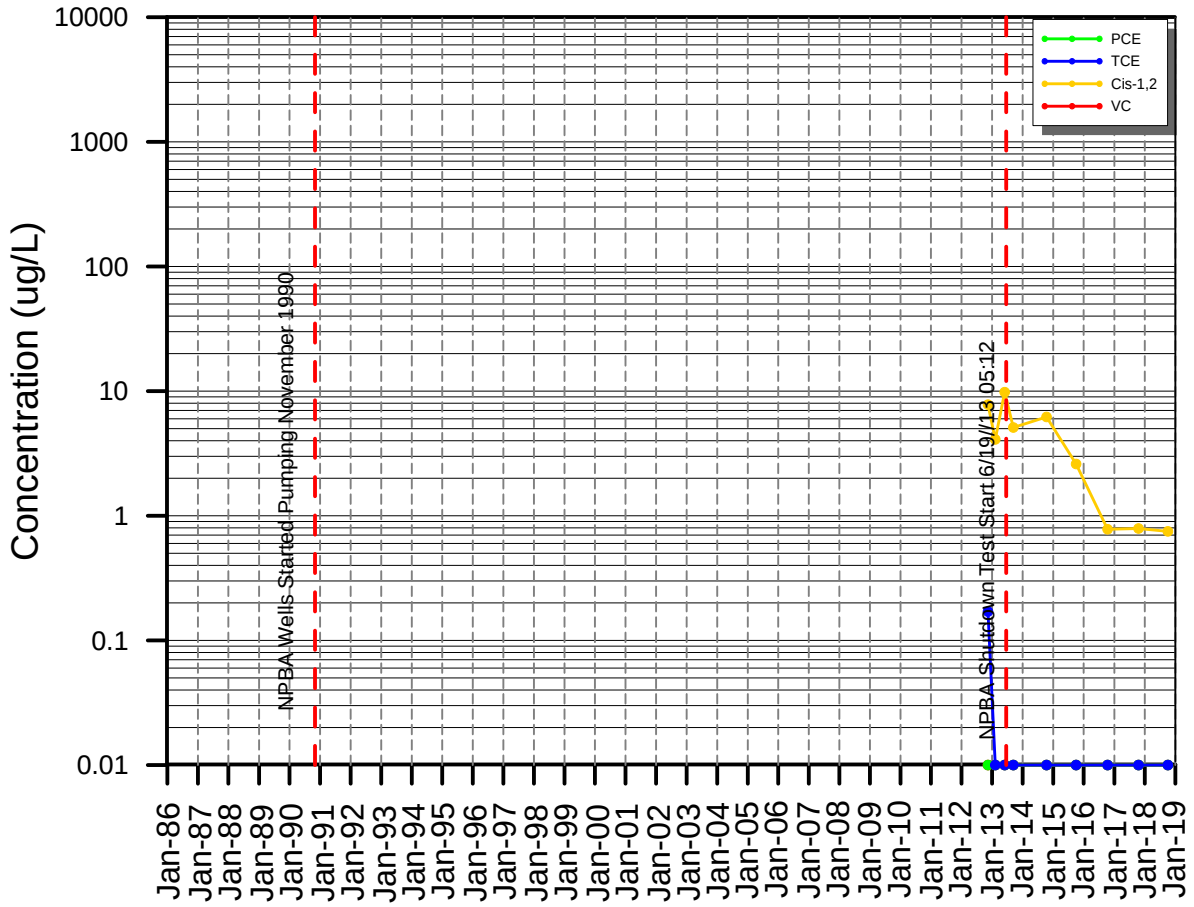
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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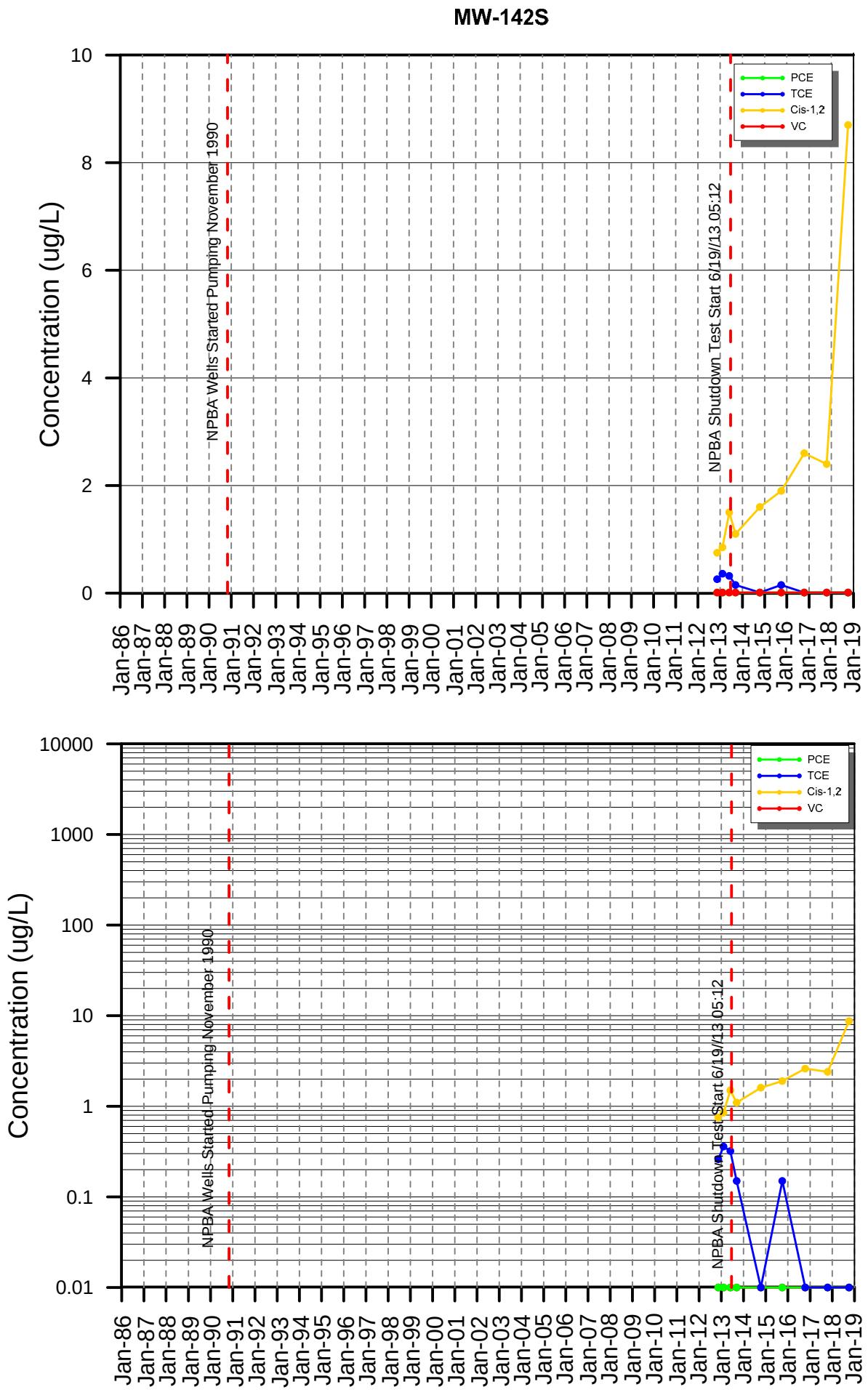
MW-142S
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19/13 05:12
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Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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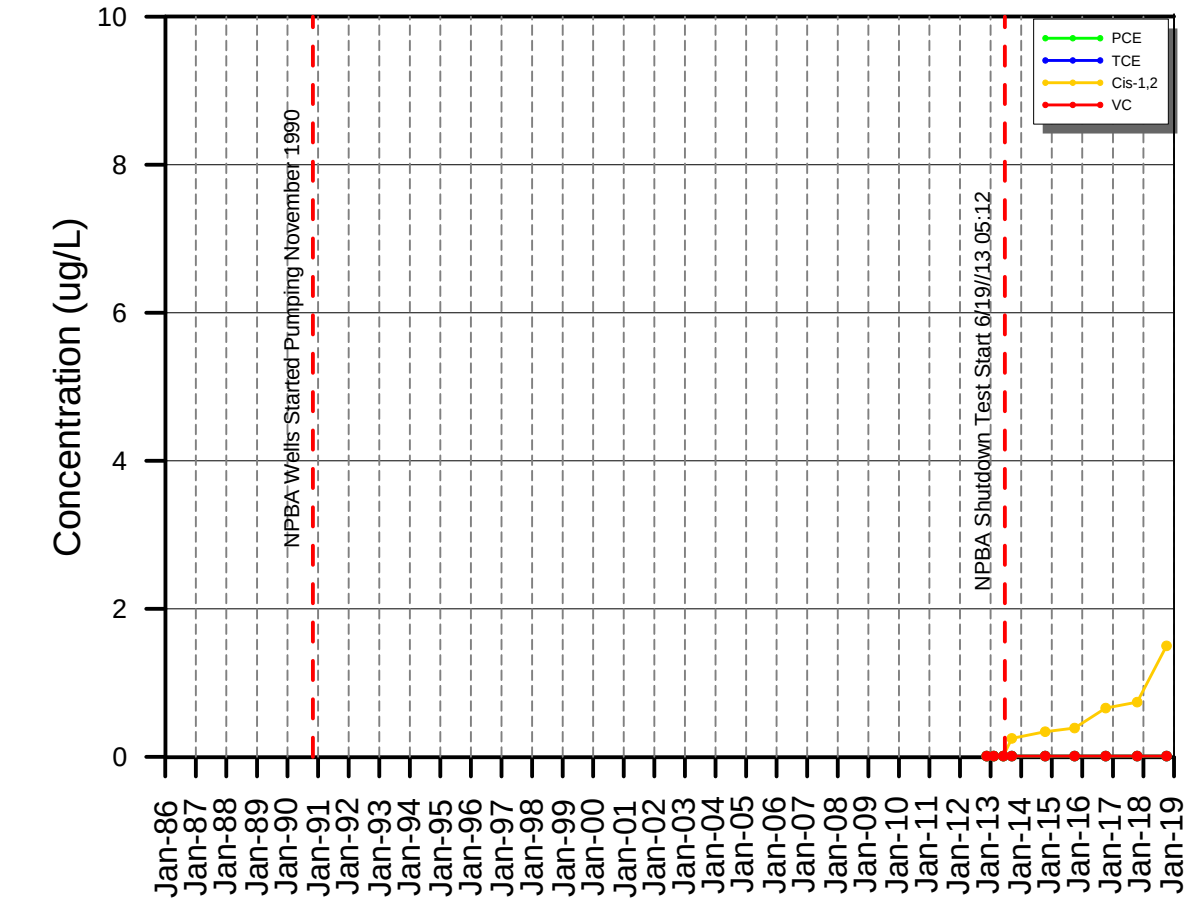
MW-143D


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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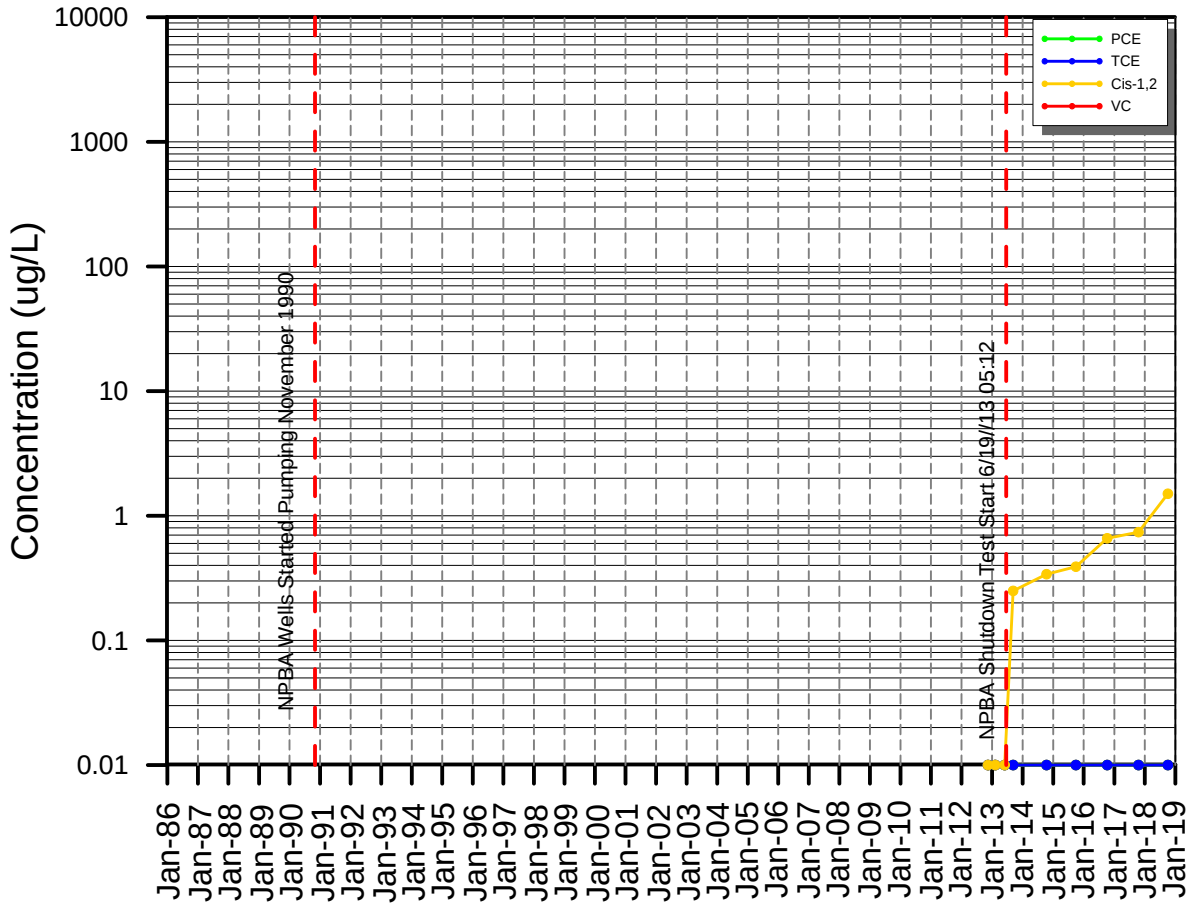
Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
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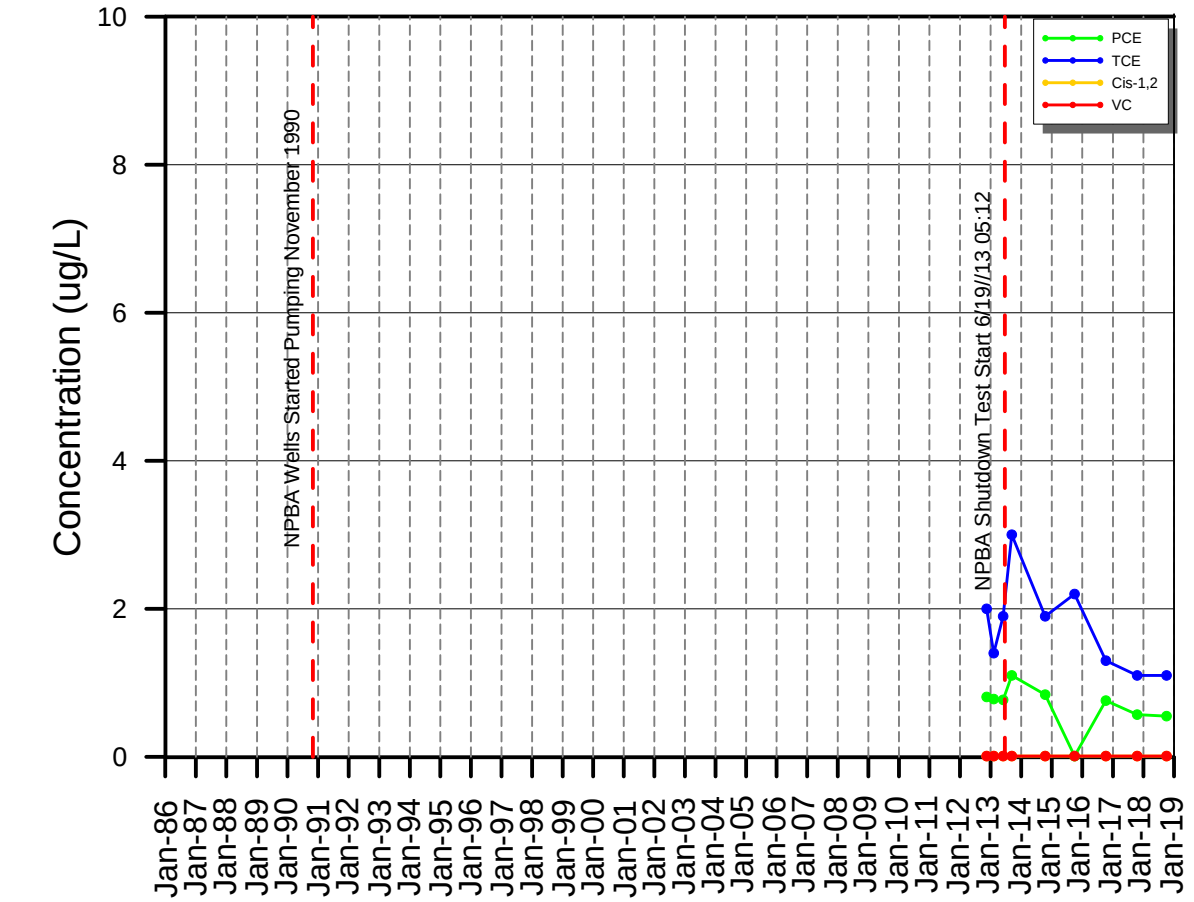
MW-143S


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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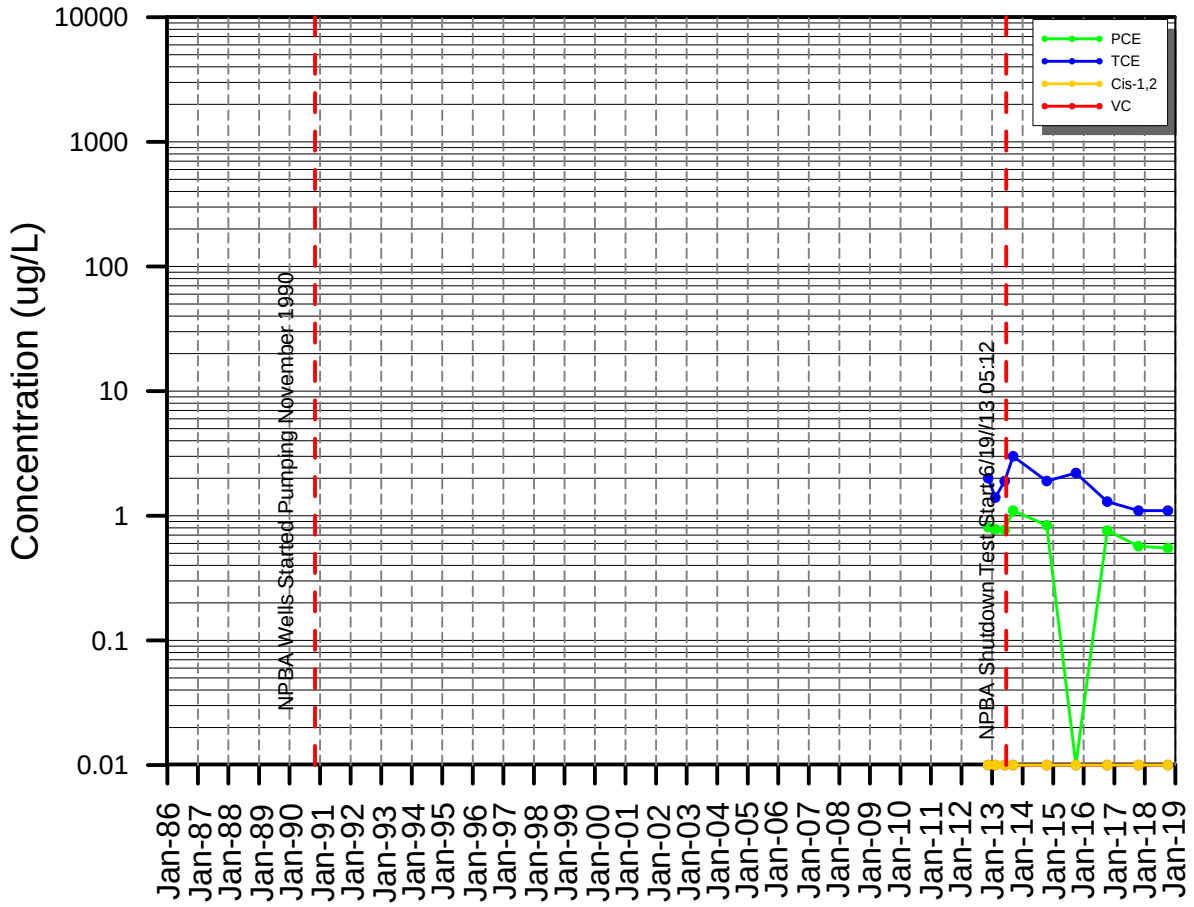
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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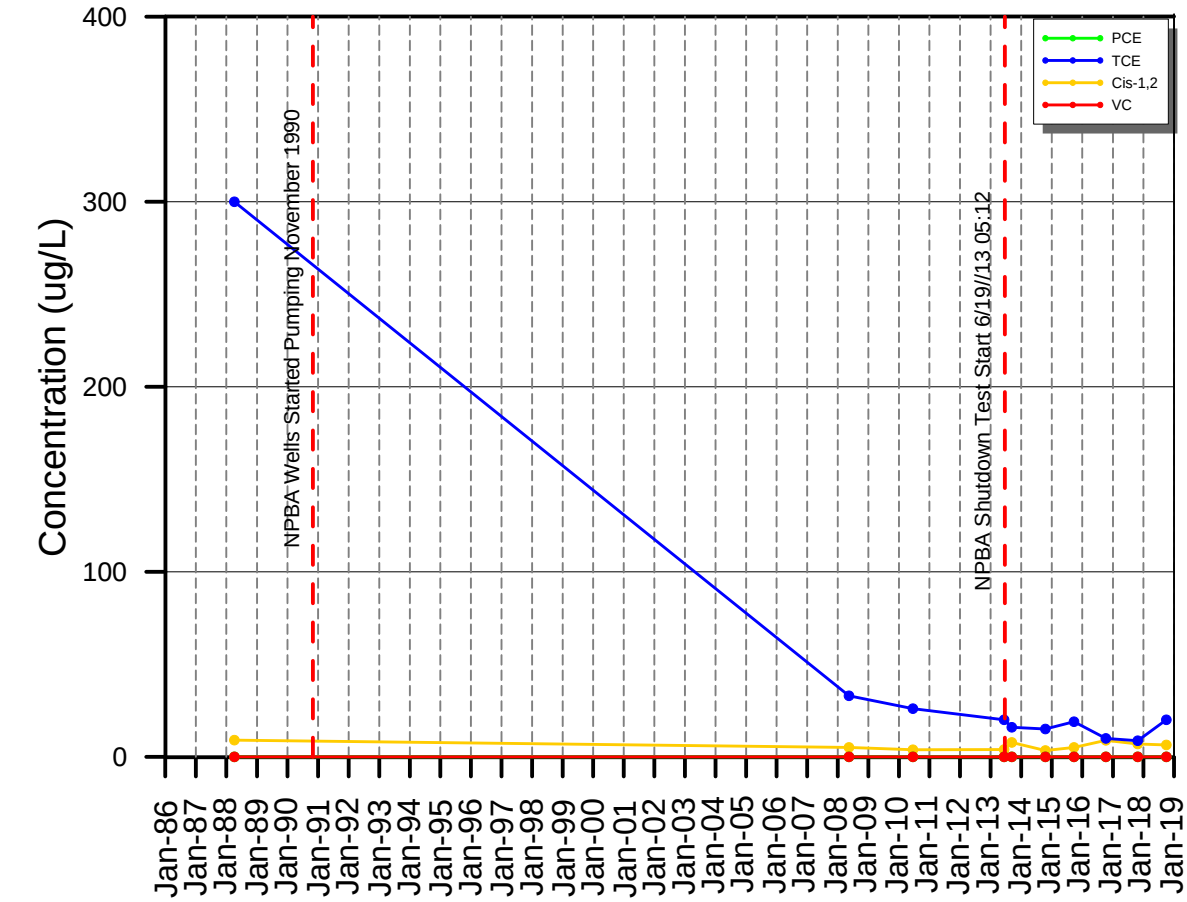
MW-16D


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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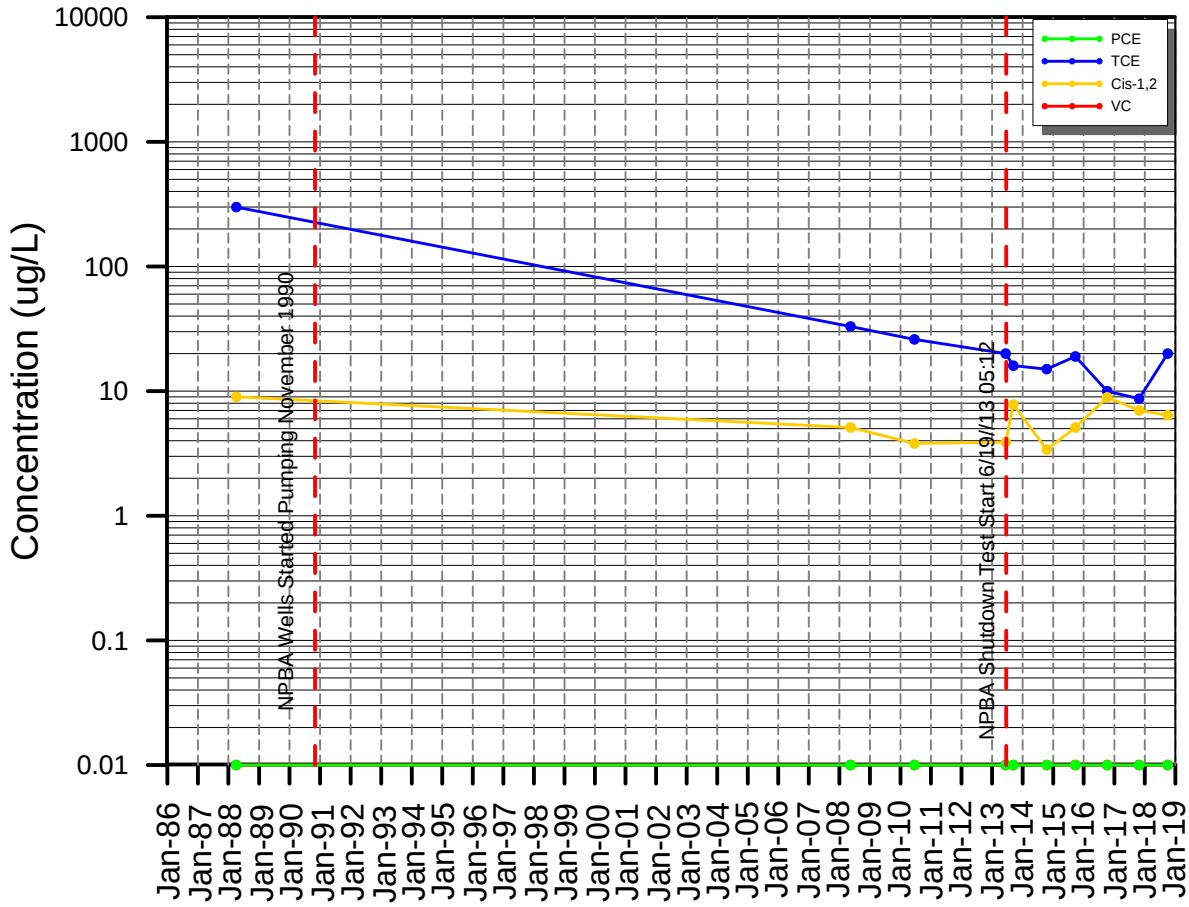
Concentration (ug/L)
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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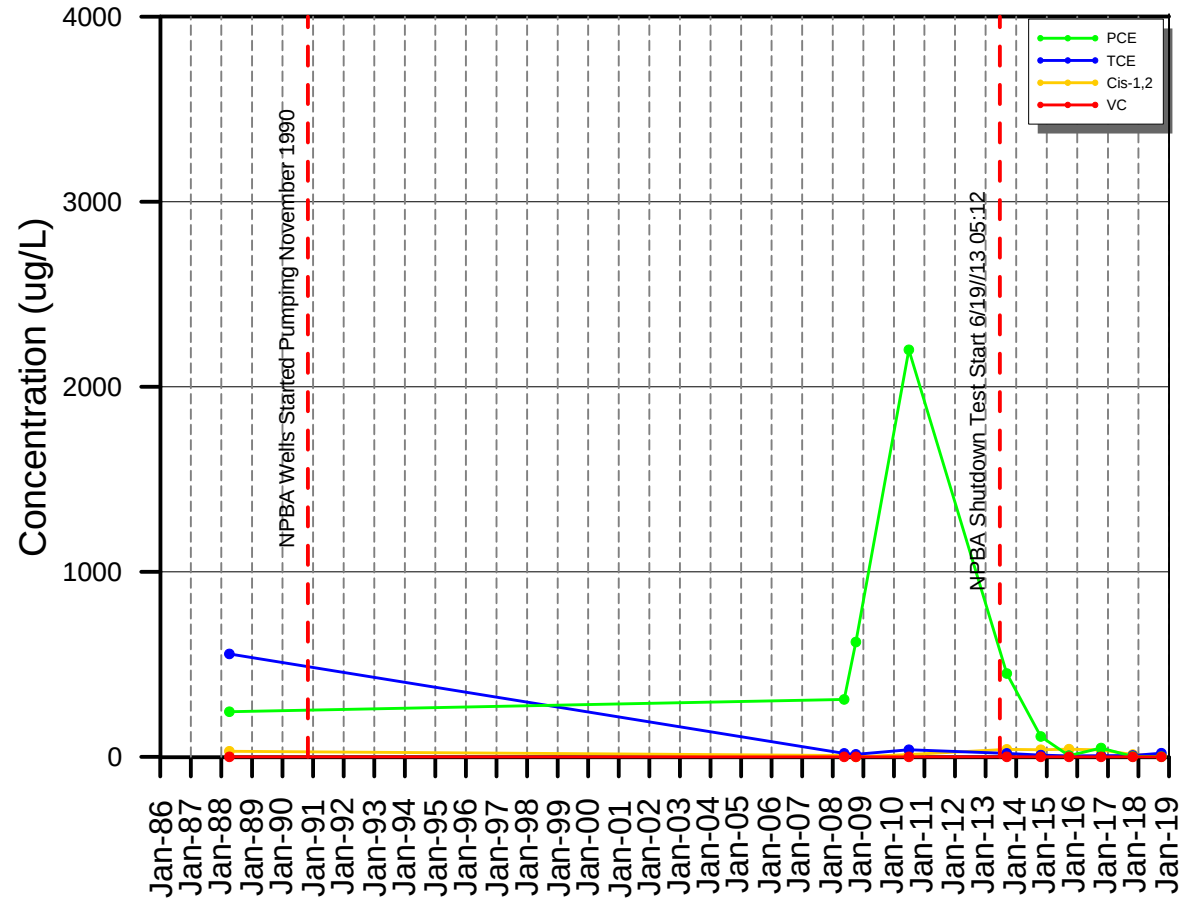
MW-16S


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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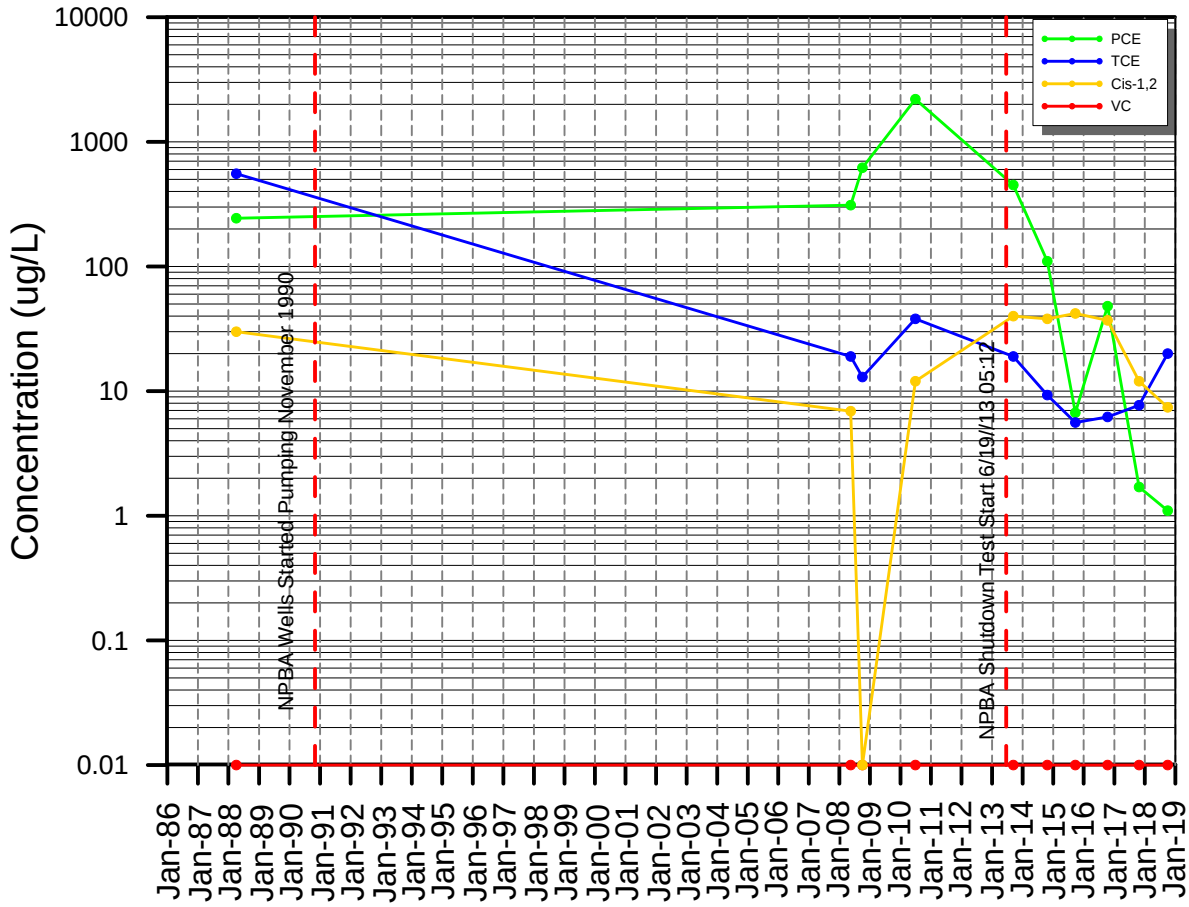
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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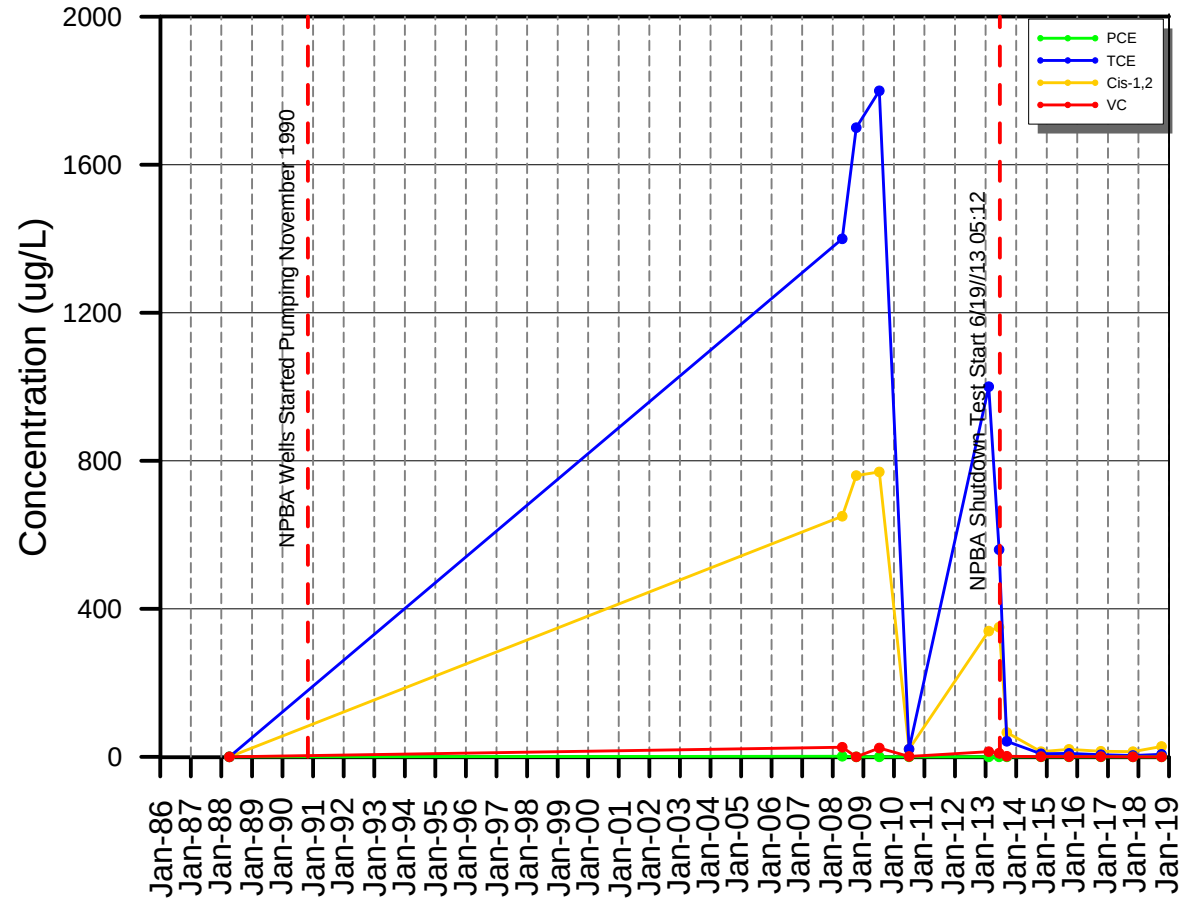
MW-18D


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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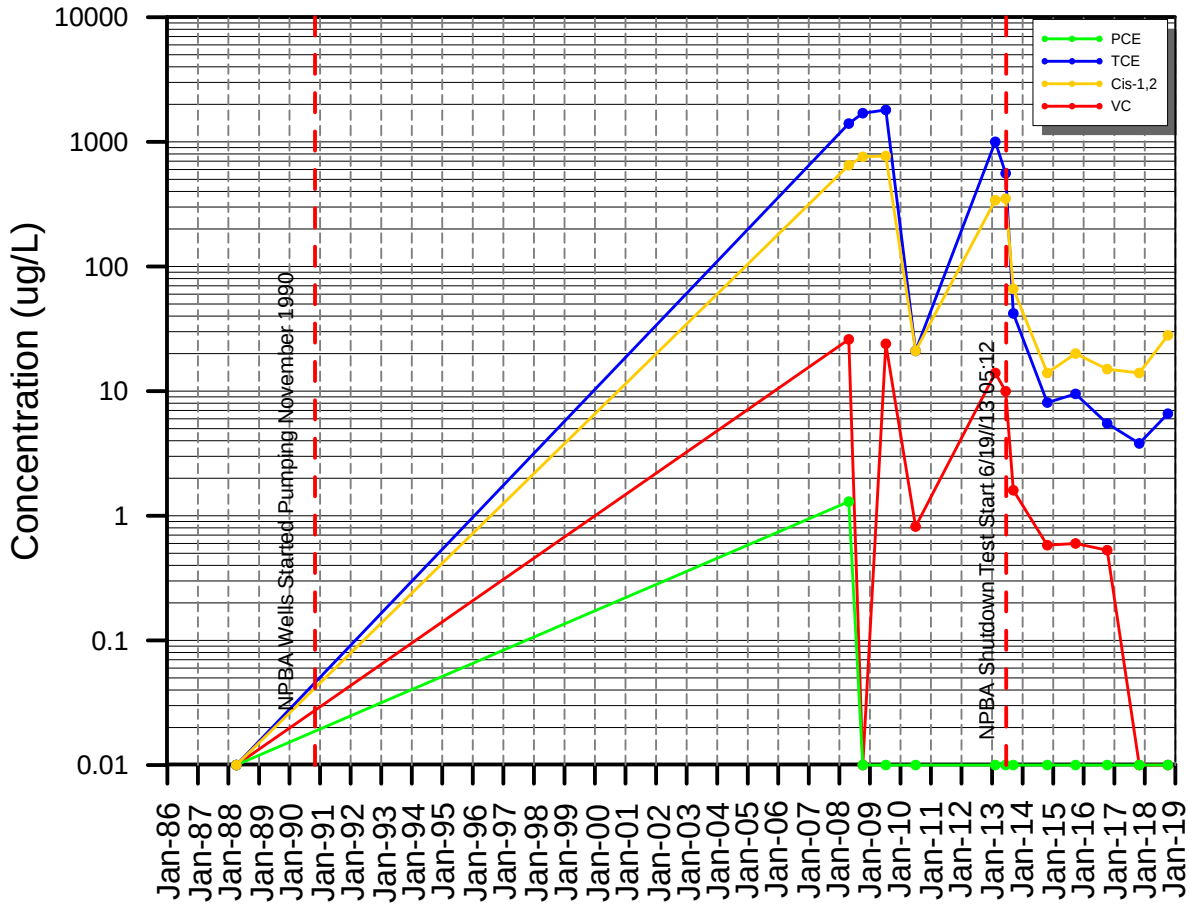
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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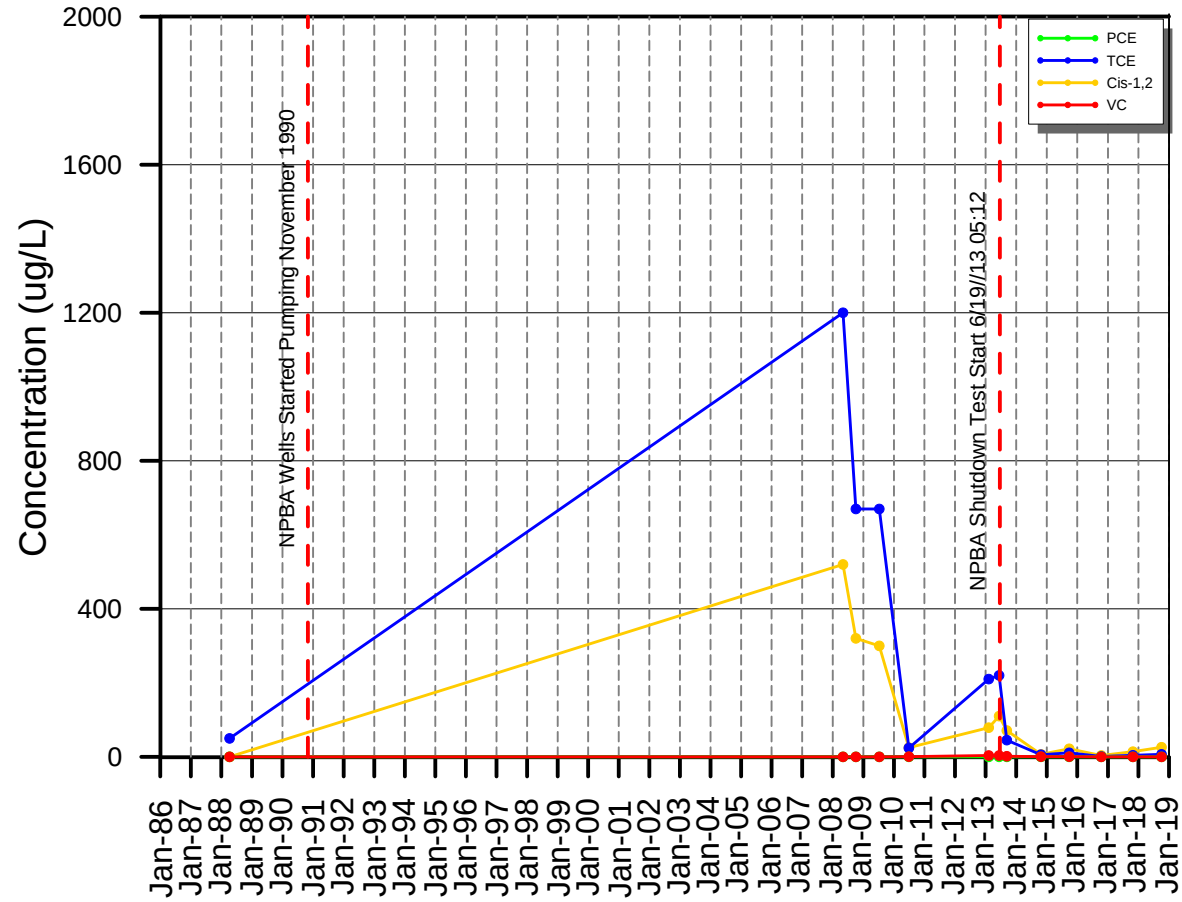
MW-18S


Concentration (ug/L)
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Cis-1,2
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NPBA Wells Started Pumping November 1990
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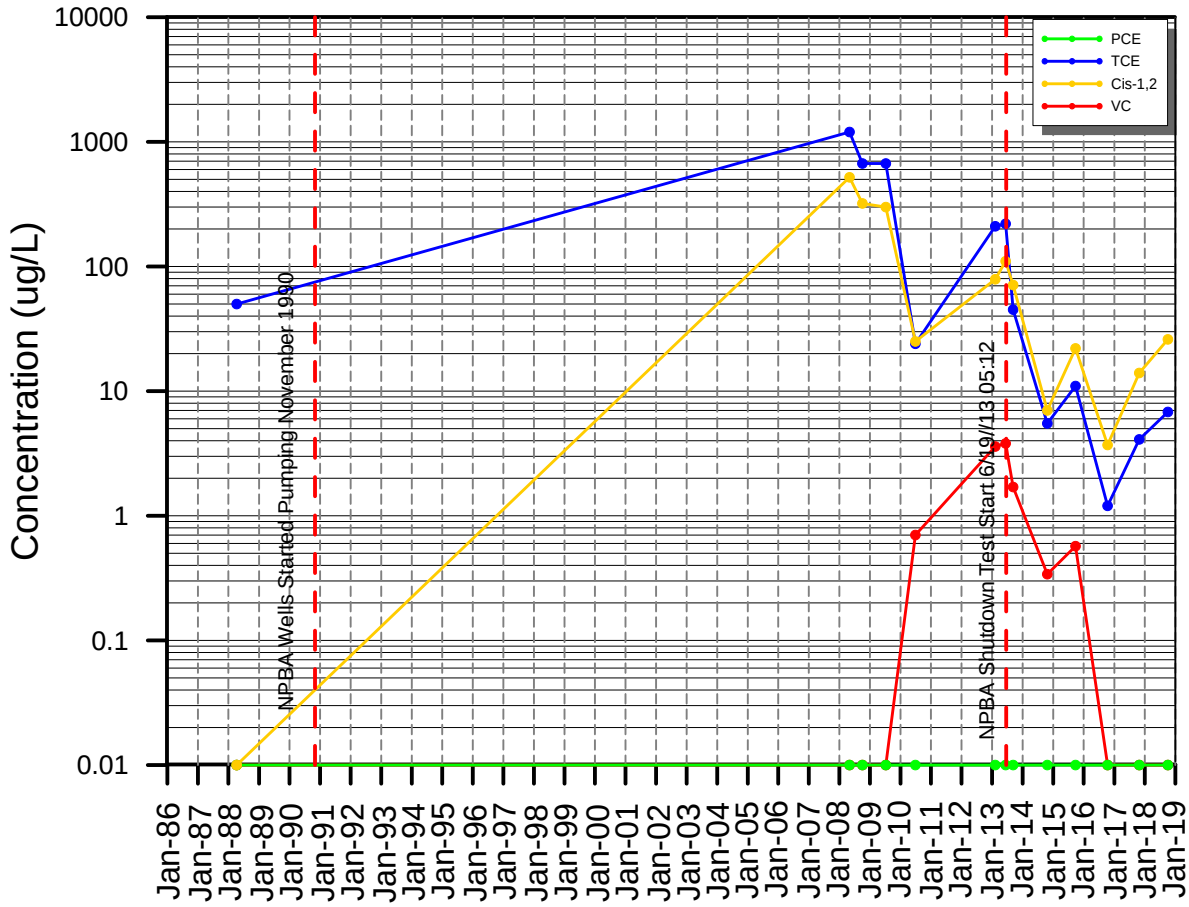
Concentration (ug/L)
10000
1000
100
10
1
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PCE
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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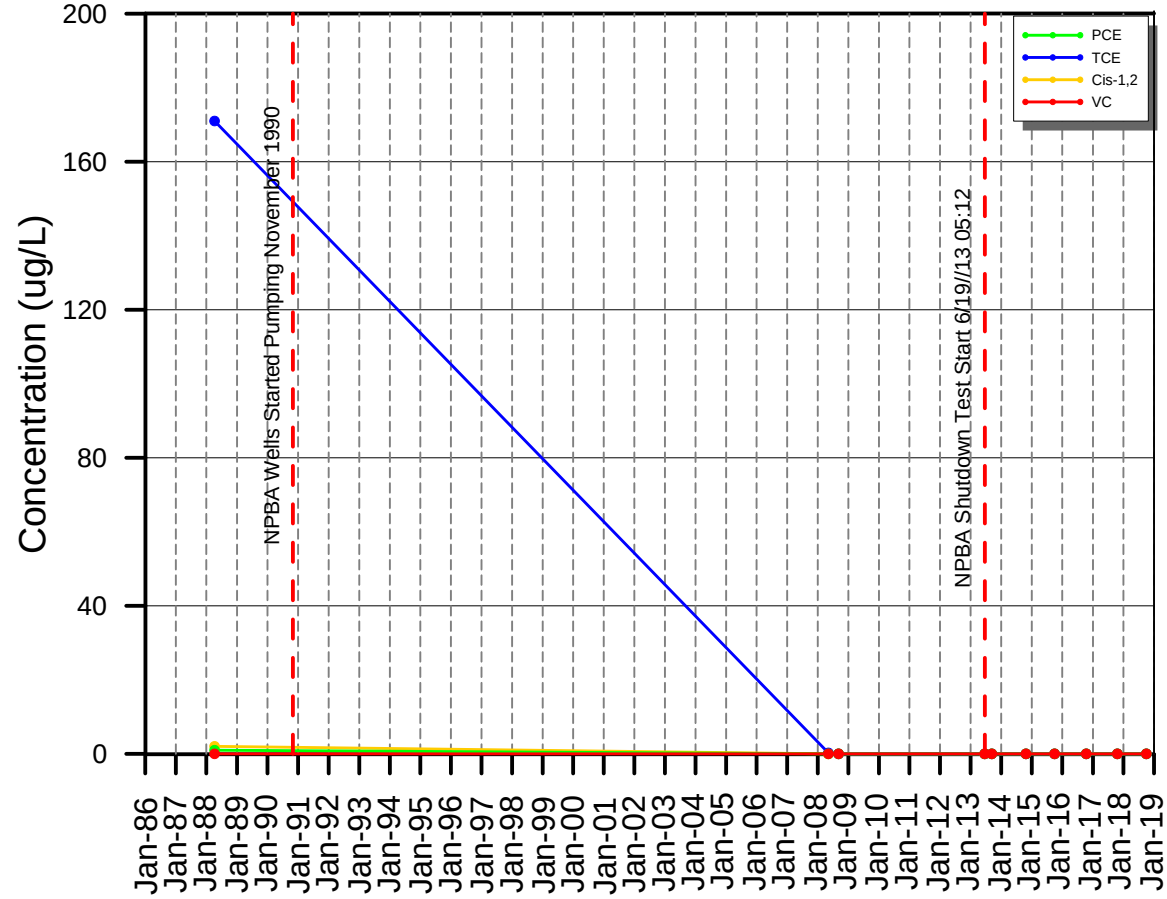
MW-20D


Concentration (ug/L)
200
160
120
80
40
0
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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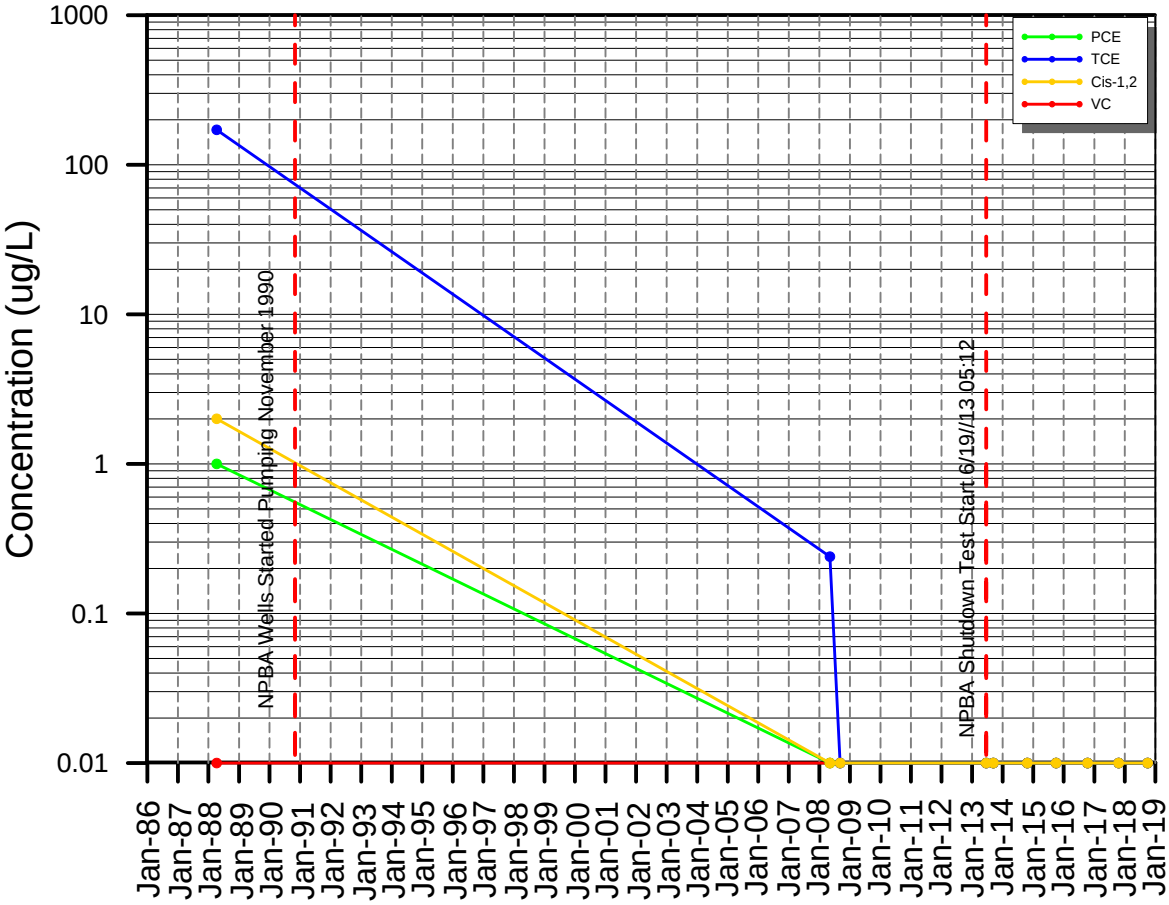
Concentration (ug/L)
1000
100
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1
0.1
0.01
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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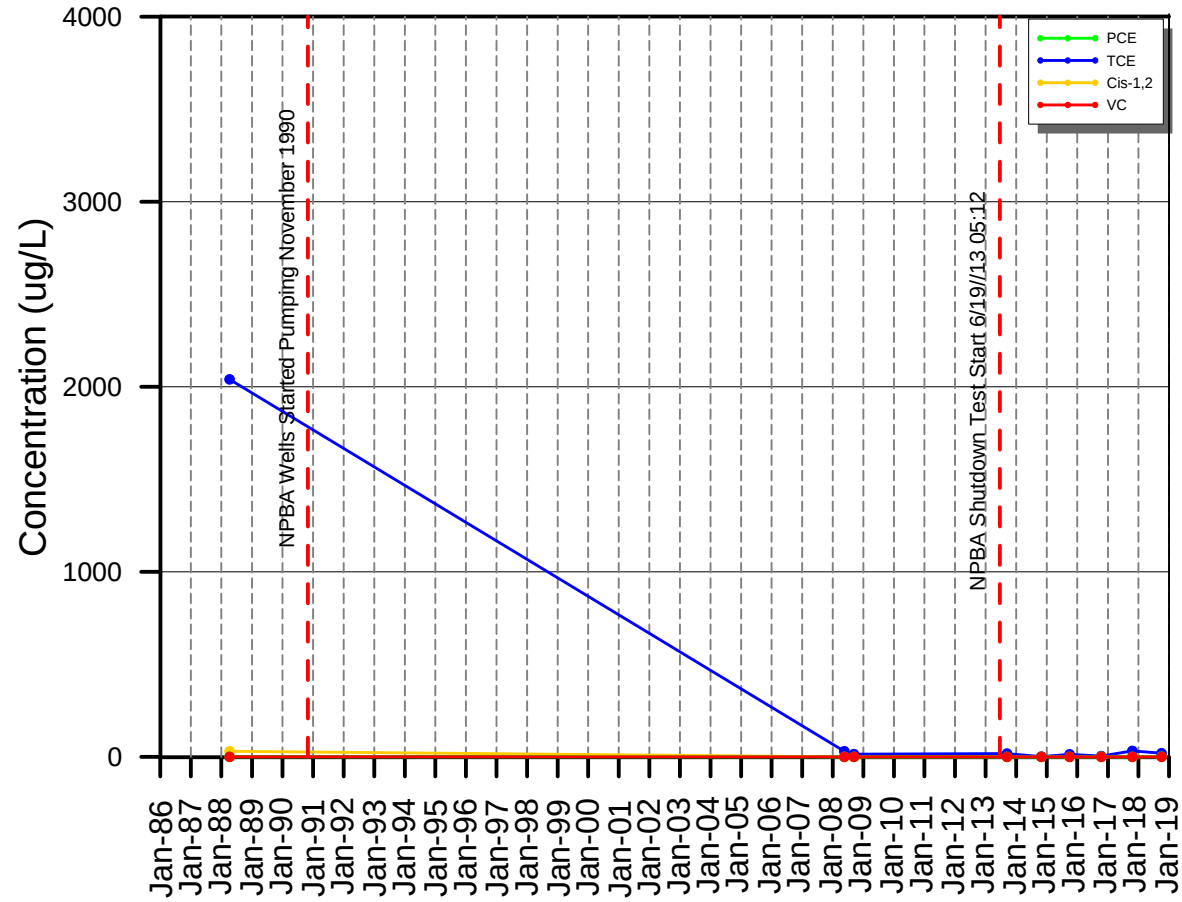
MW-20M


Concentration (ug/L)
4000
3000
2000
1000
0
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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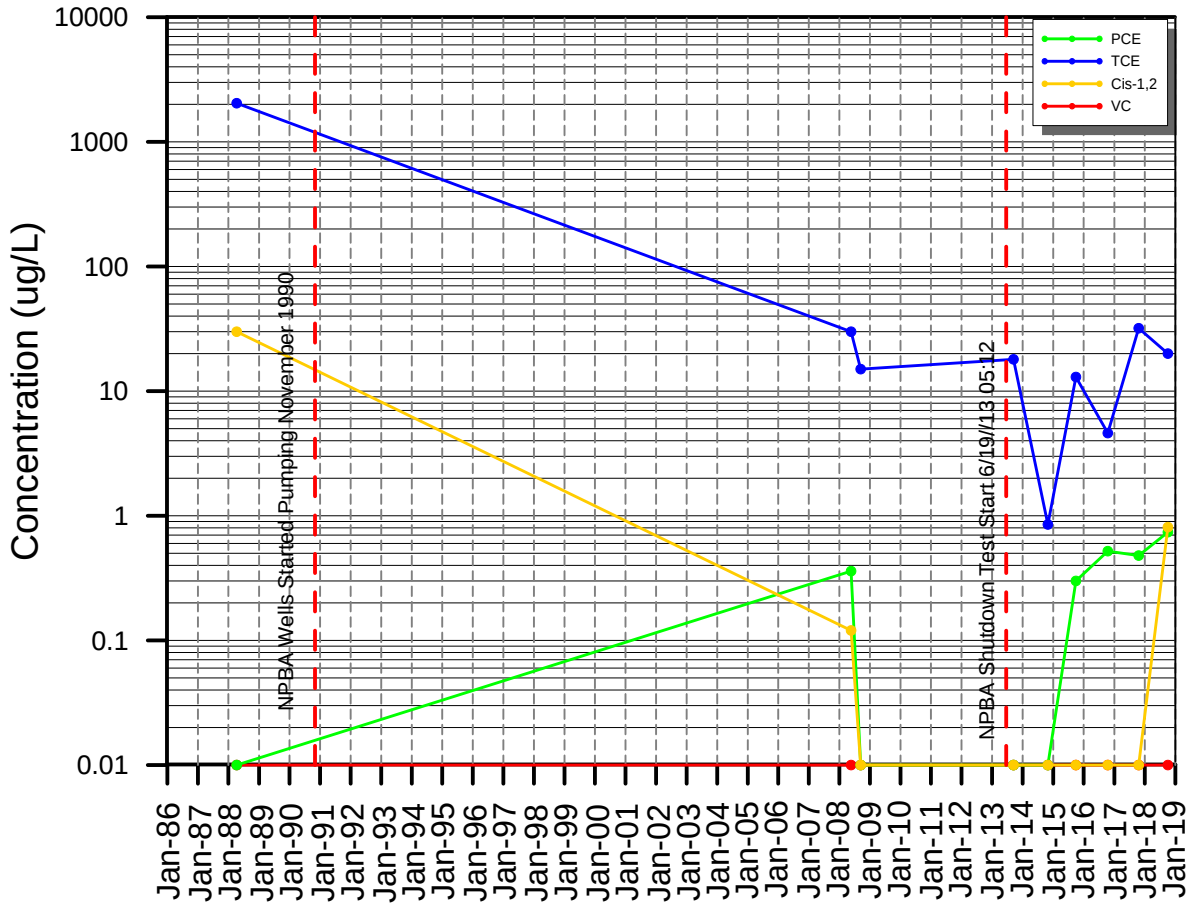
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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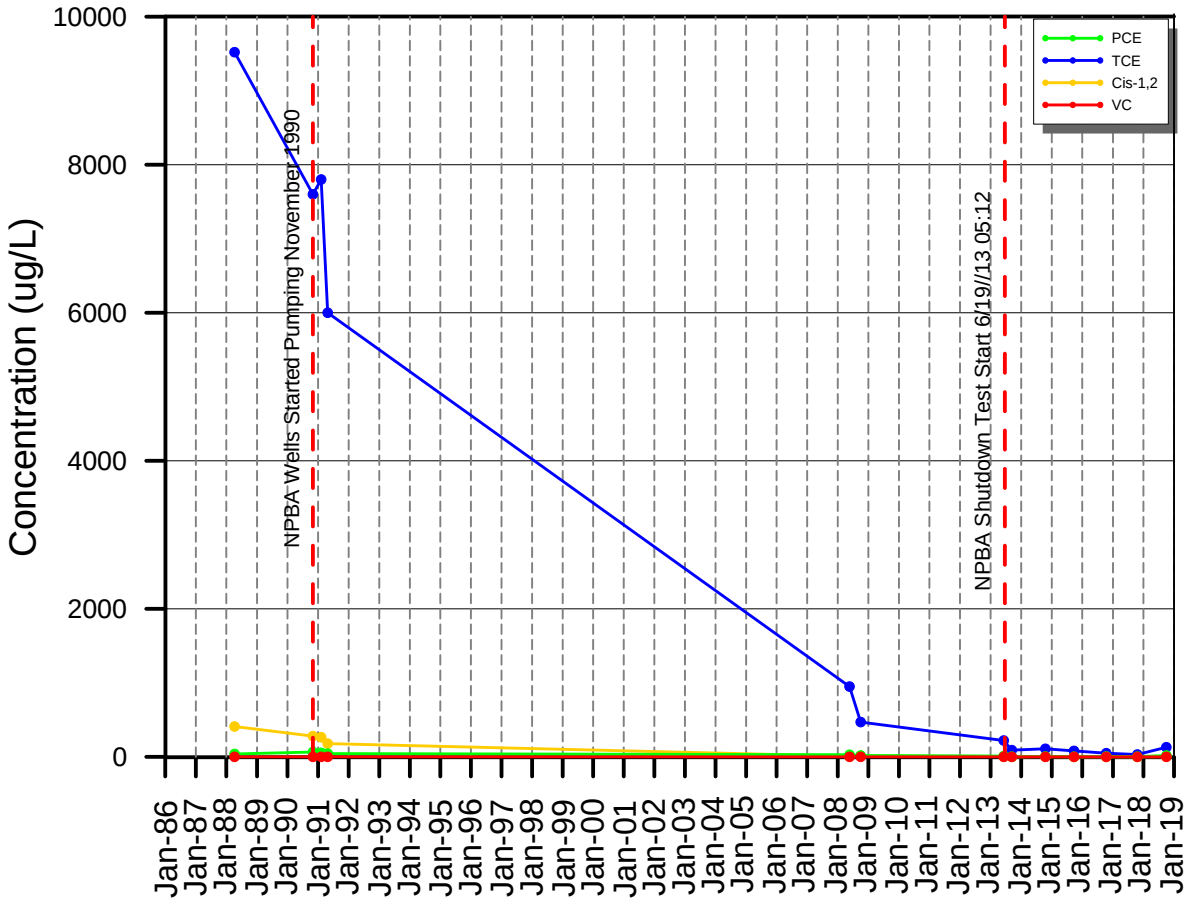
MW-20S


Concentration (ug/L)
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8000
6000
4000
2000
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TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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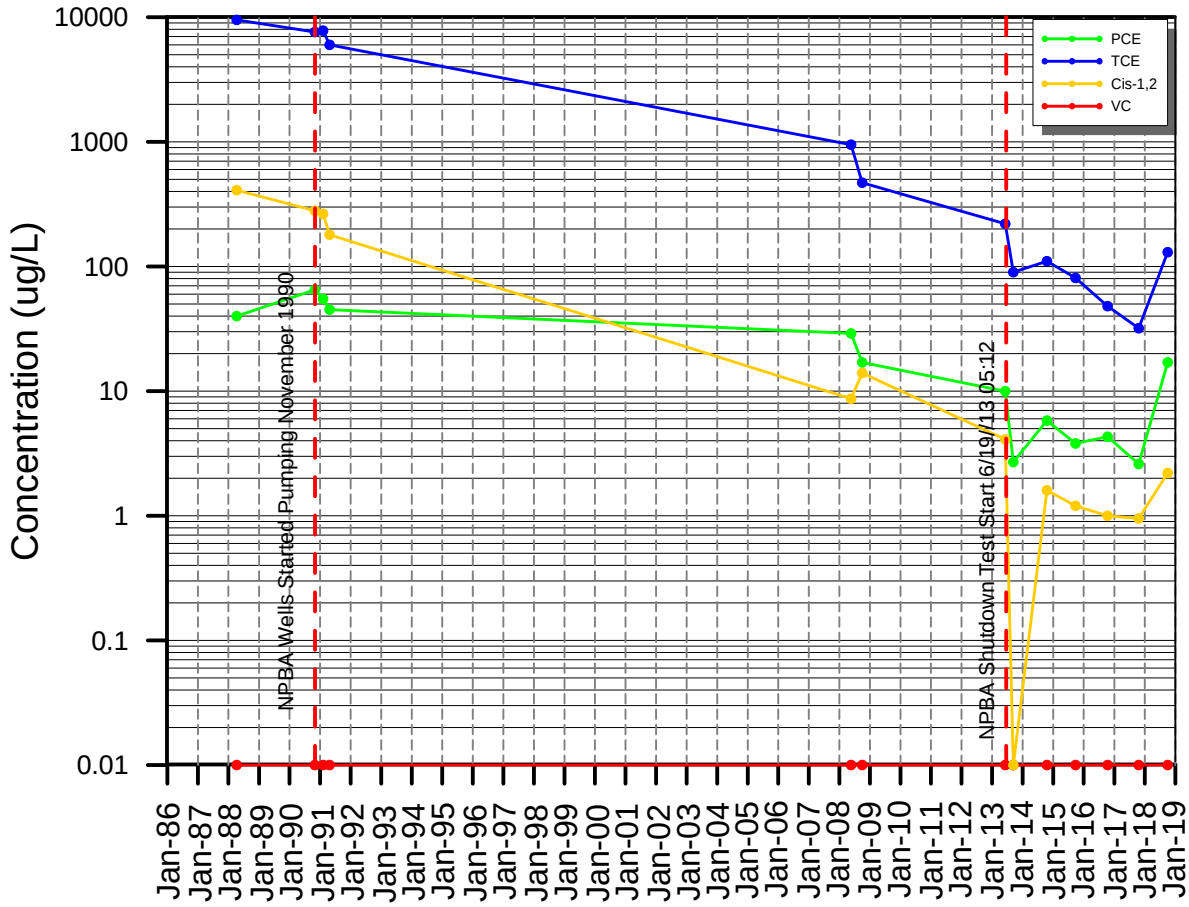
Concentration (ug/L)
10000
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10
1
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PCE
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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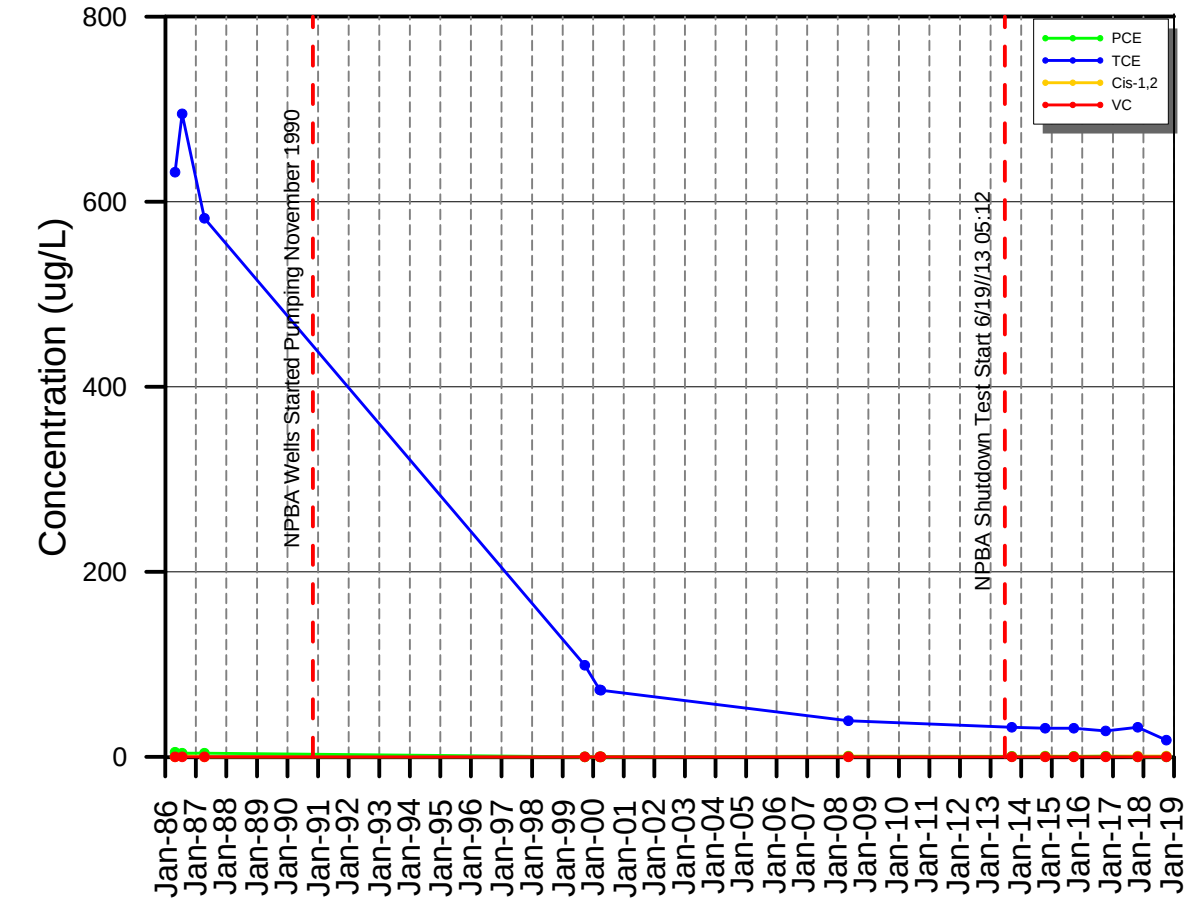
MW-3


Concentration (ug/L)
800
600
400
200
0
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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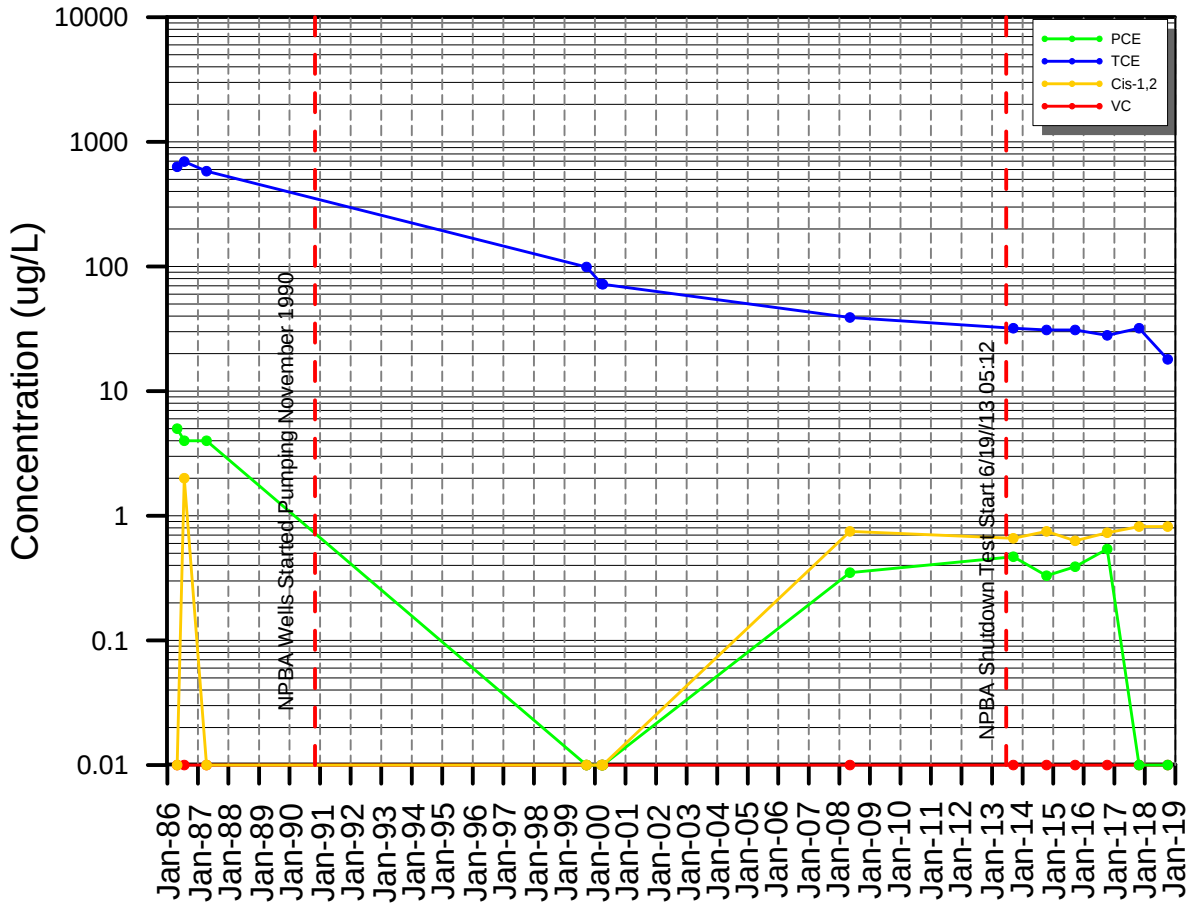
Concentration (ug/L)
10000
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1
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PCE
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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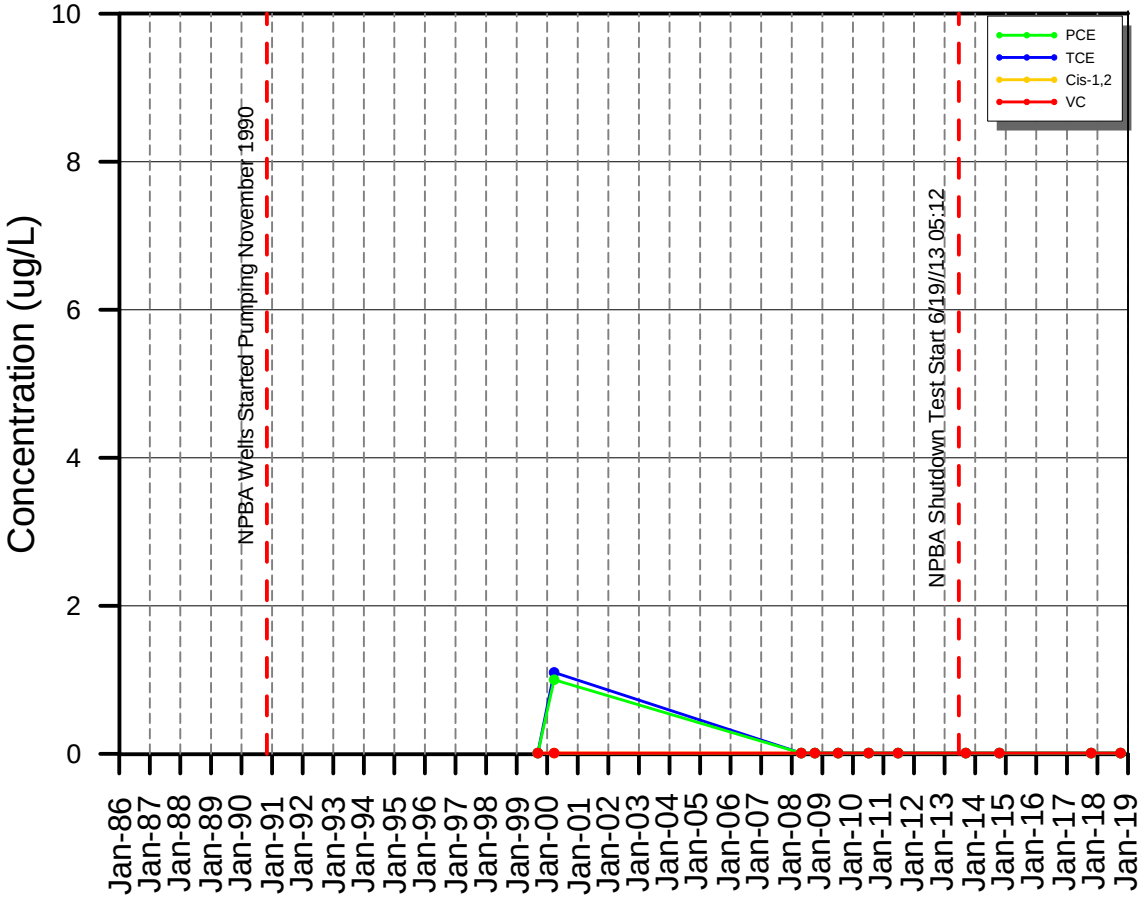
MW-77


Concentration (ug/L)
10
8
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PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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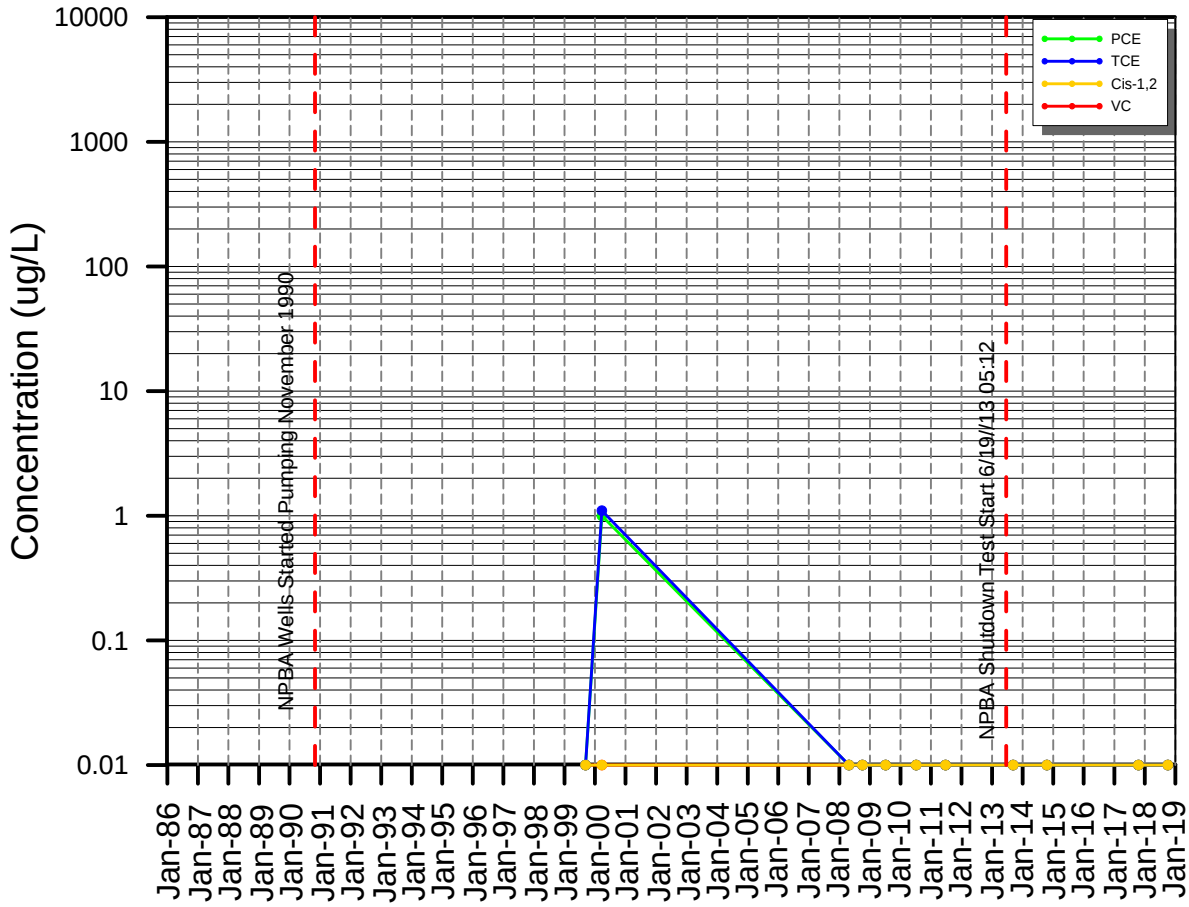
Concentration (ug/L)
10000
1000
100
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0.1
0.01
PCE
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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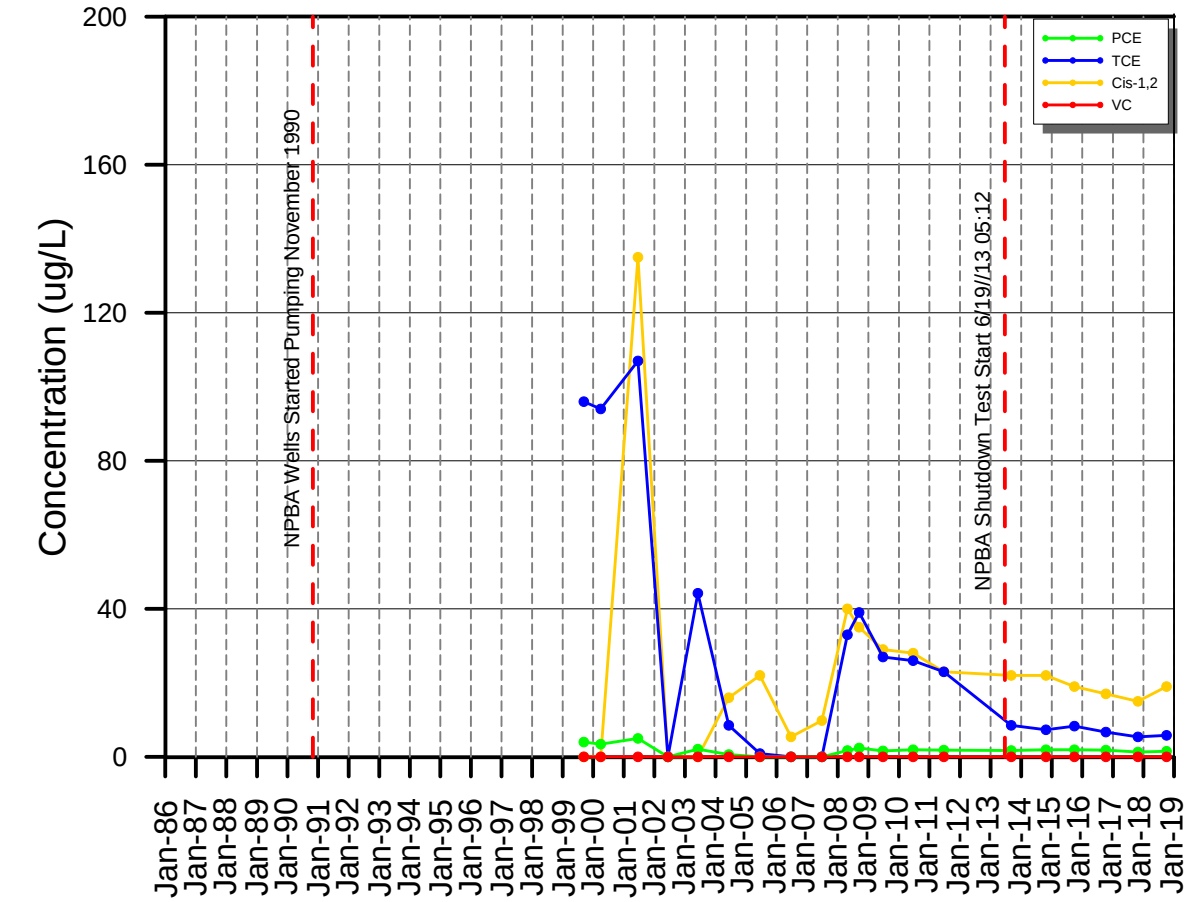
MW-82


PCE
TCE
Cis-1,2
VC
Concentration (ug/L)
200
160
120
80
40
0
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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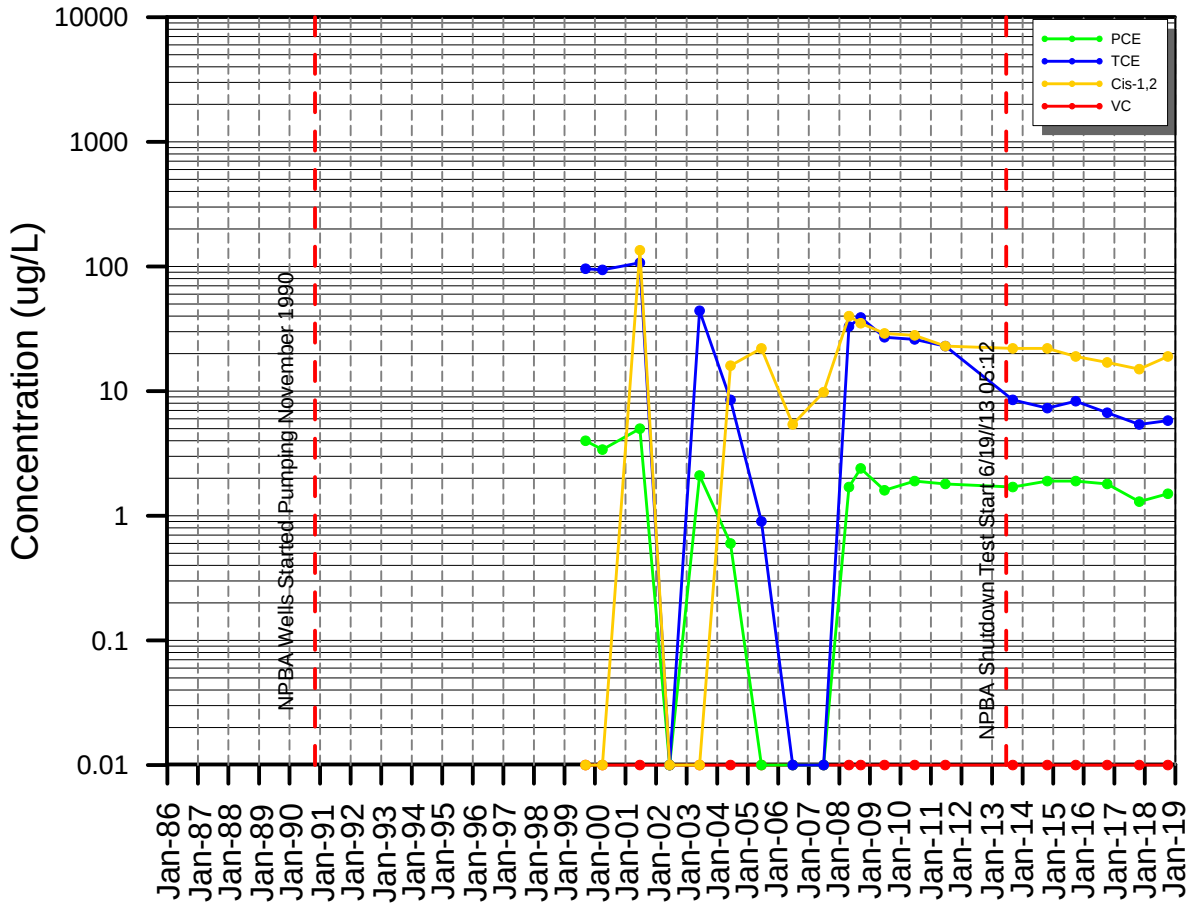
PCE
TCE
Cis-1,2
VC
Concentration (ug/L)
10000
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100
10
1
0.1
0.01
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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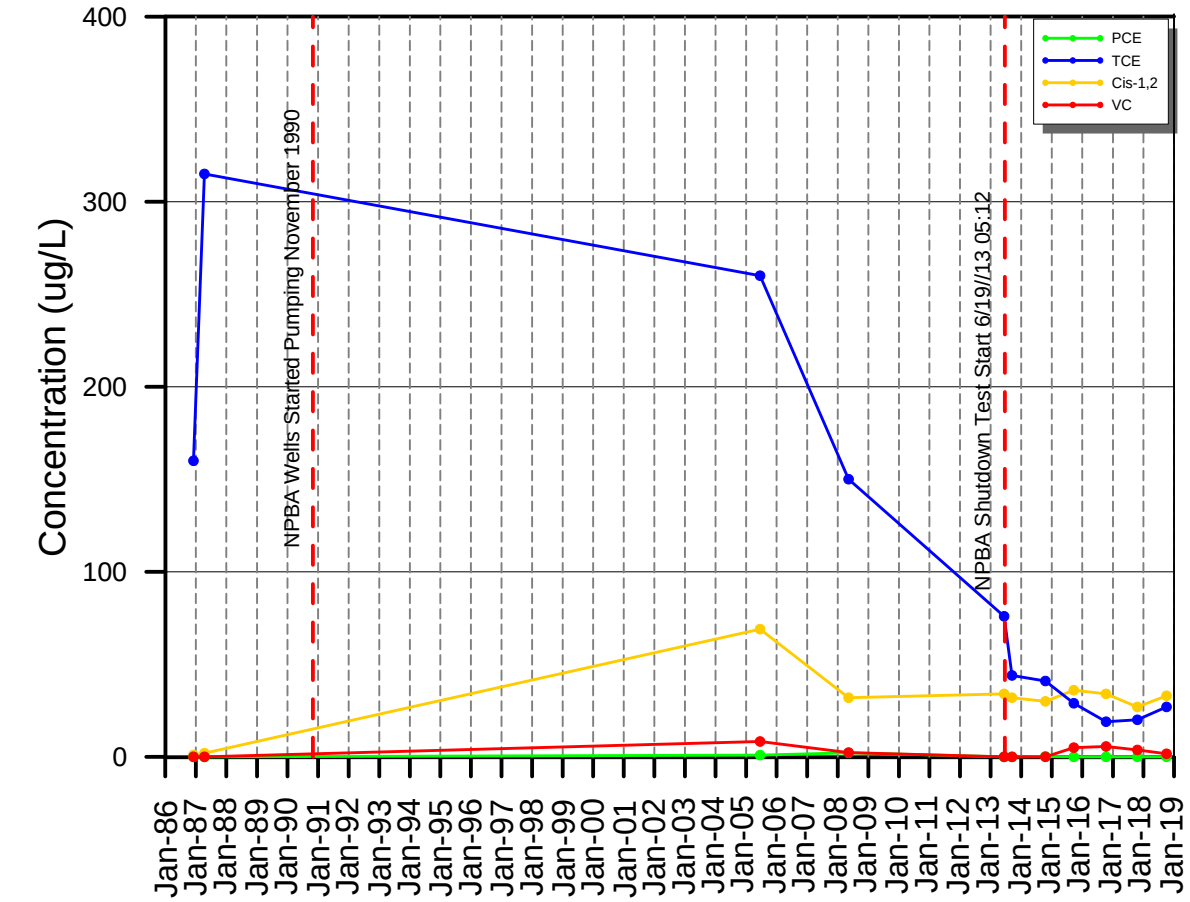
MW-9


PCE
TCE
Cis-1,2
VC
Concentration (ug/L)
400
300
200
100
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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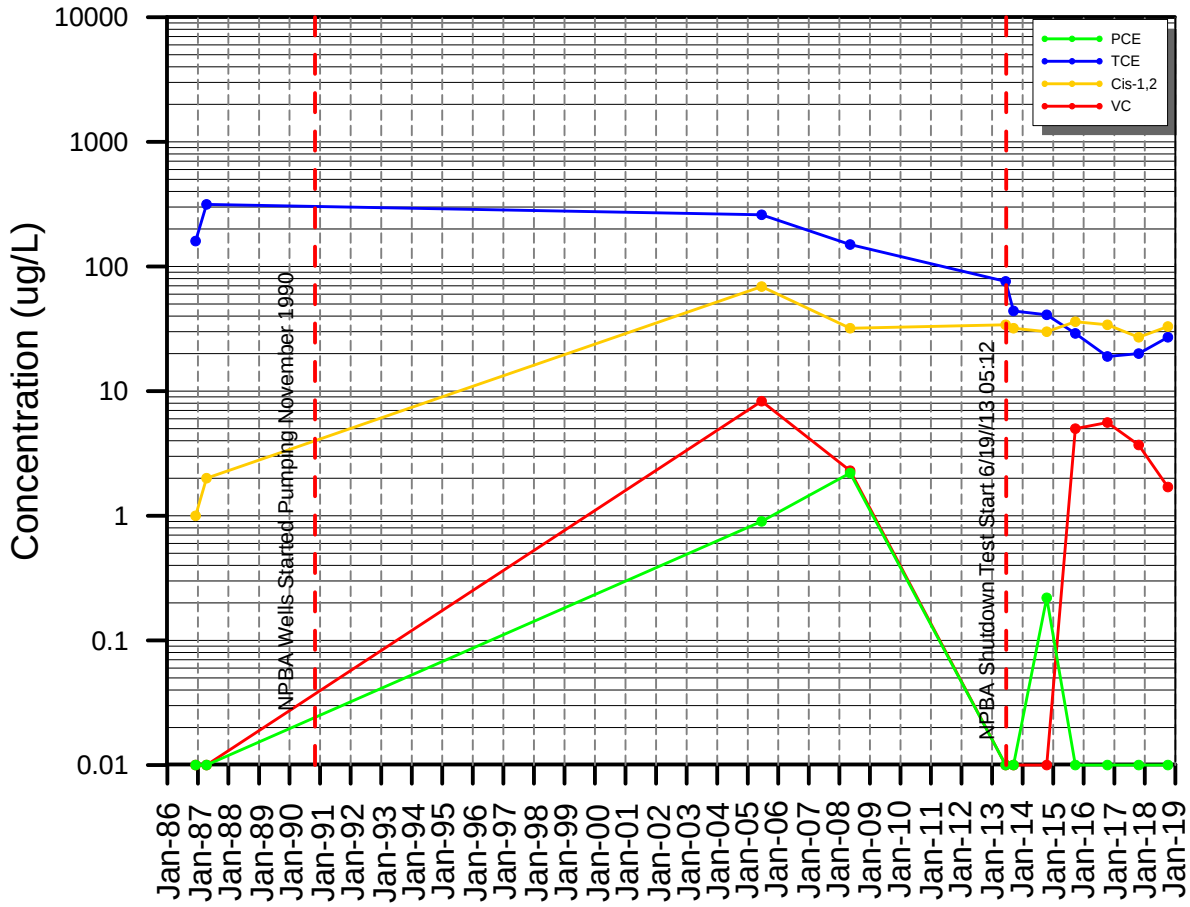
PCE
TCE
Cis-1,2
VC
Concentration (ug/L)
10000
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100
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1
0.1
0.01
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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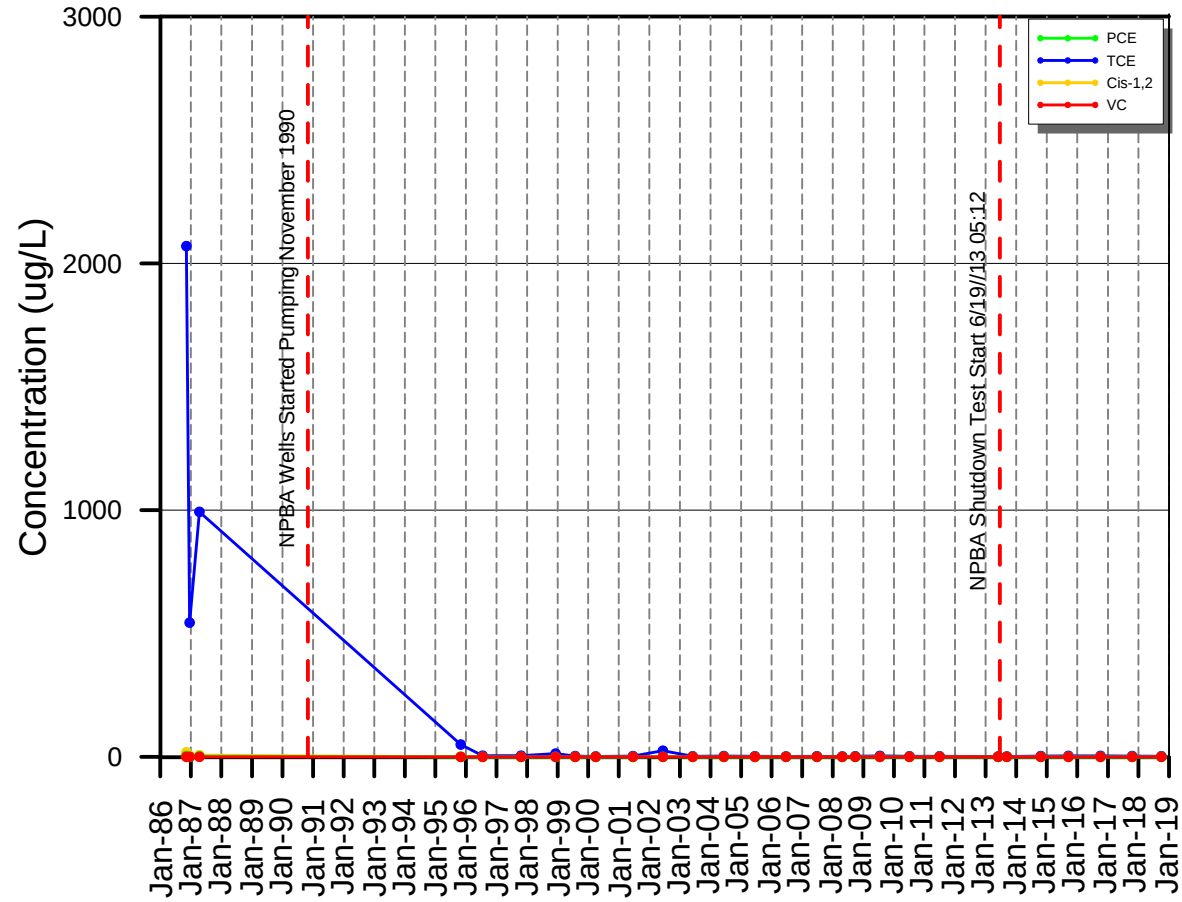
RW-2


Concentration (ug/L)
3000
2000
1000
0
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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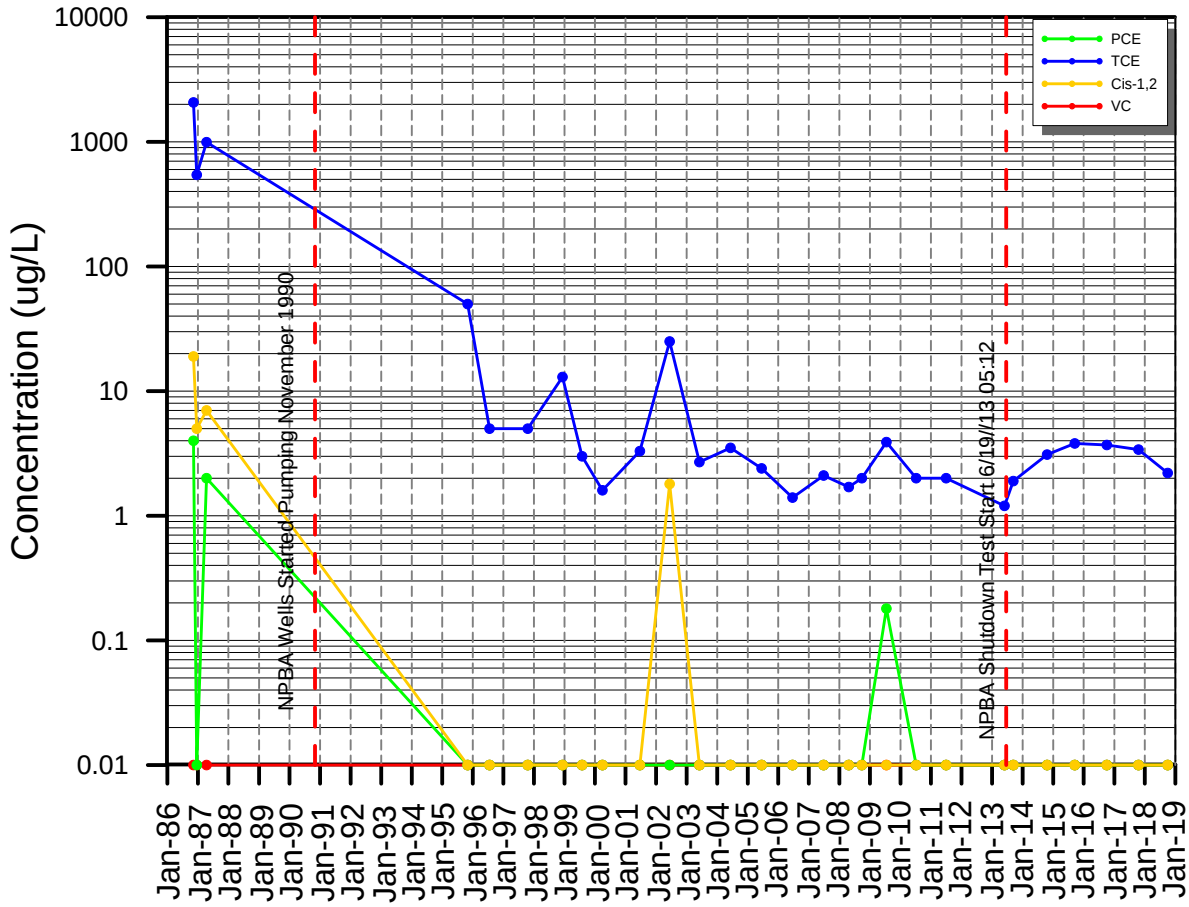
Concentration (ug/L)
10000
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0.1
0.01
PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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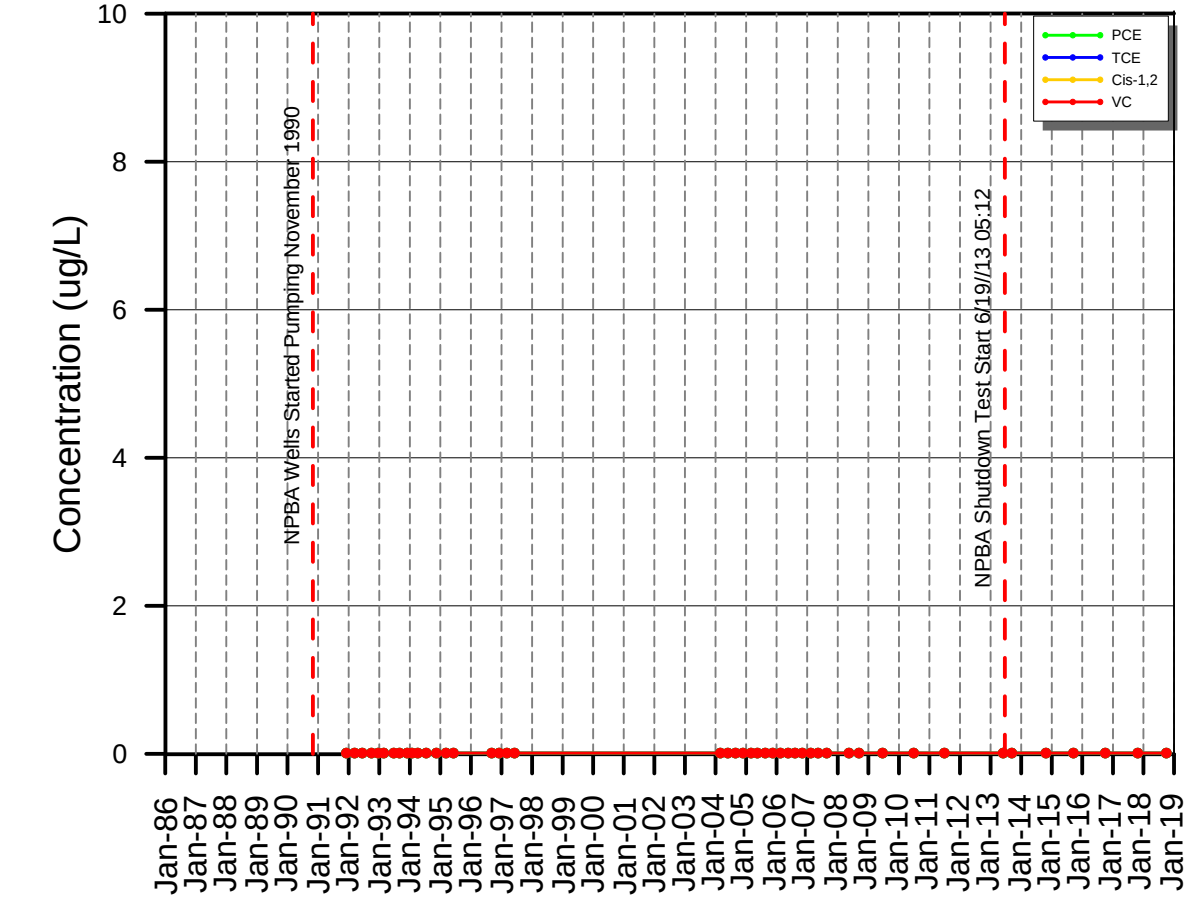
RW-4 (Folk)


Concentration (ug/L)
10
8
6
4
2
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PCE
TCE
Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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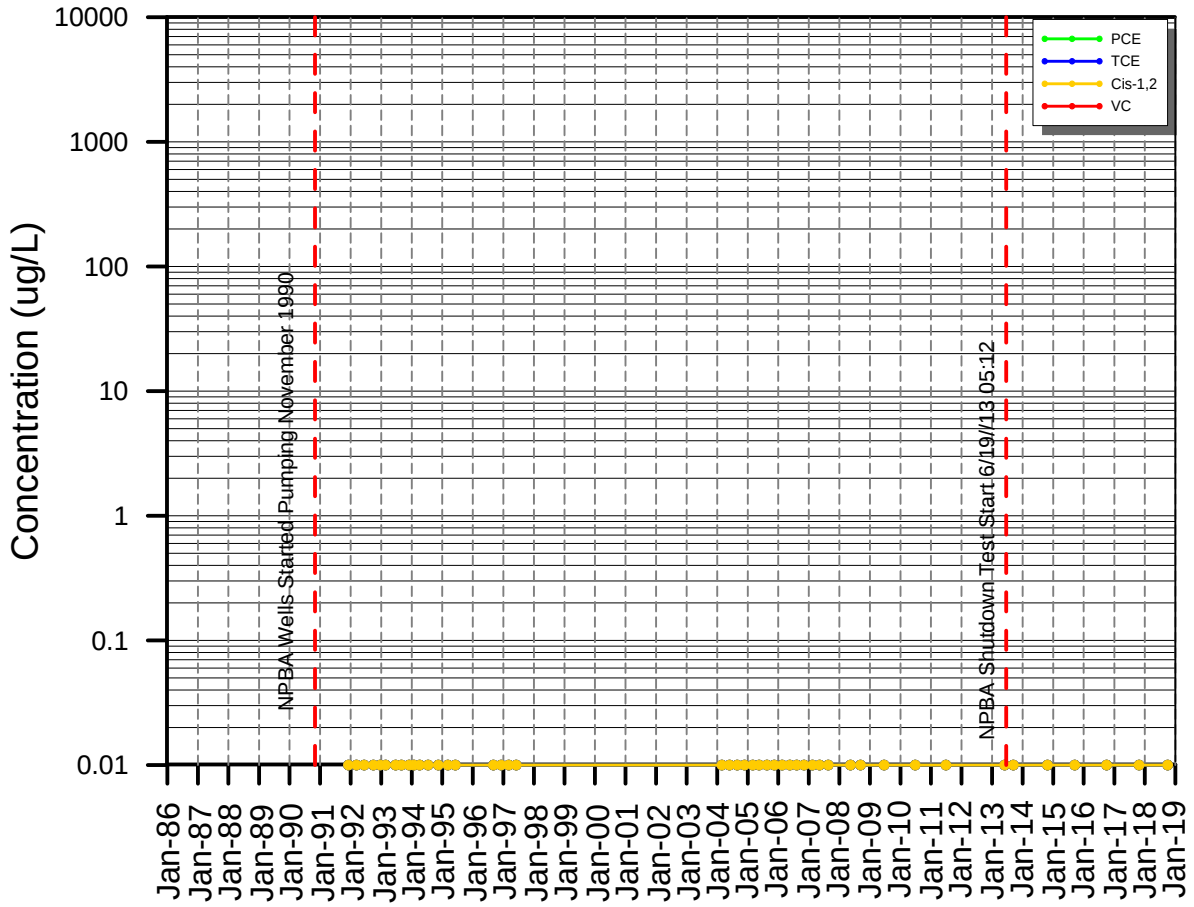
Concentration (ug/L)
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Cis-1,2
VC
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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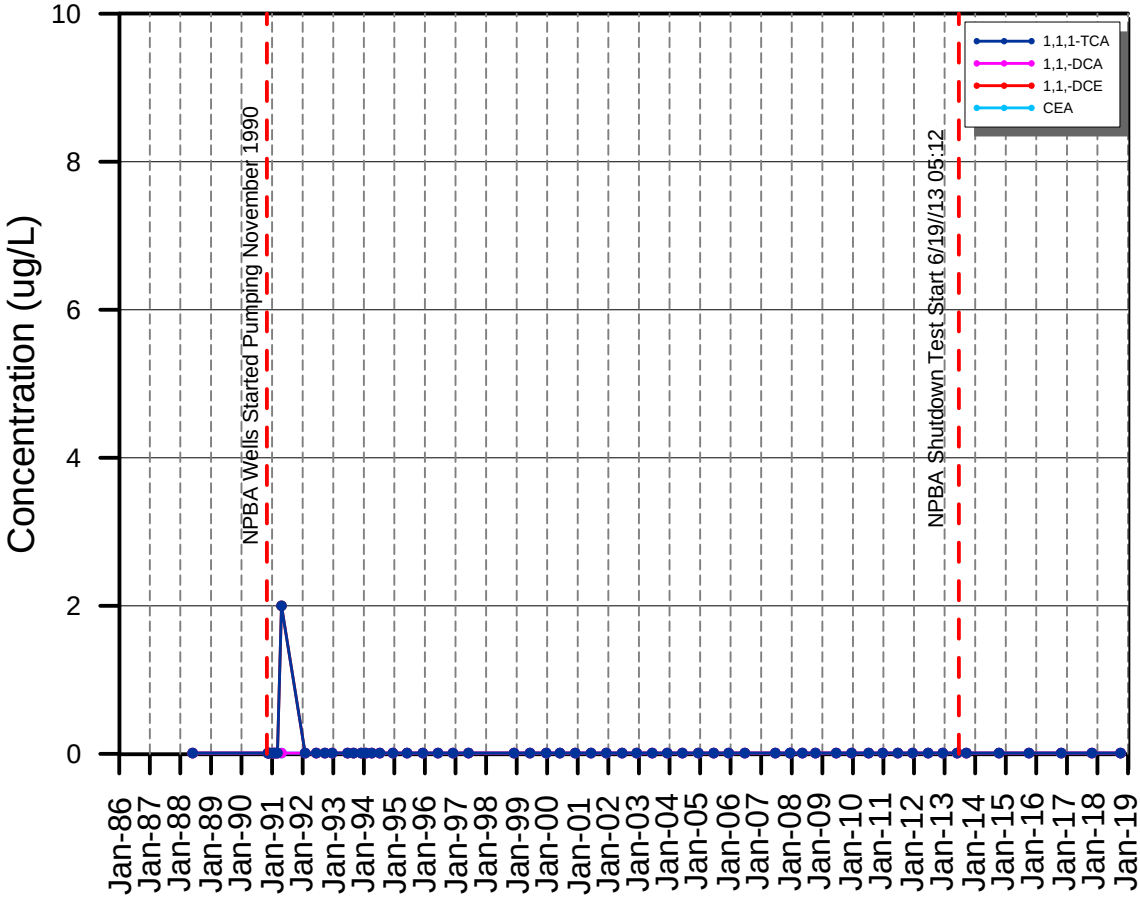
CW-1


Concentration (ug/L)
10
8
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1,1,1-TCA
1,1,-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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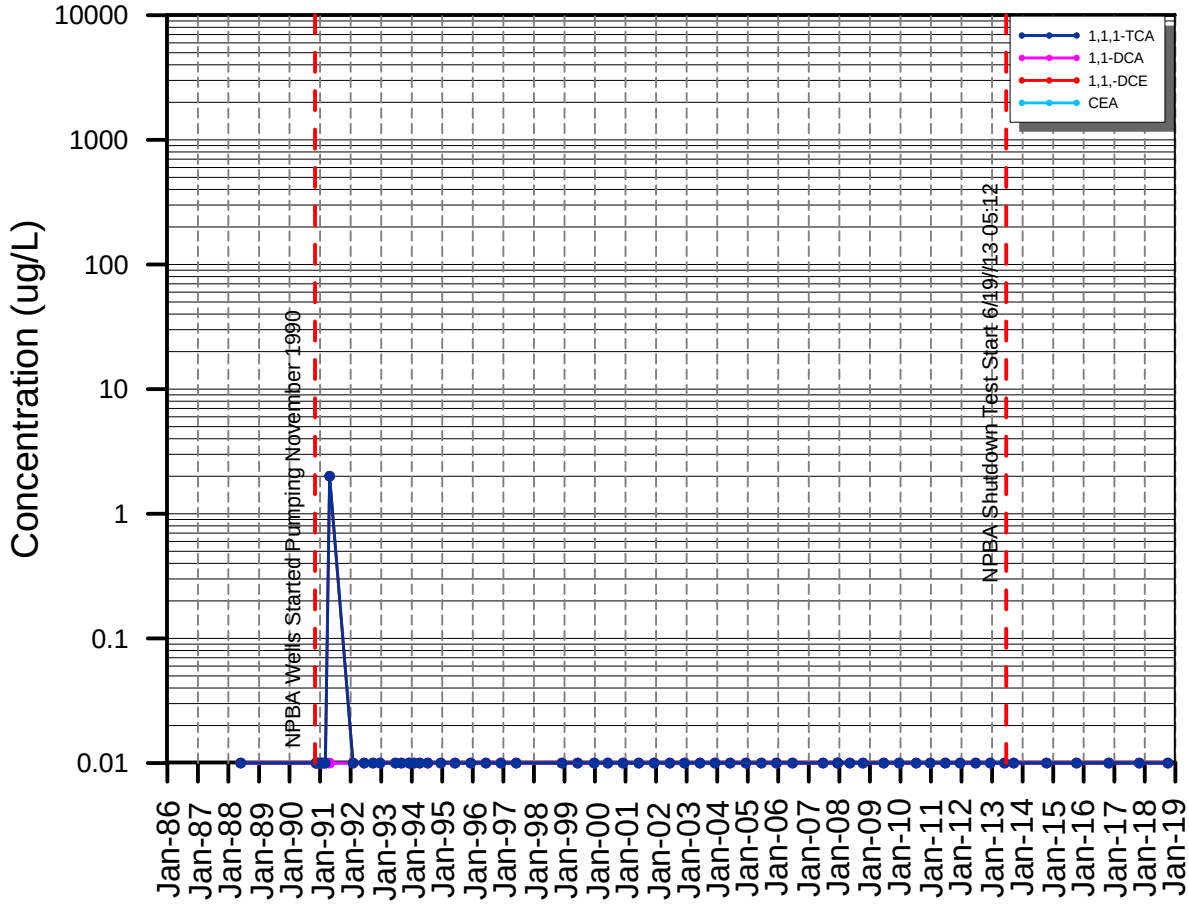
Concentration (ug/L)
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1,1-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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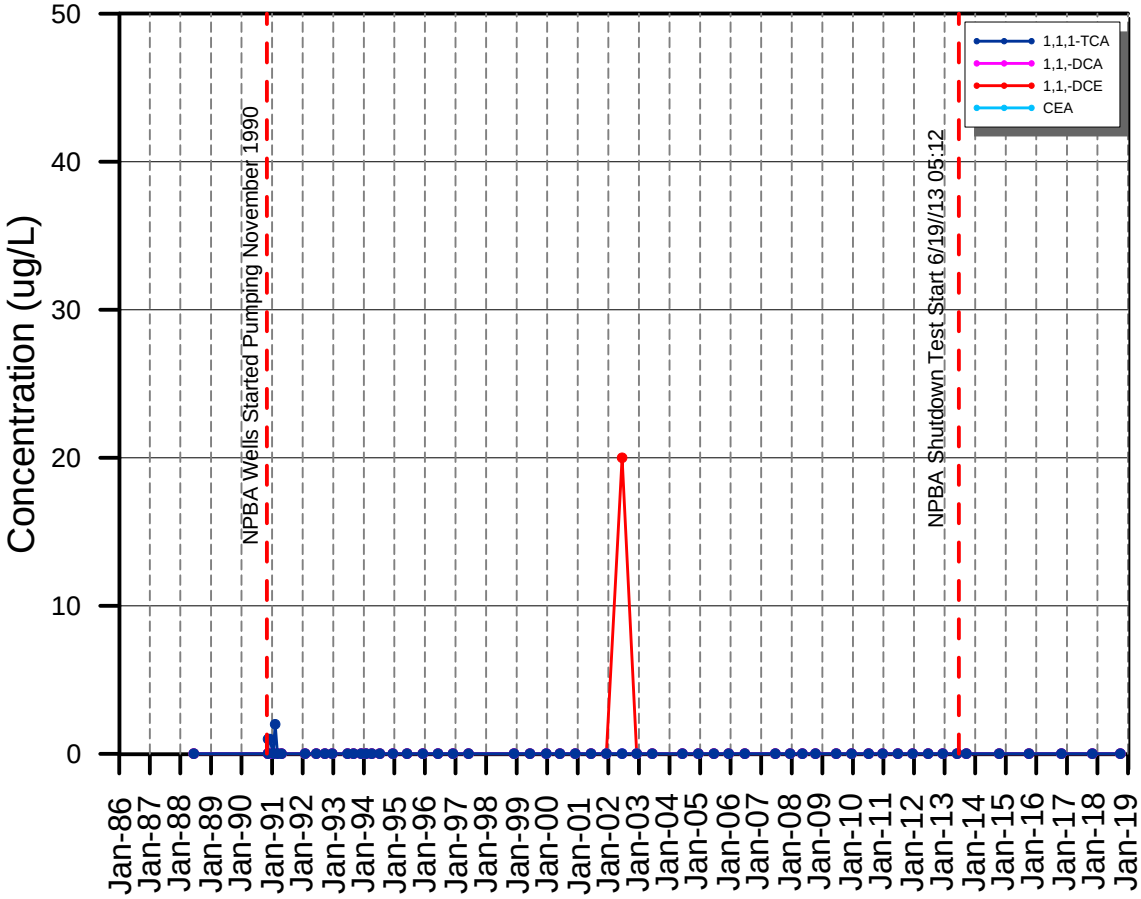
CW-1A


Concentration (ug/L)
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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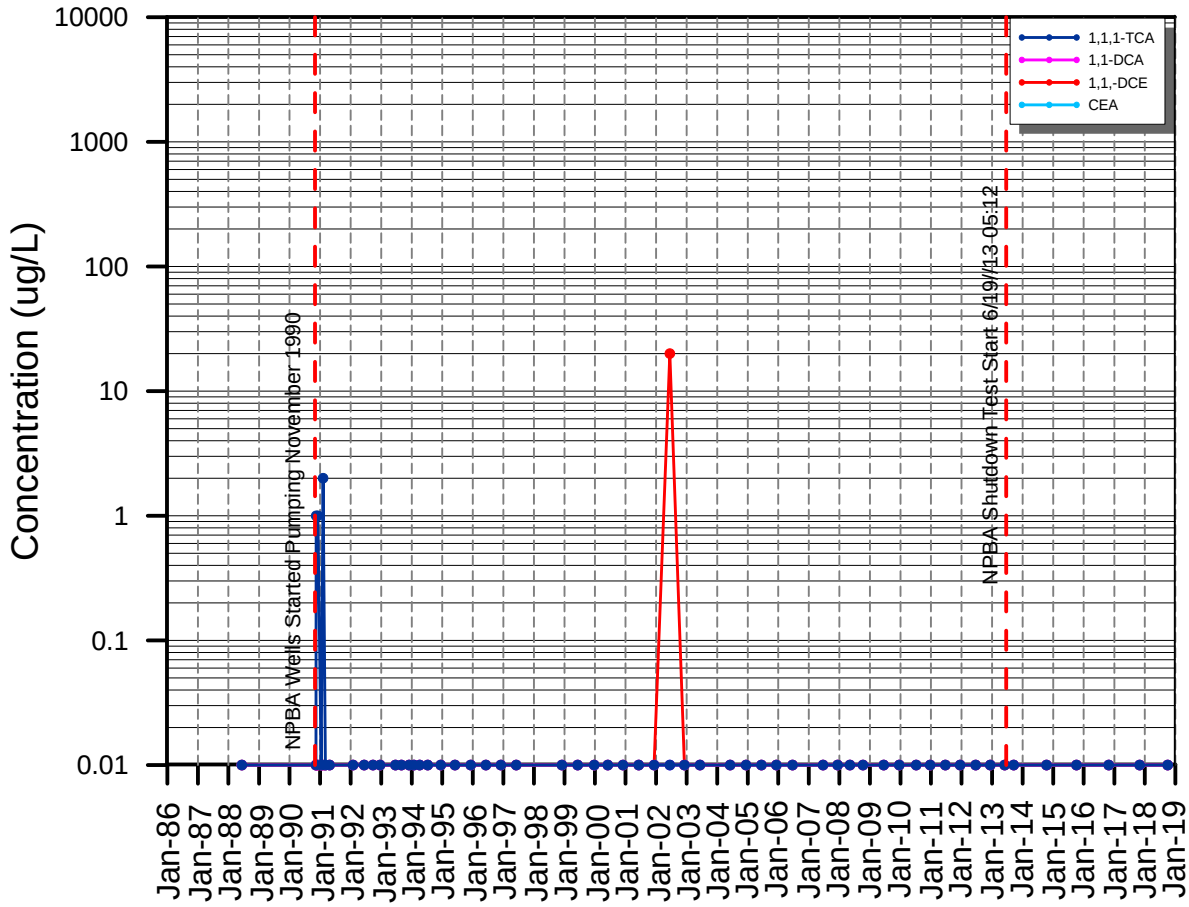
Concentration (ug/L)
10000
1000
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0.1
0.01
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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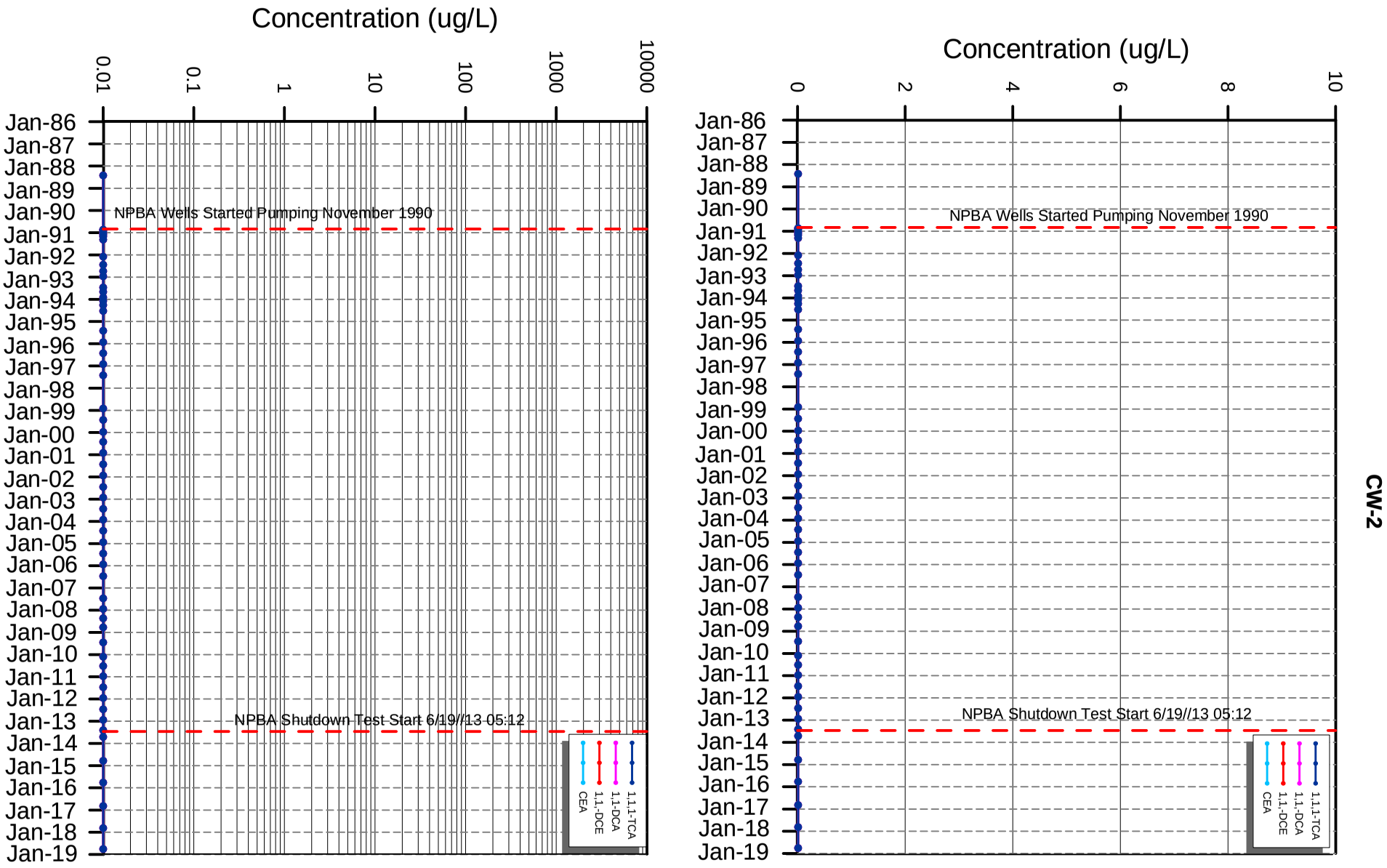
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
1,1,-DCE
1,1-DCA
1,1,1-TCA
Concentration (ug/L)
0
2
4
6
8
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
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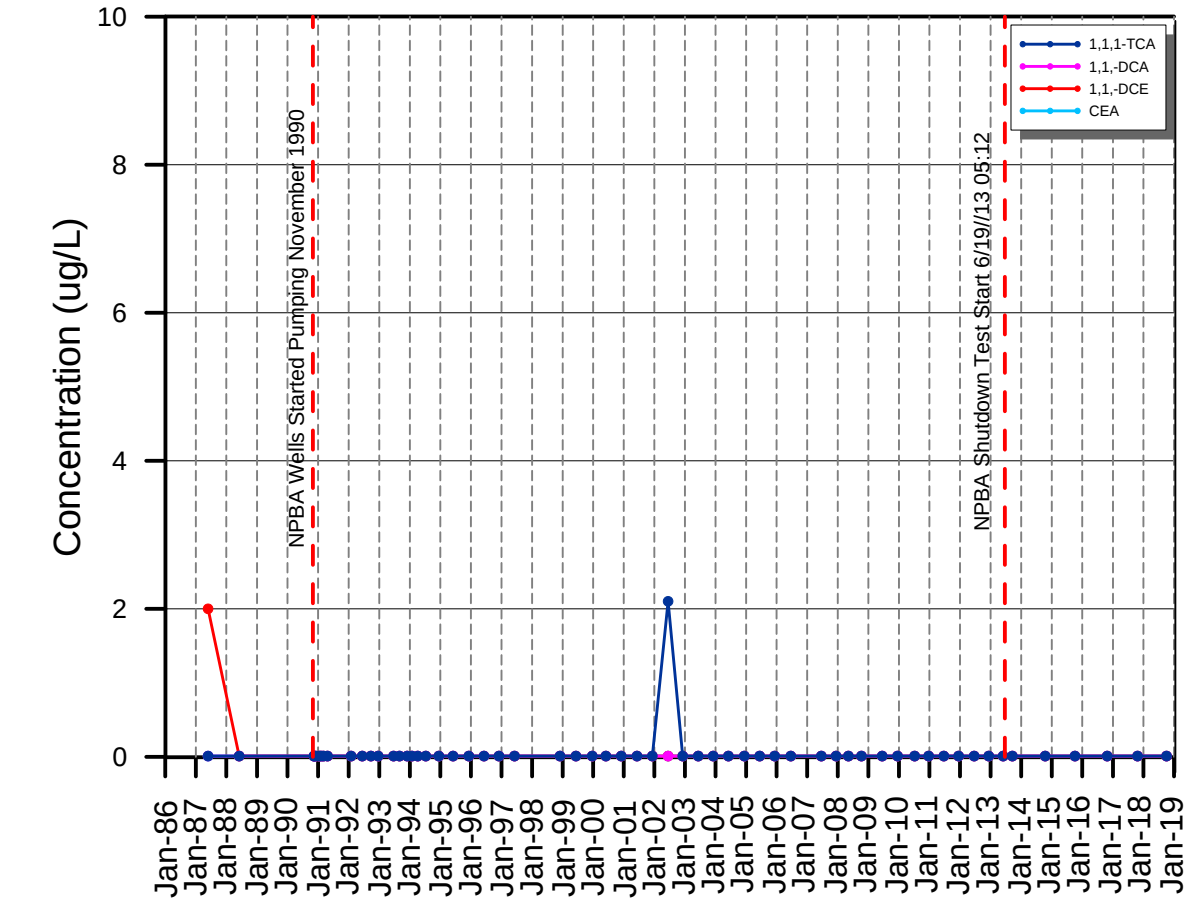
CW-2

CW-3


Concentration (ug/L)
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8
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4
2
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1,1,-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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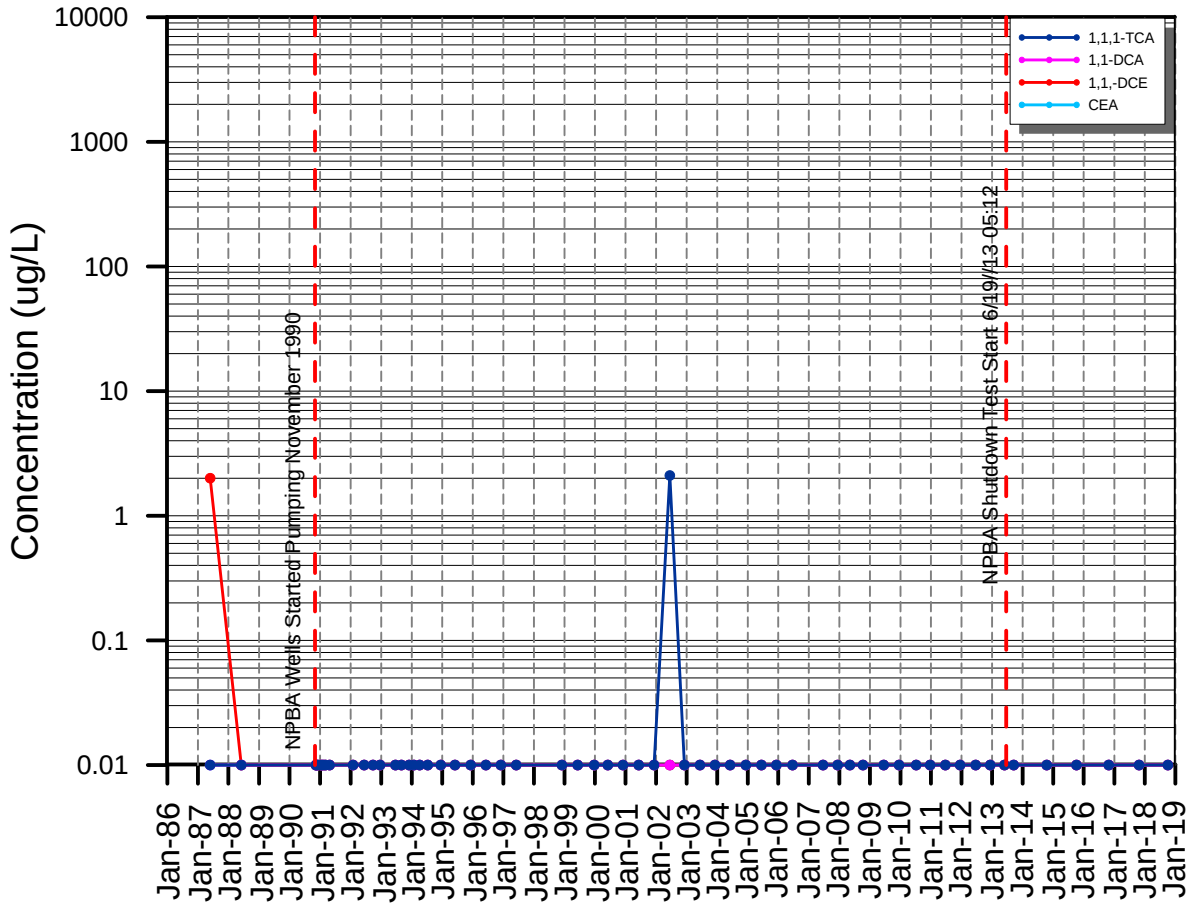
Concentration (ug/L)
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0.01
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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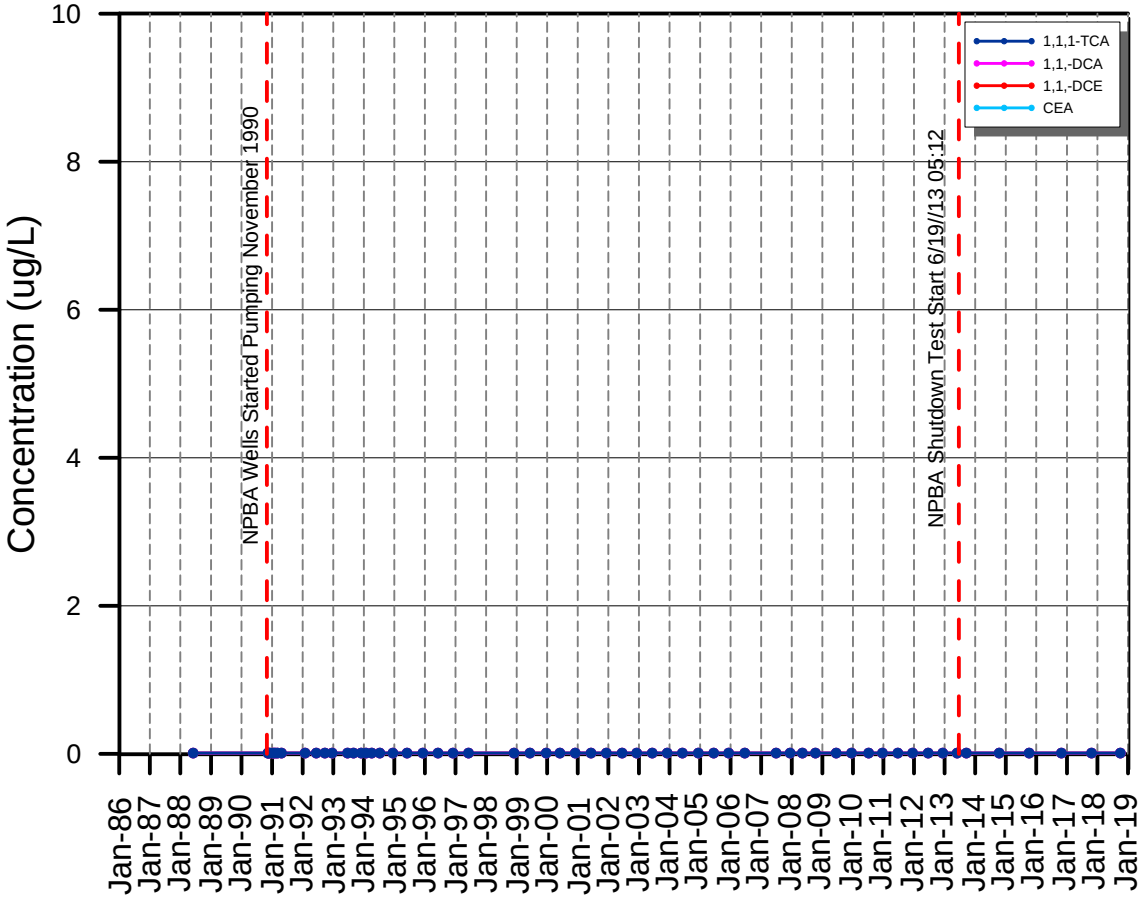
CW-4


Concentration (ug/L)
10
8
6
4
2
0
1,1,1-TCA
1,1,-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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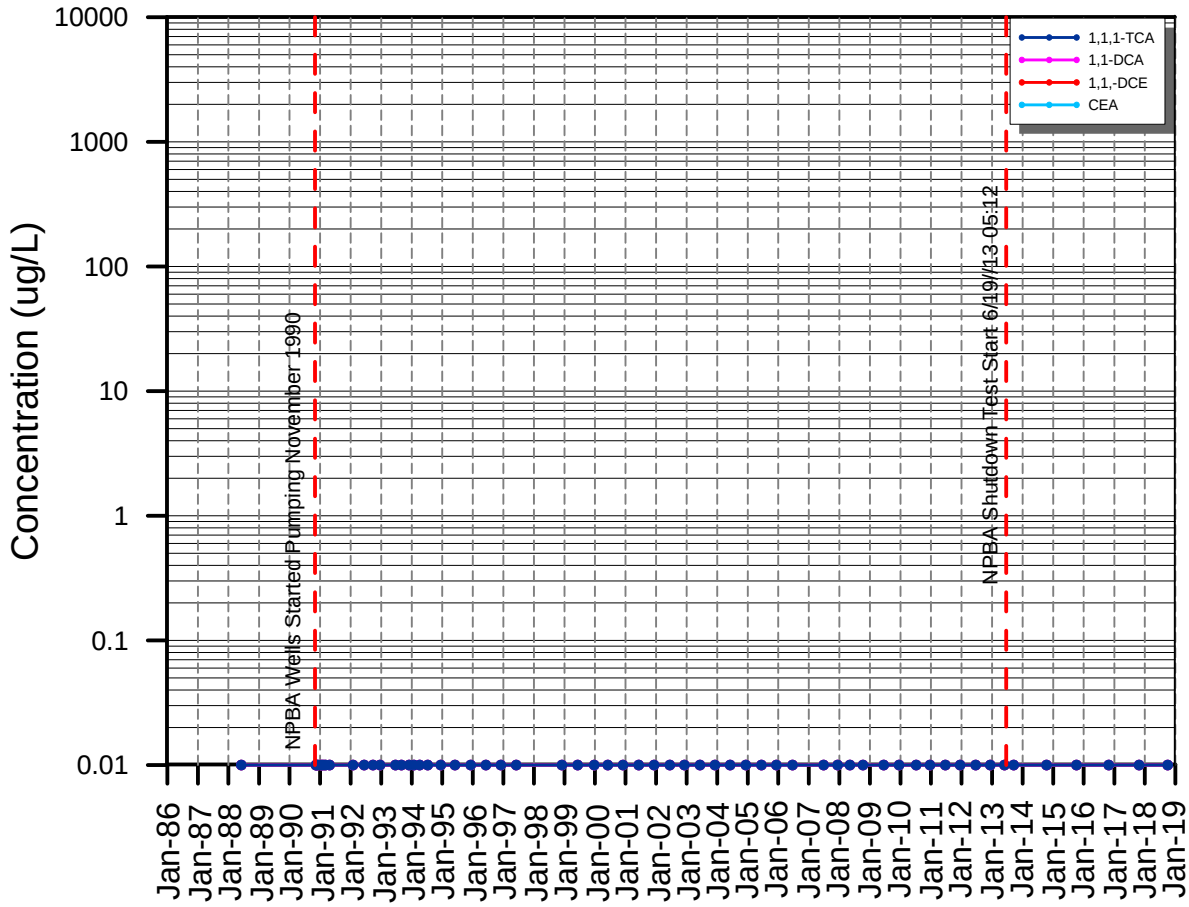
Concentration (ug/L)
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0.1
0.01
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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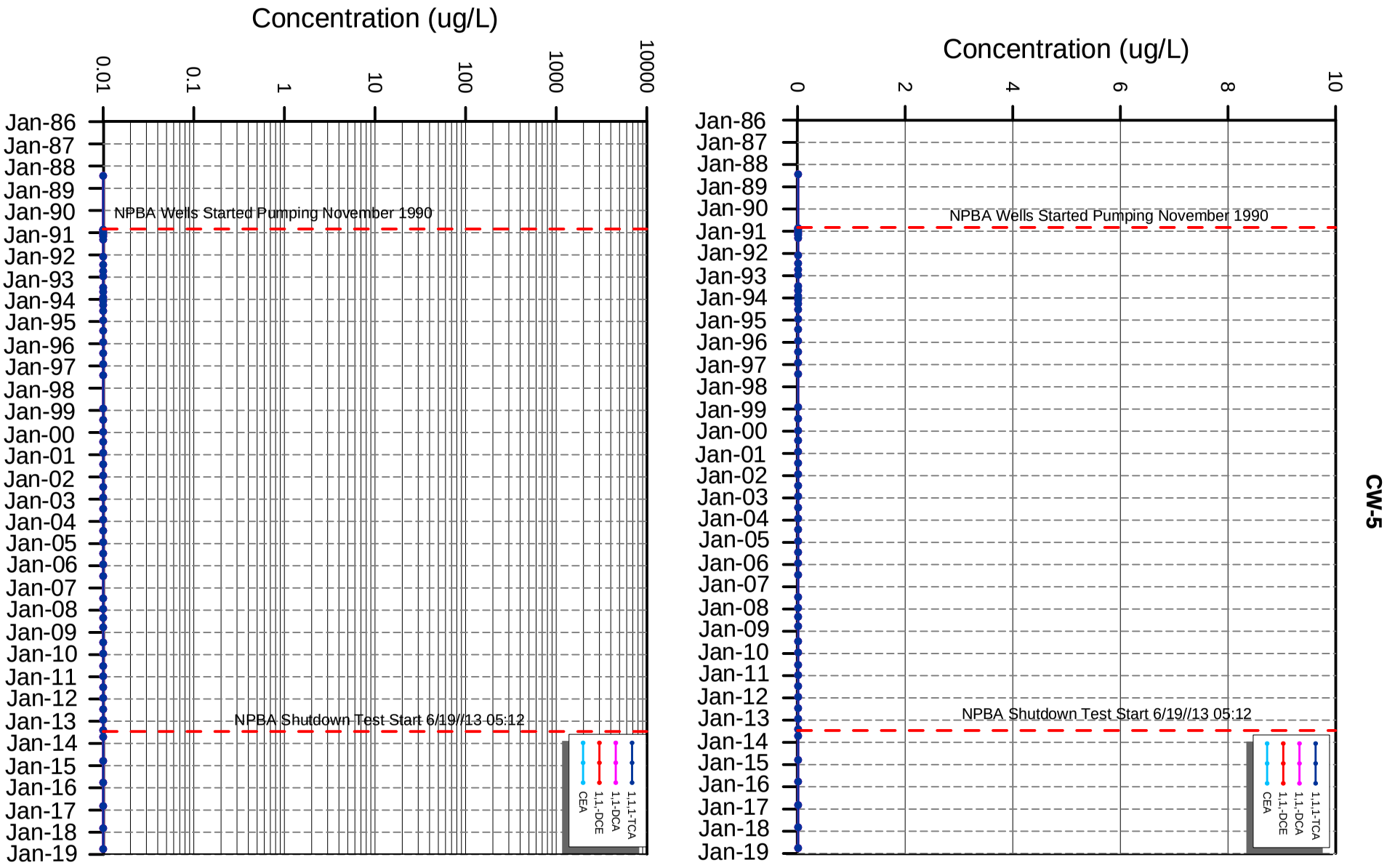
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
1,1,-DCE
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Concentration (ug/L)
0
2
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
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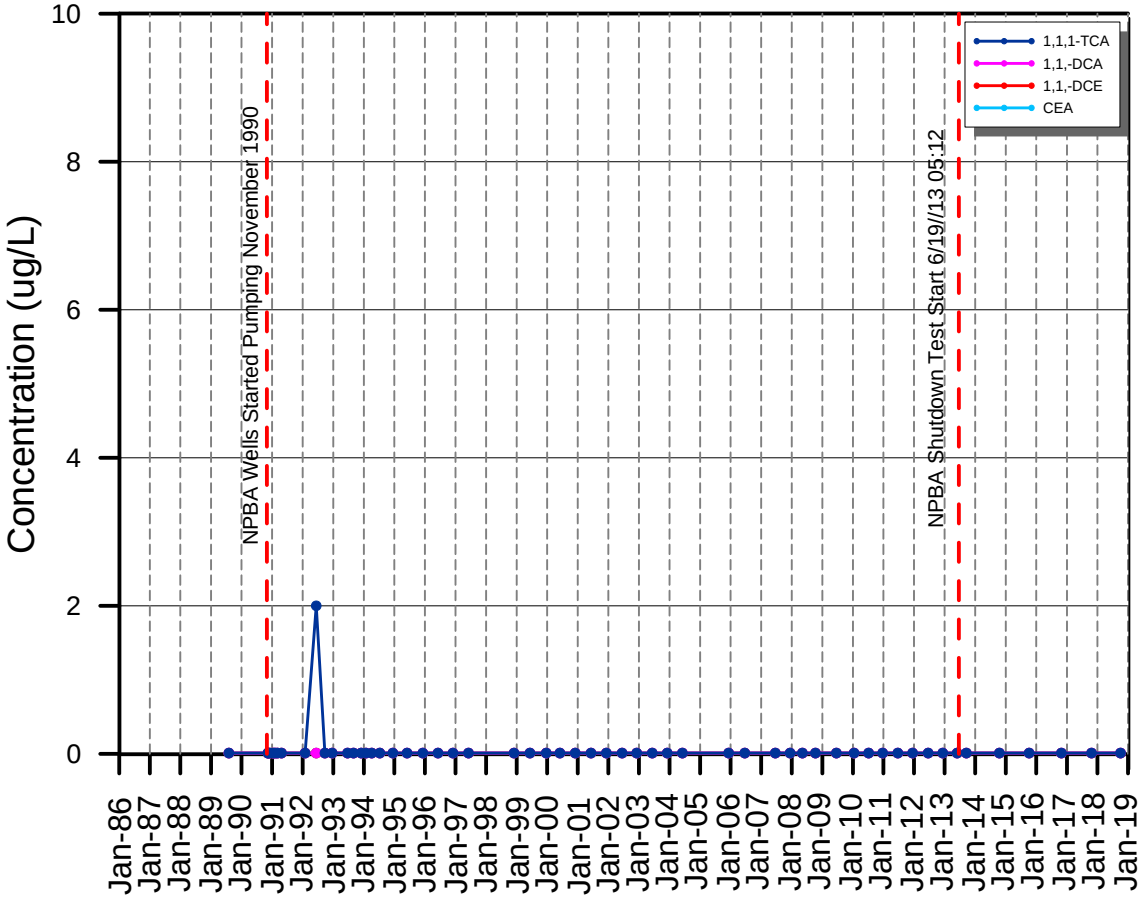
1,1-DCA
1,1,1-TCA
CW-5

CW-6


Concentration (ug/L)
10
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1,1,1-TCA
1,1,-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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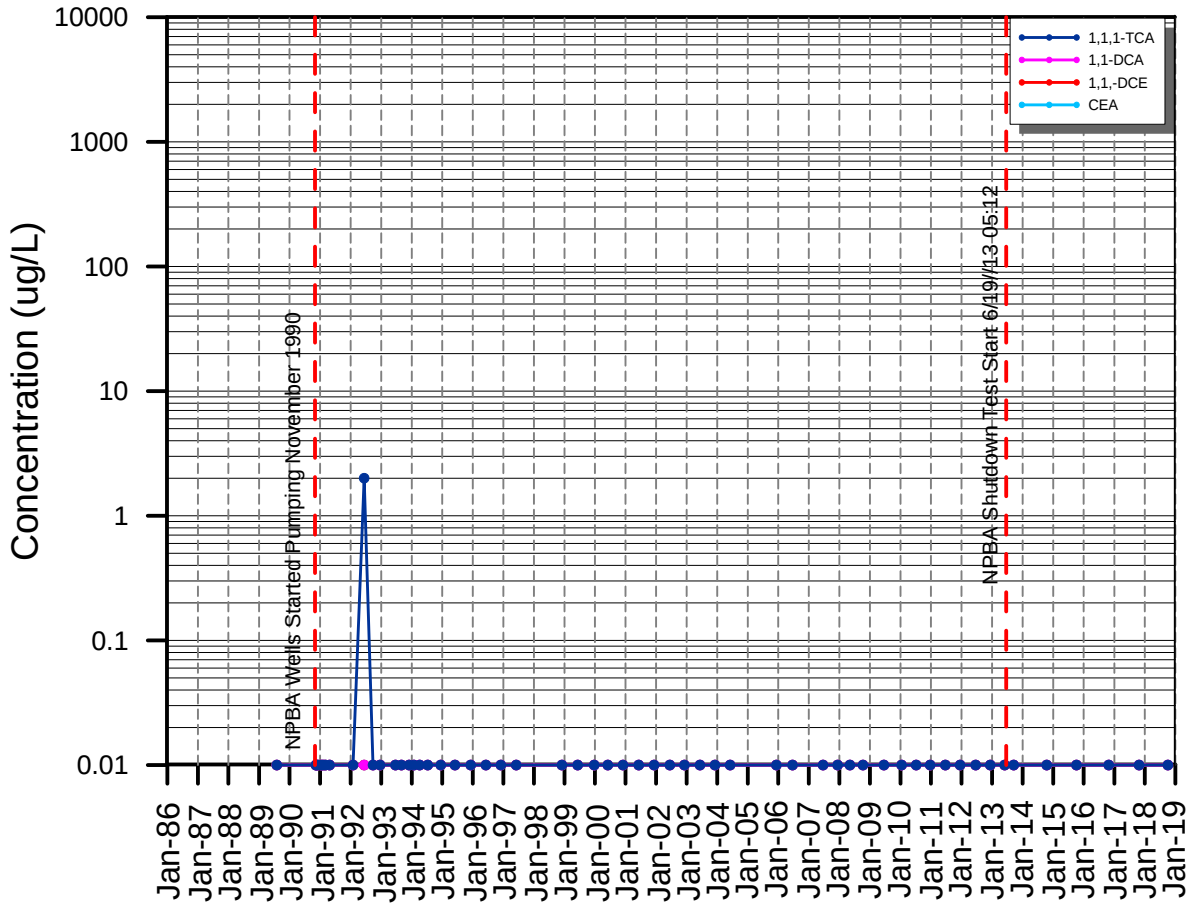
Concentration (ug/L)
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1000
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10
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0.1
0.01
1,1,1-TCA
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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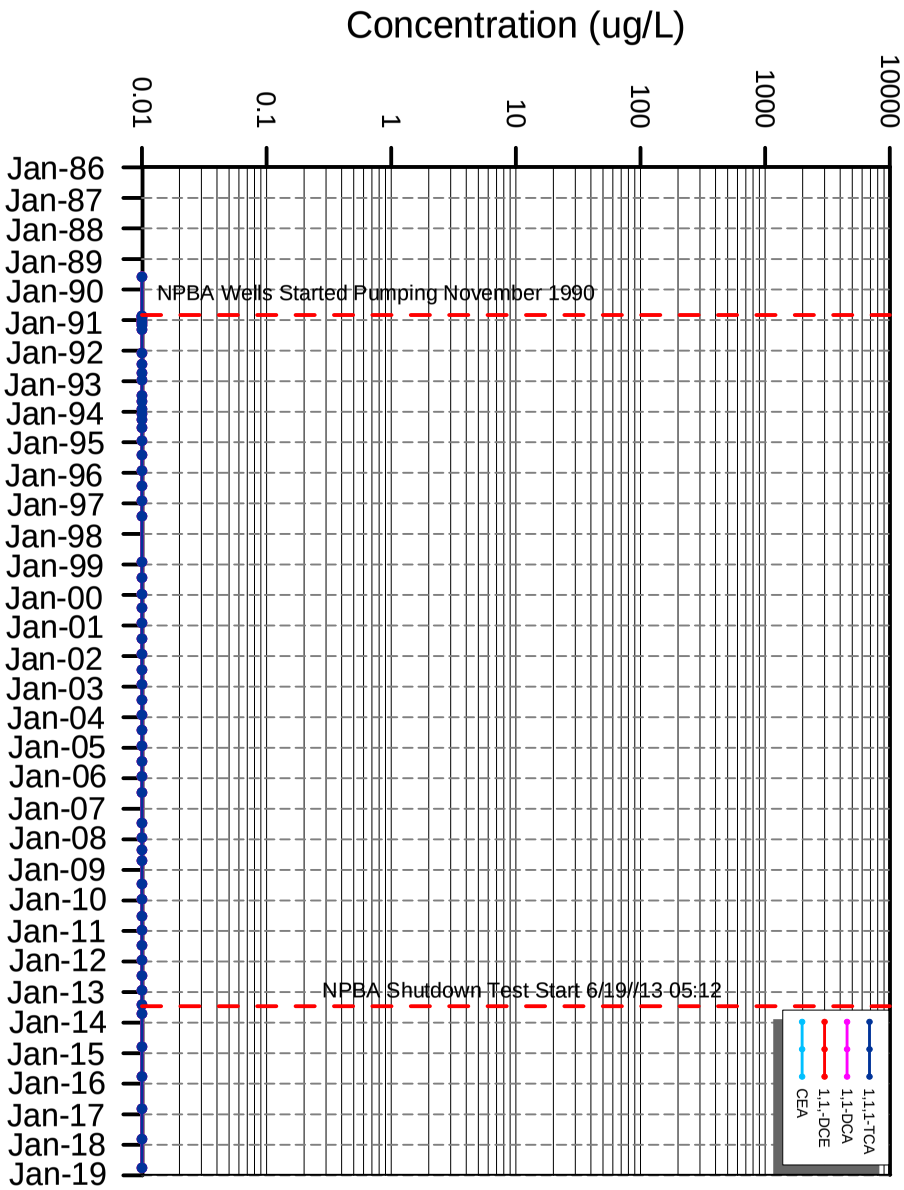
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
1,1,-DCE
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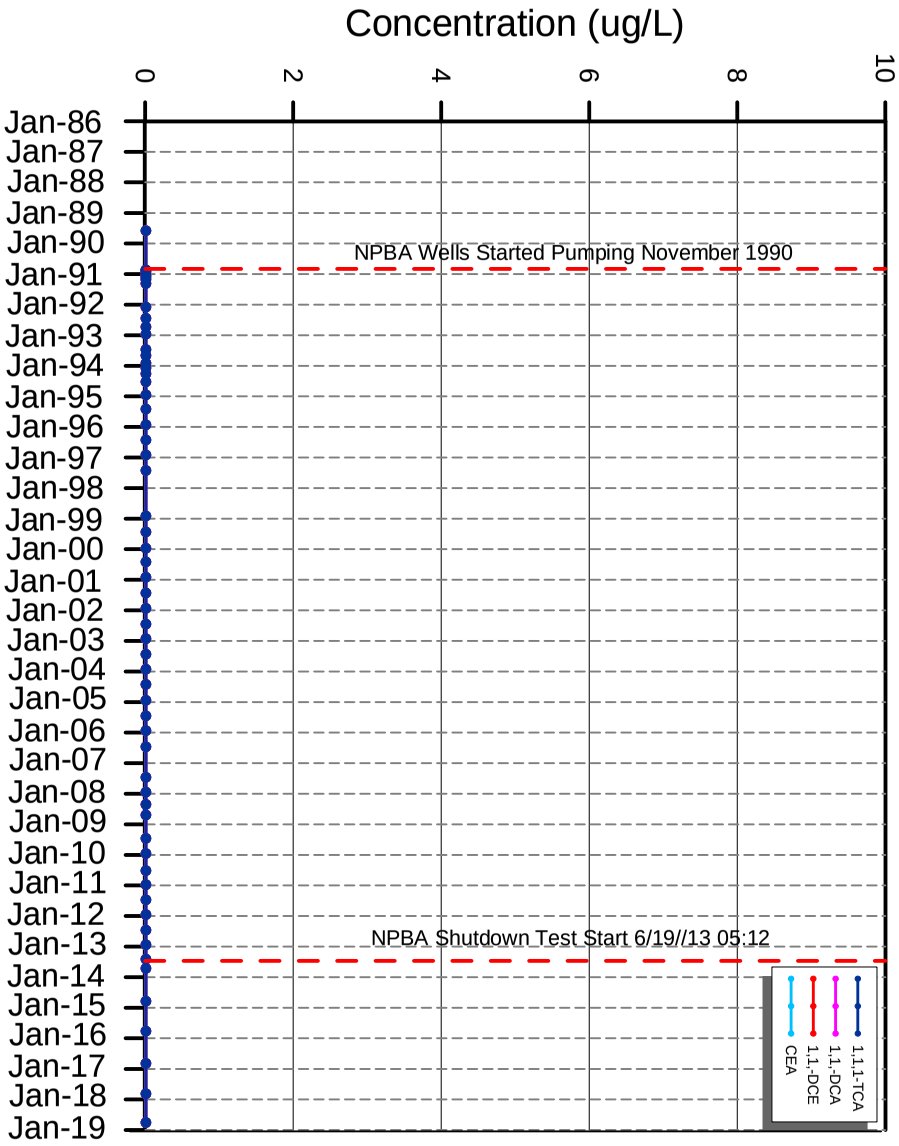
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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CEA
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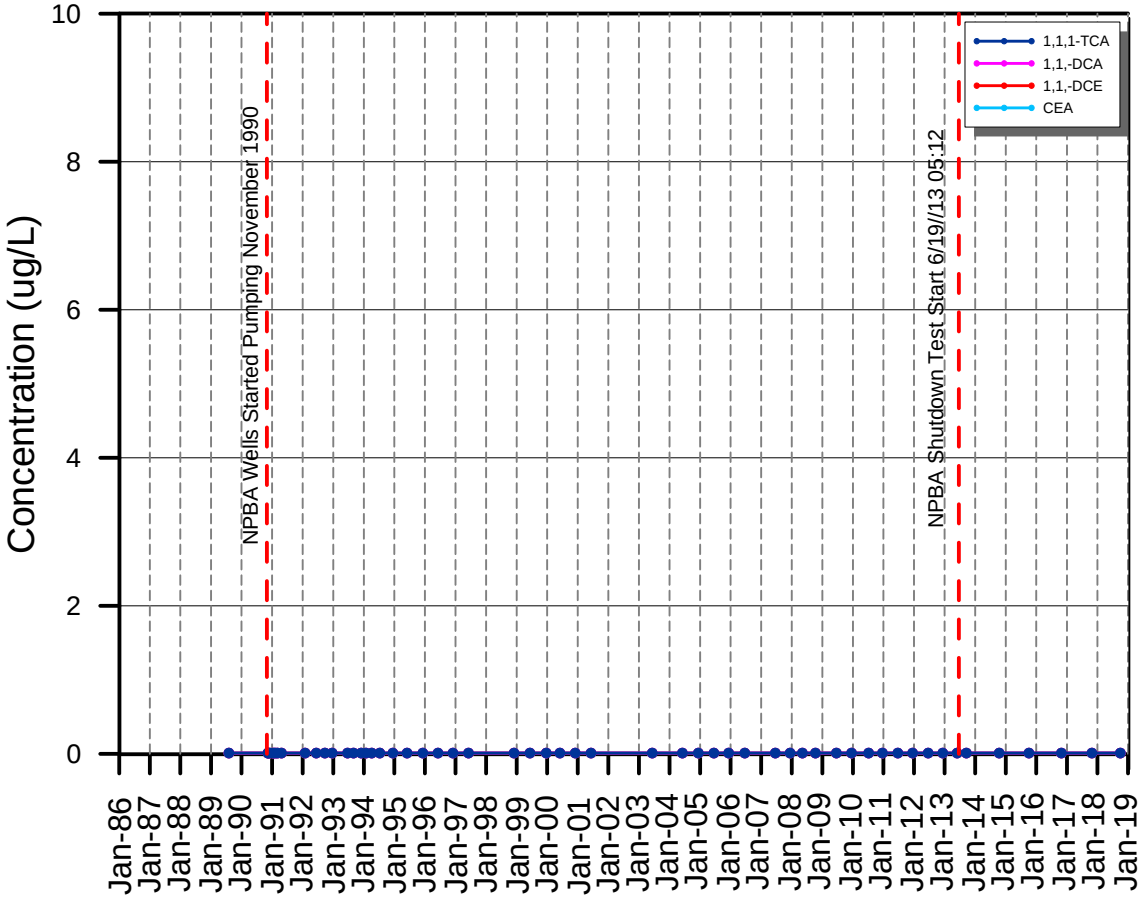
1,1,1-TCA

CW-7

CW-7A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1,1,-DCA
1,1,-DCE
CEA
Concentration (ug/L)
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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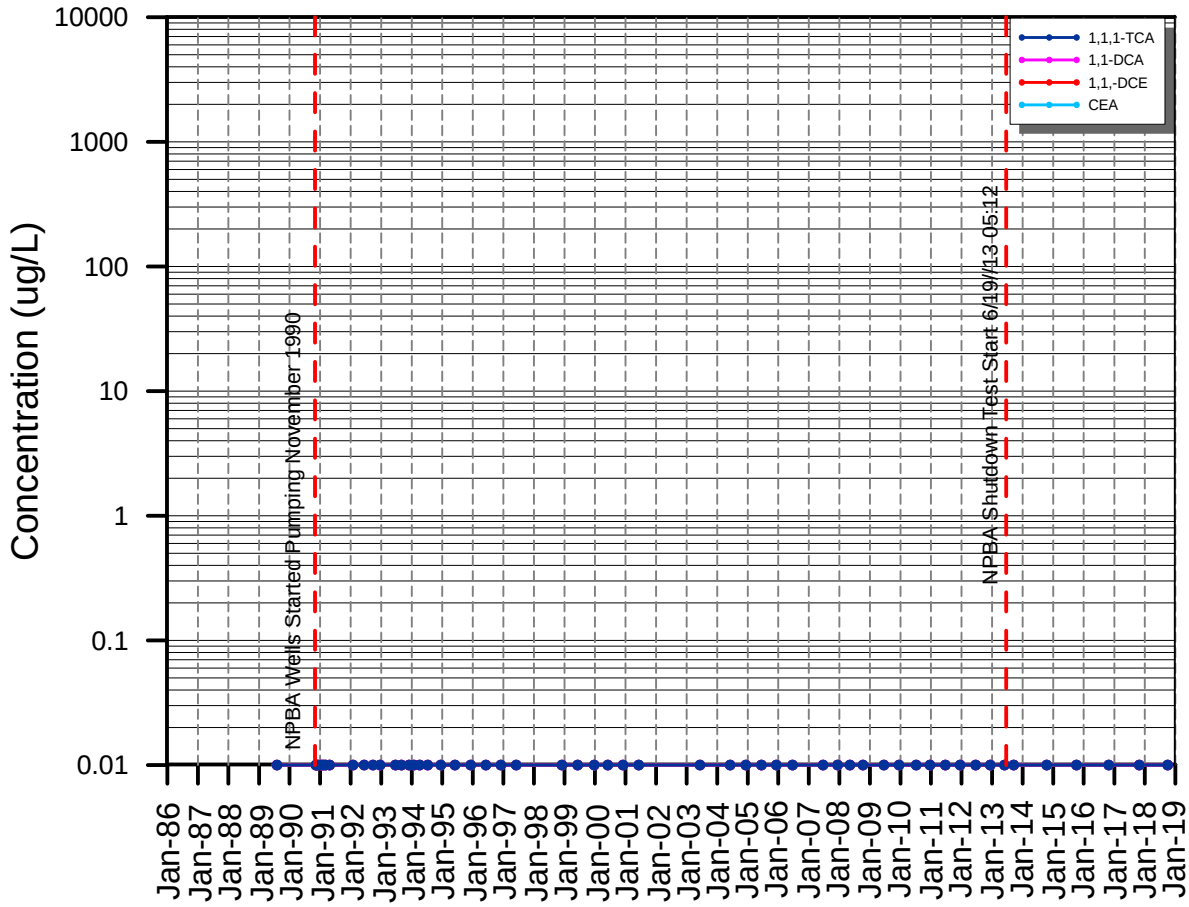
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1,1,-DCE
CEA
Concentration (ug/L)
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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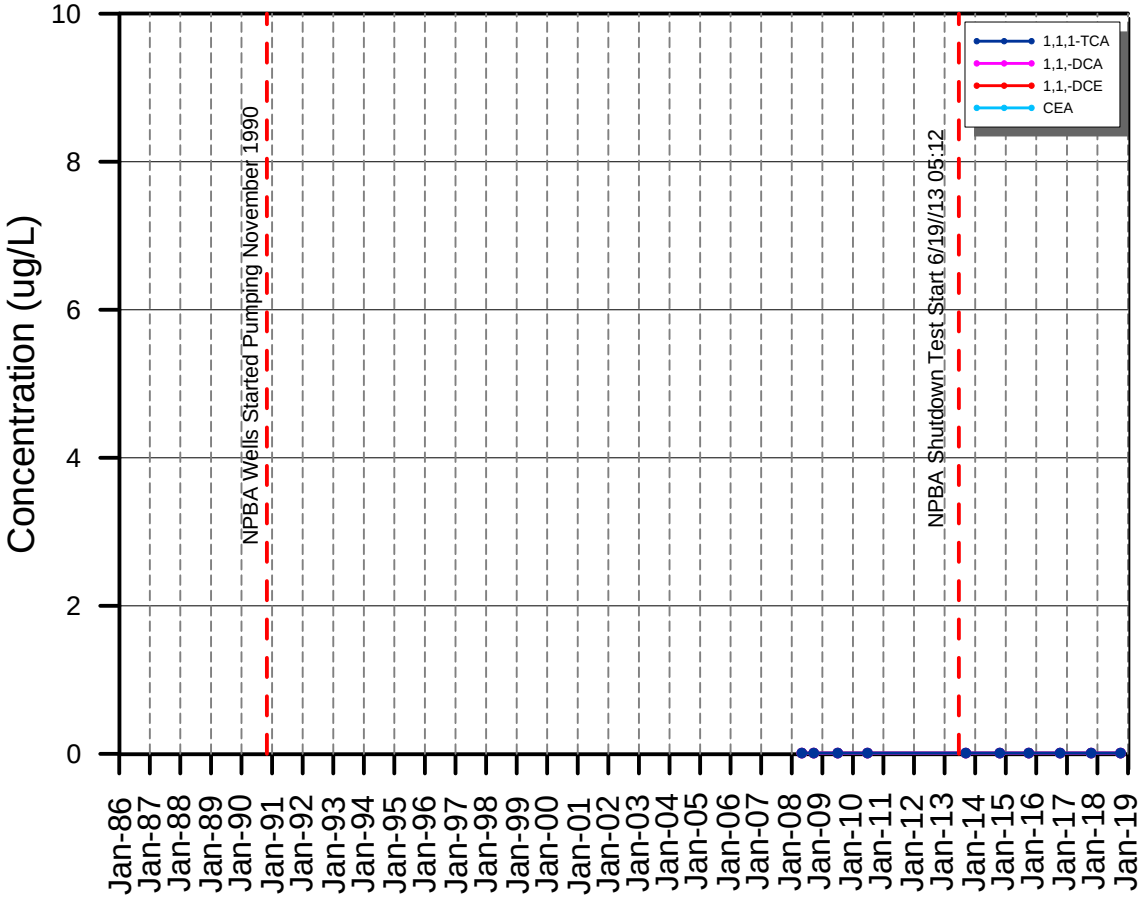
MW-102D


Concentration (ug/L)
10
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1,1,1-TCA
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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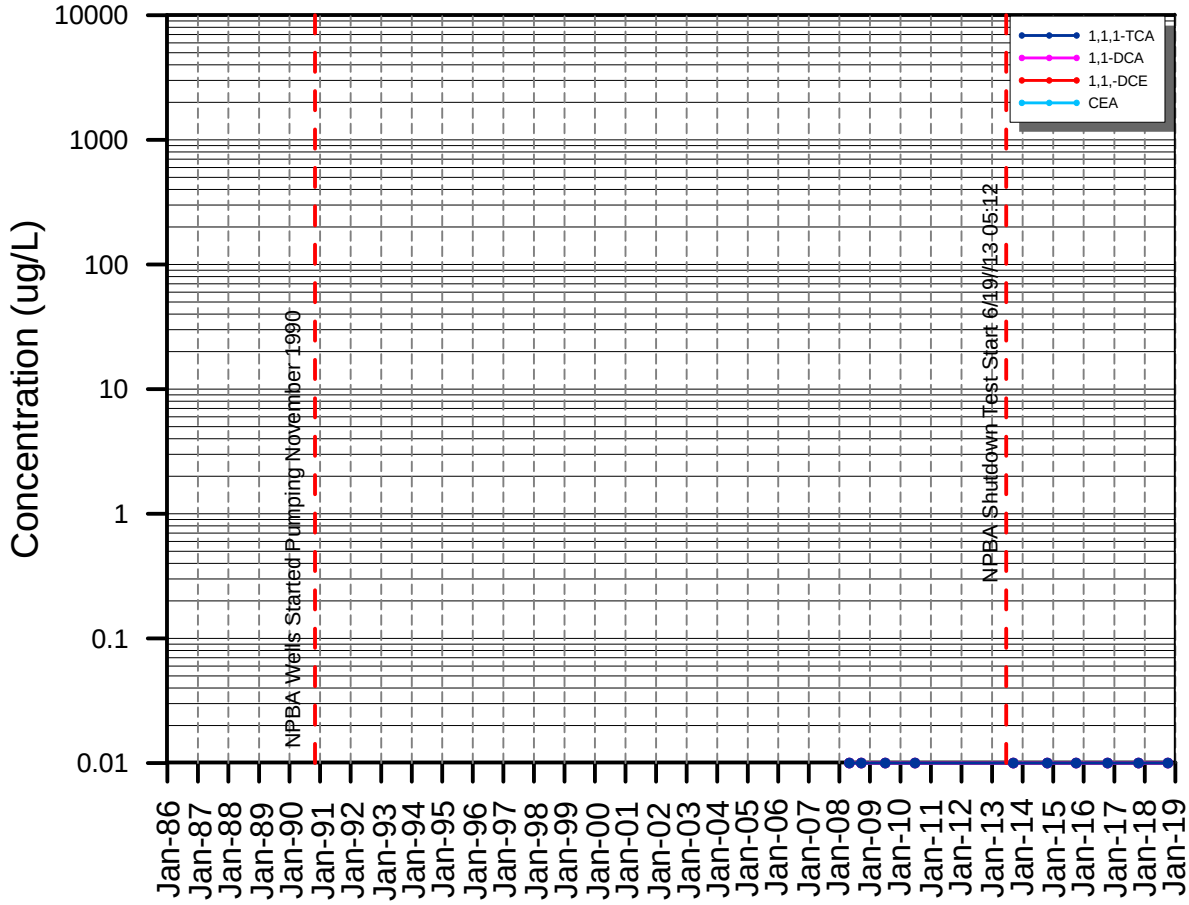
Concentration (ug/L)
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0.01
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1,1-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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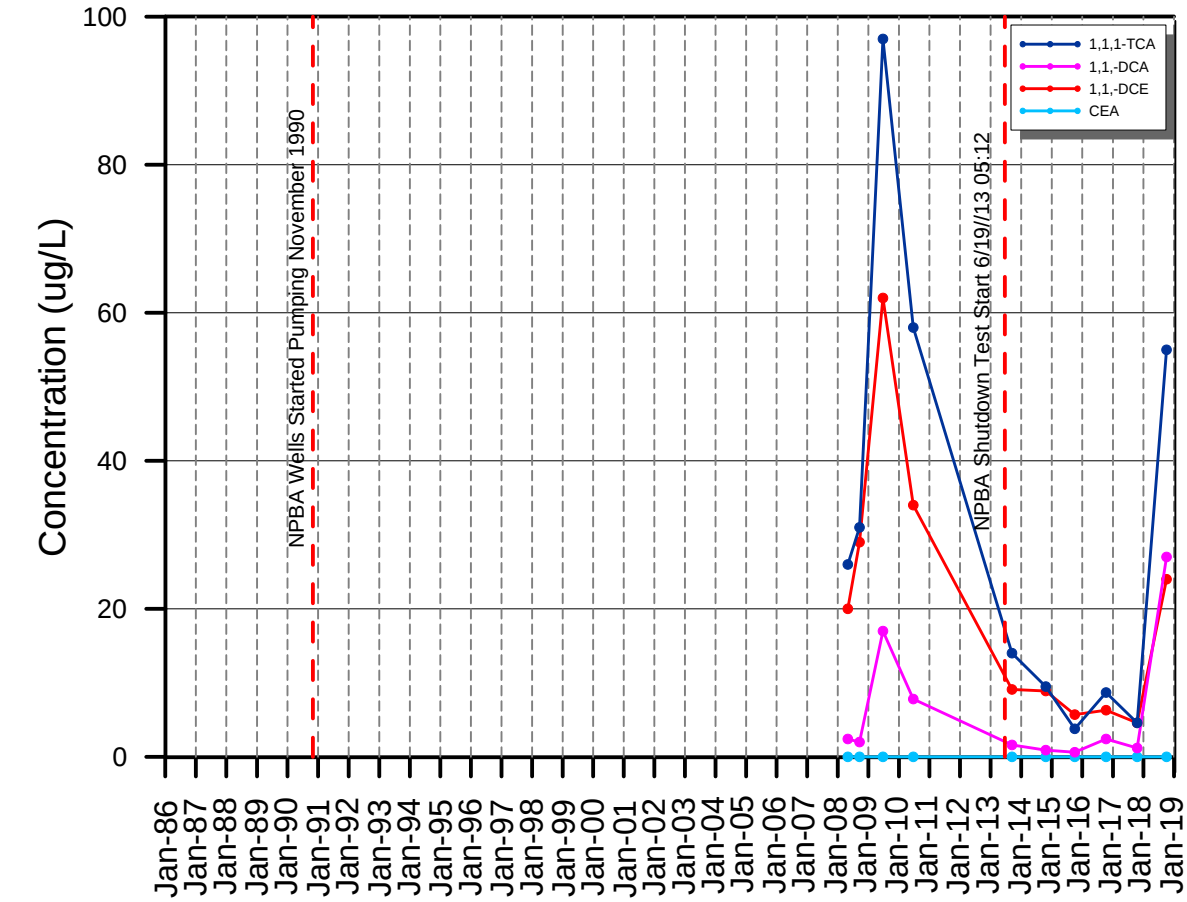
MW-102S


Concentration (ug/L)
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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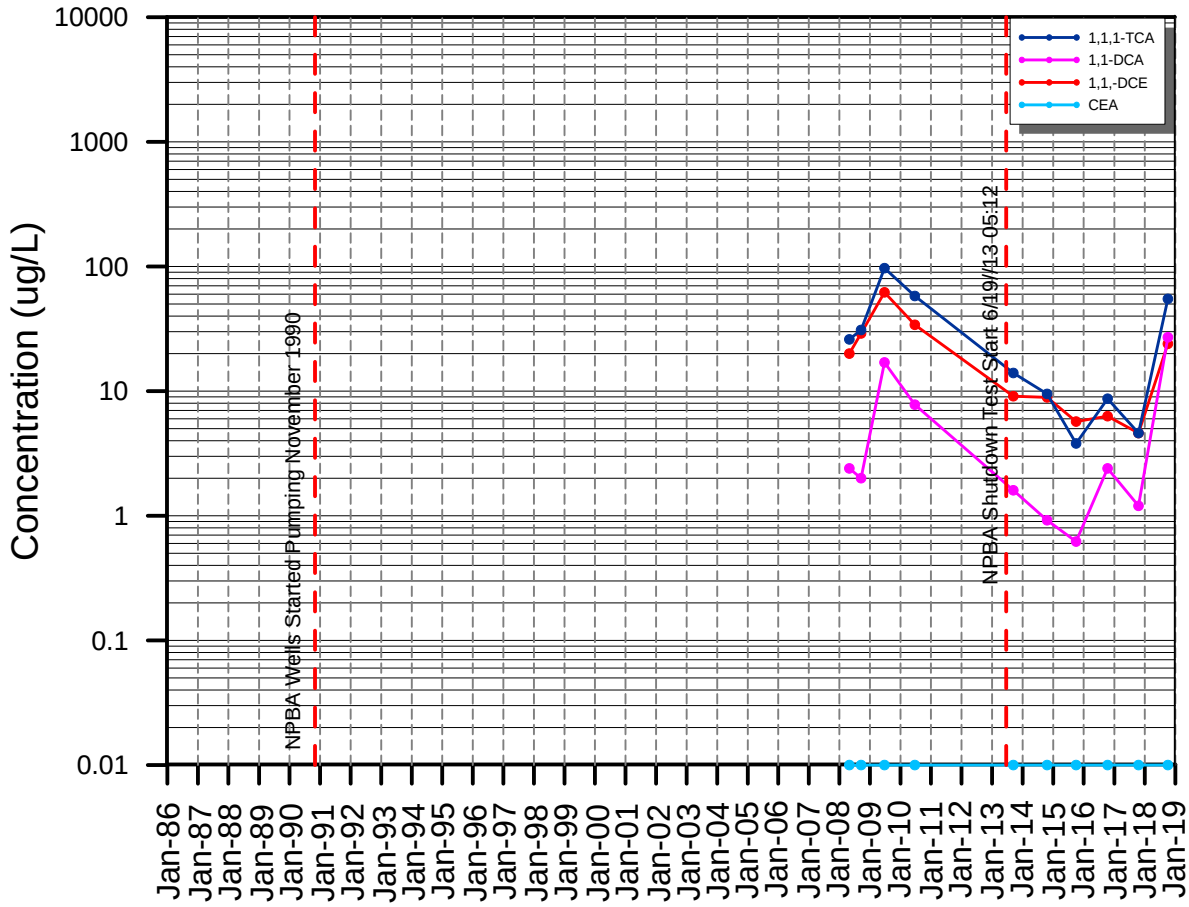
Concentration (ug/L)
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0.01
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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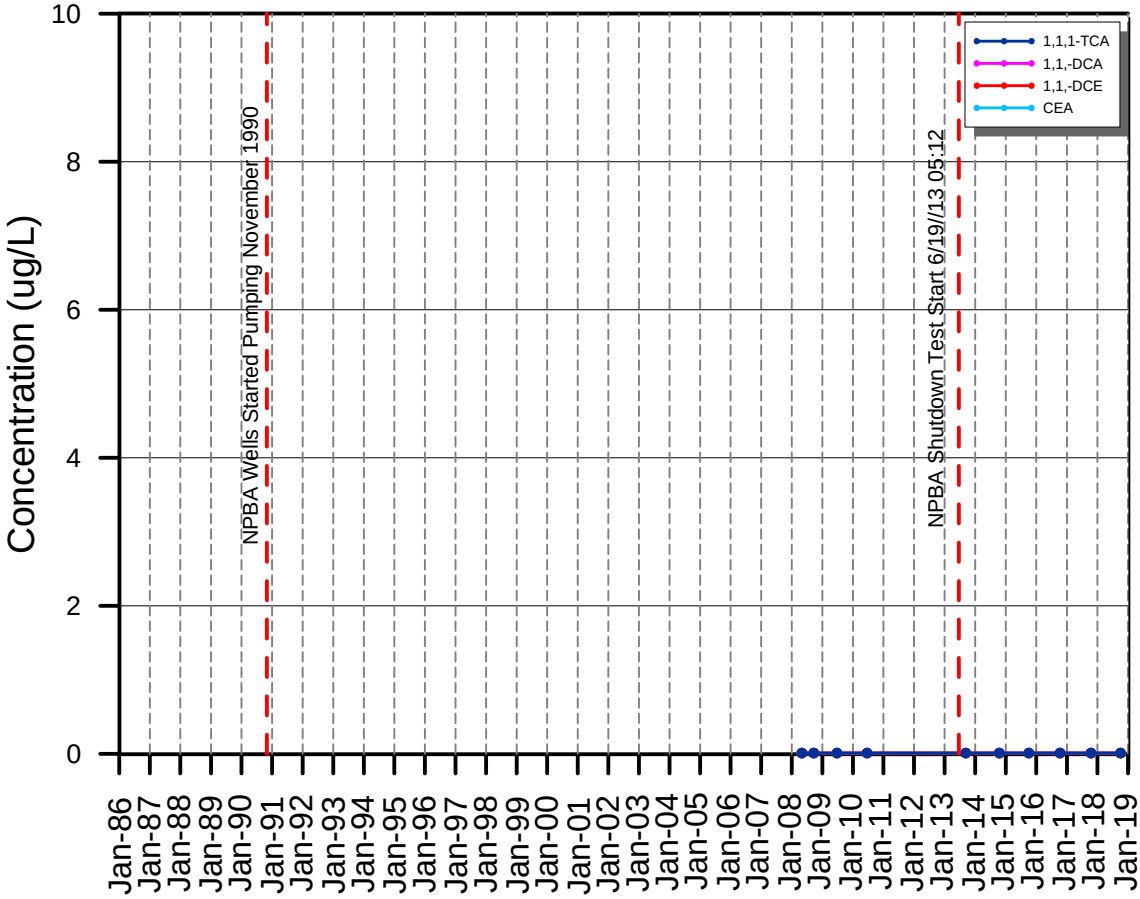
MW-103D


Concentration (ug/L)
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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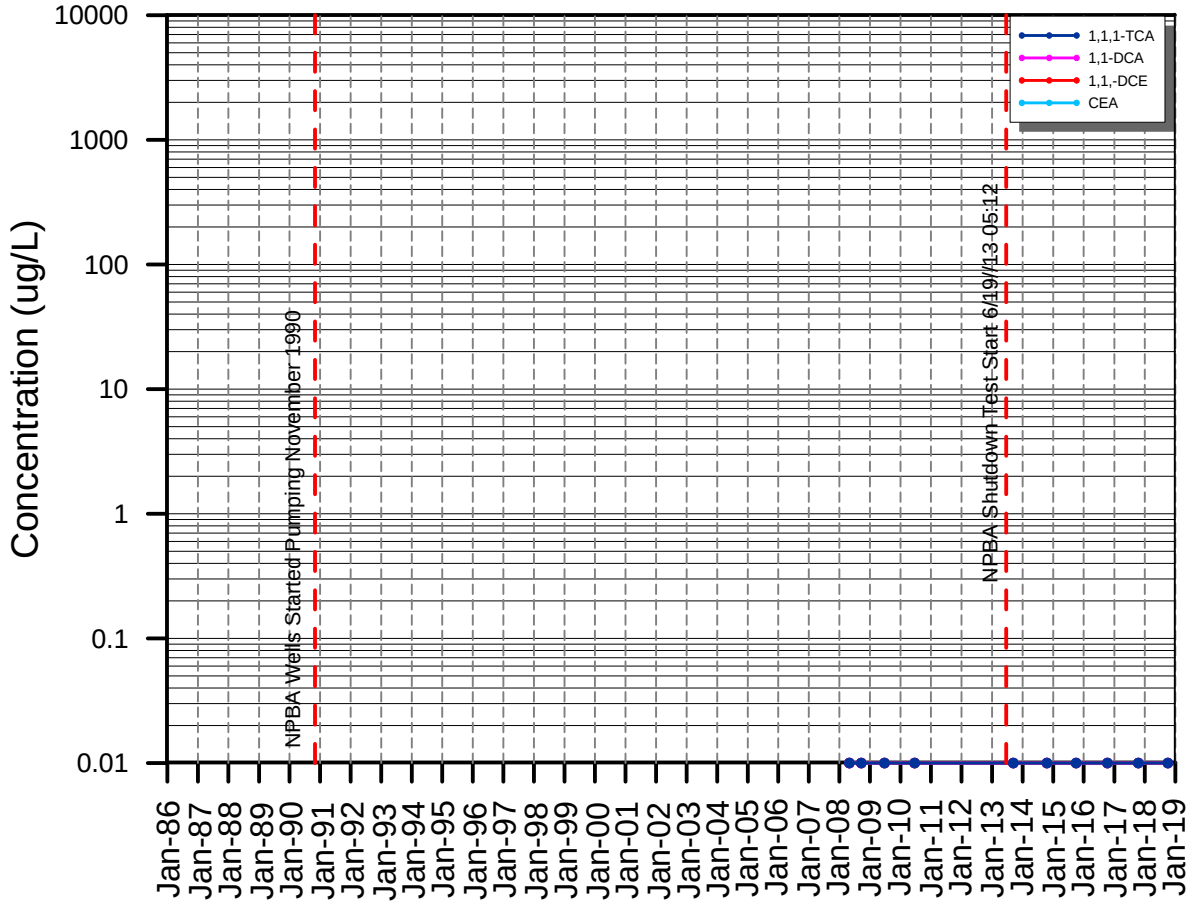
Concentration (ug/L)
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100
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0.1
0.01
1,1,1-TCA
1,1-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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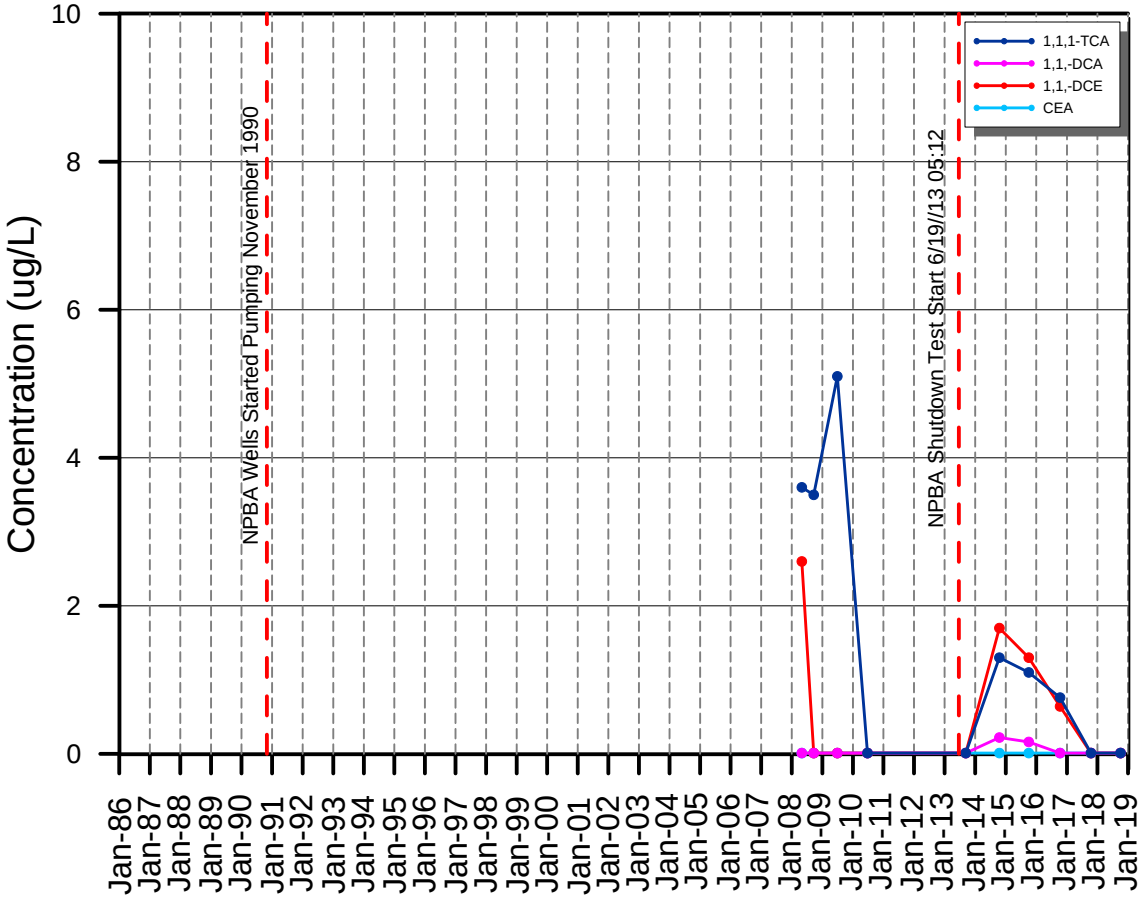
MW-103S


Concentration (ug/L)
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1,1,-DCA
1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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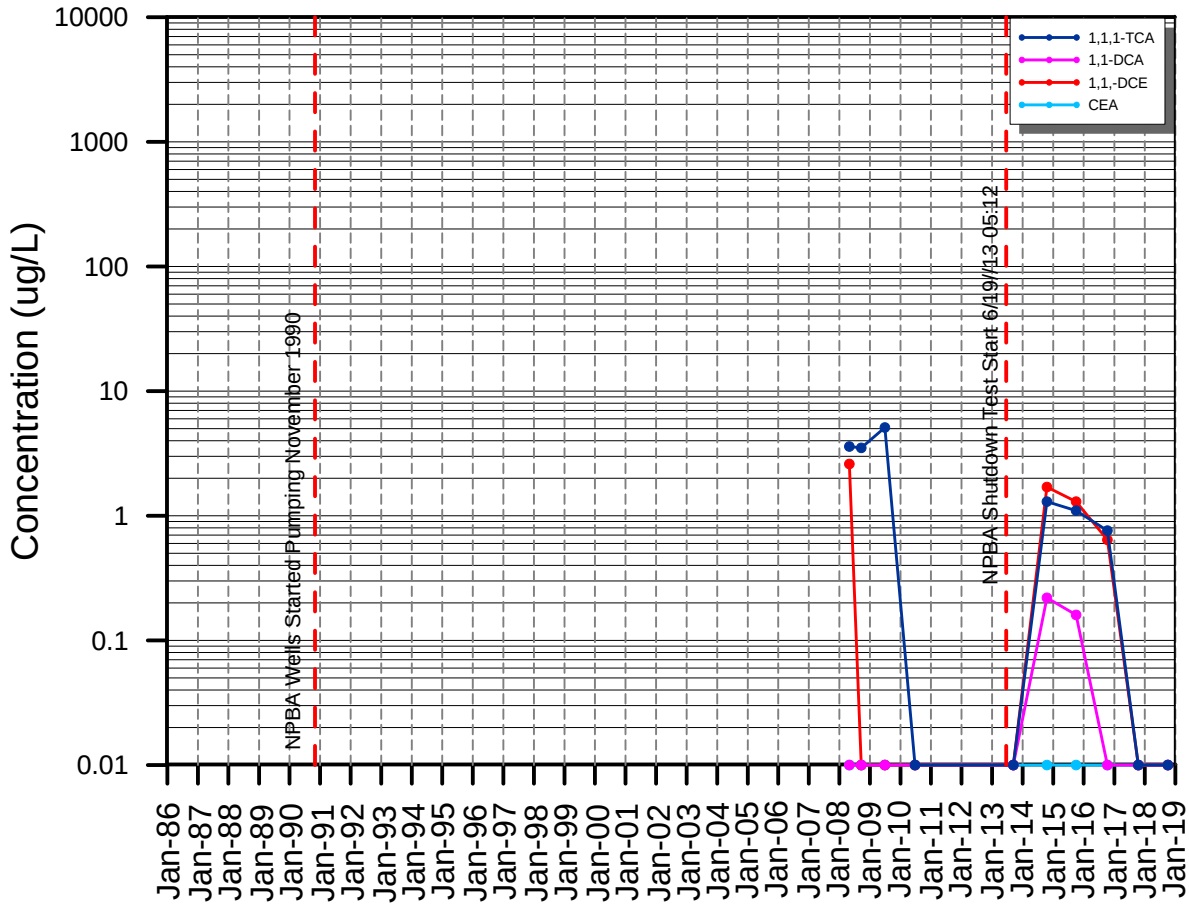
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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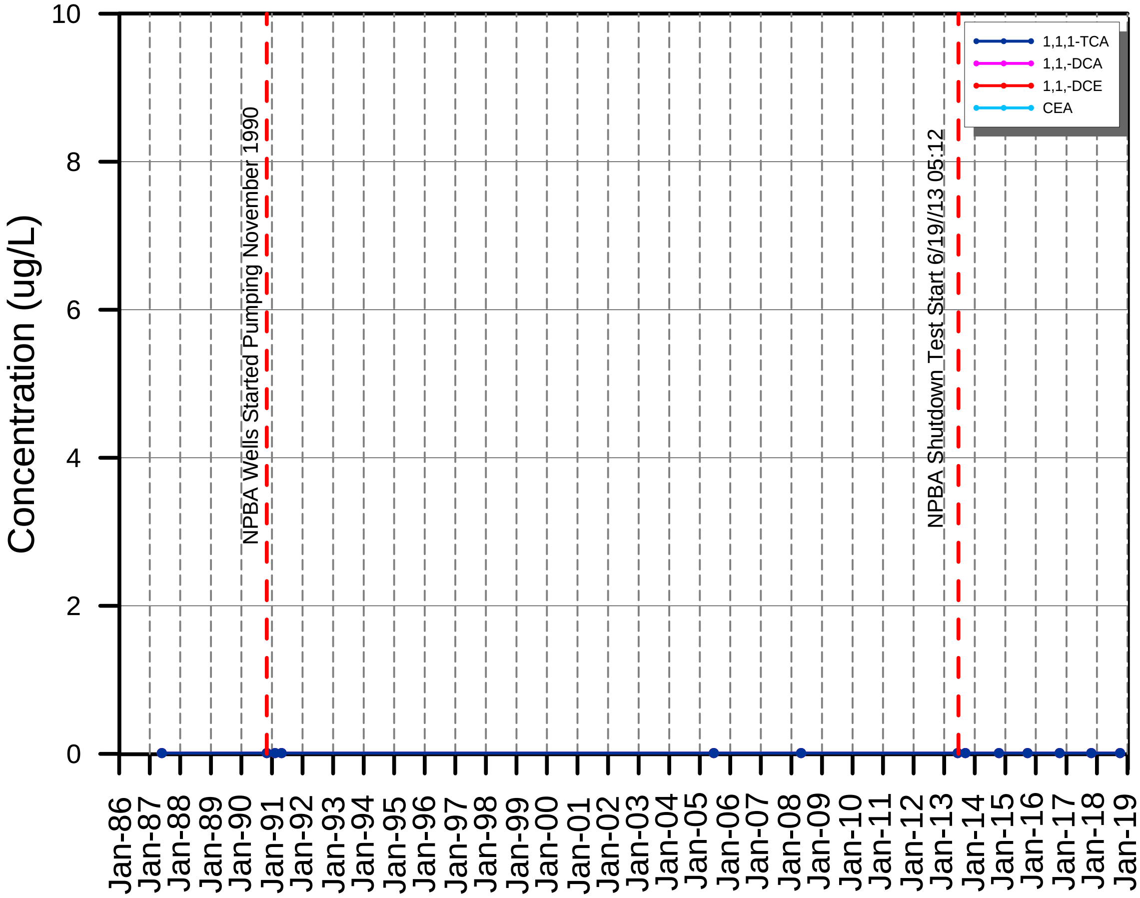
MW-11



Concentration (ug/L)
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19/13 05:12
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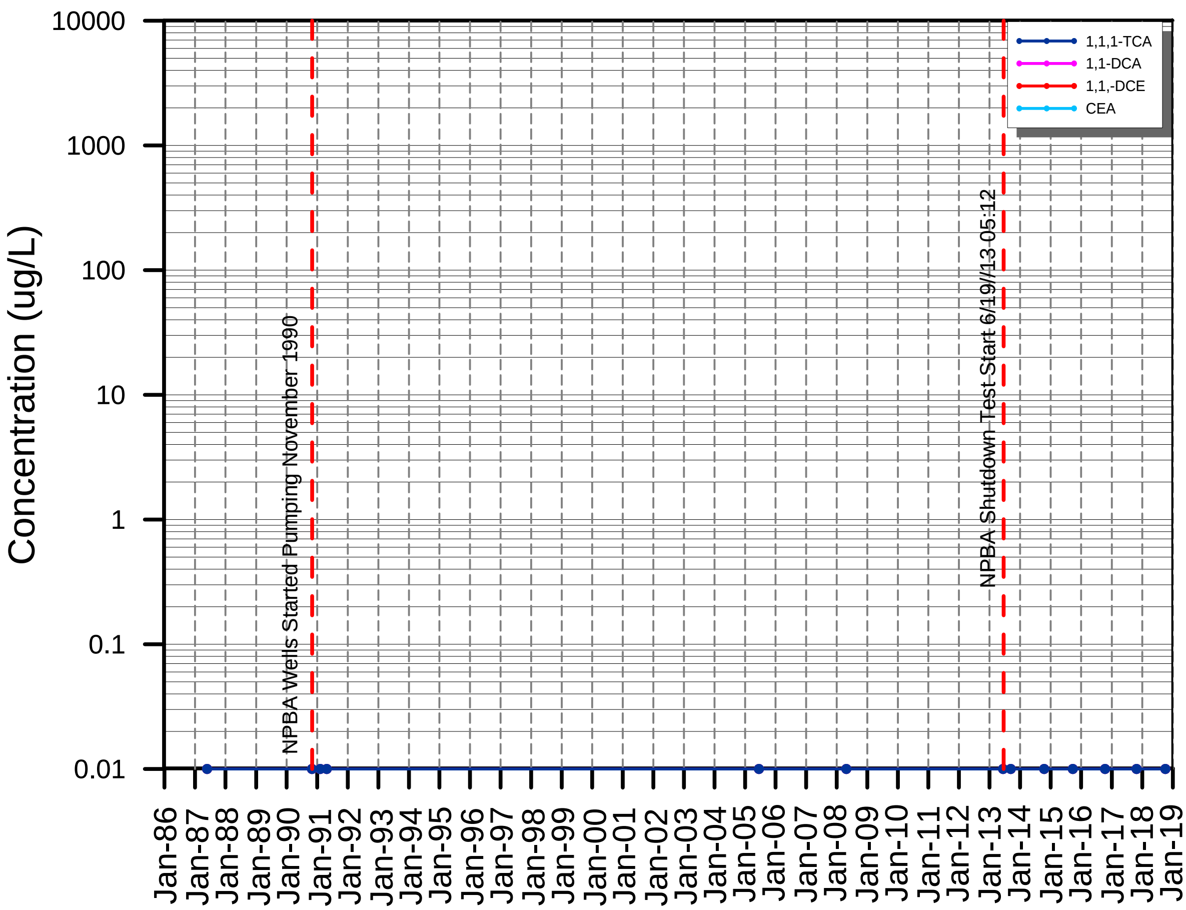

Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19/13 05:12
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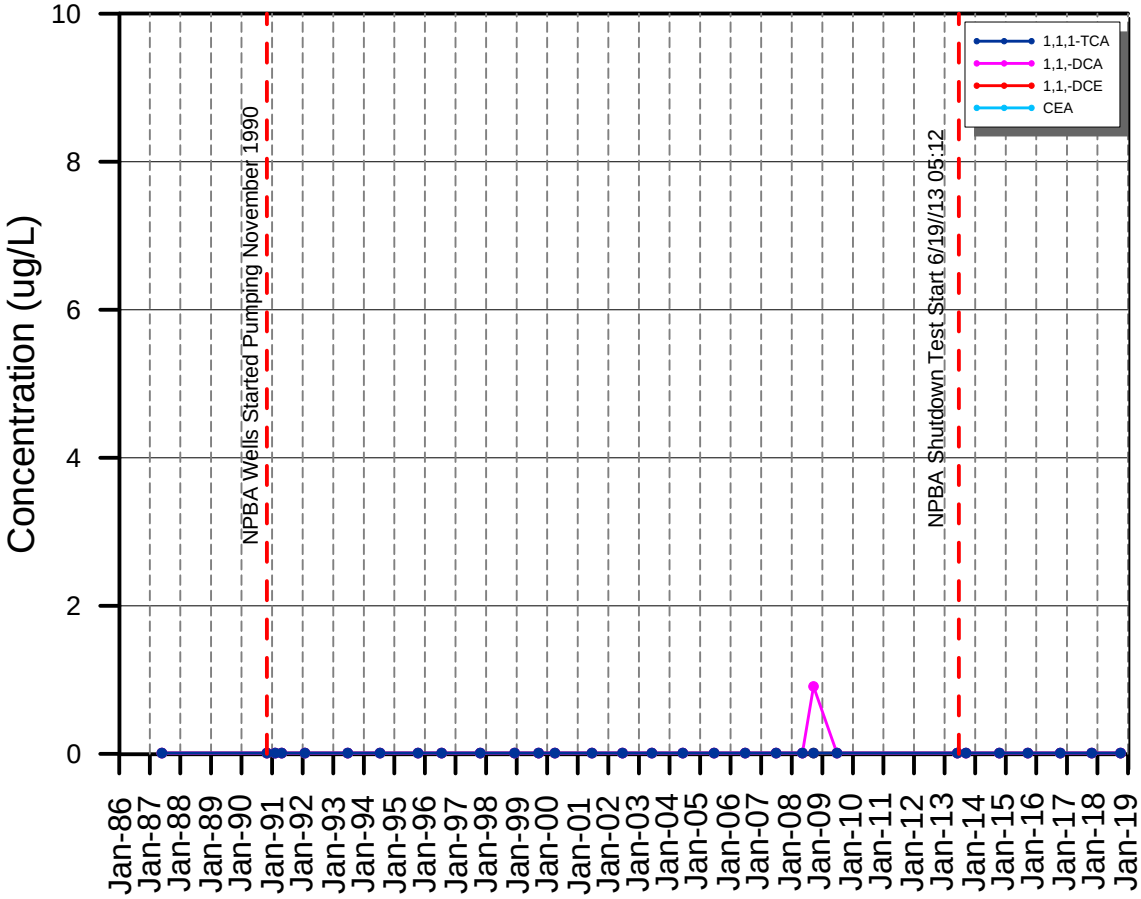
MW-12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NPBA Wells Started Pumping November 1990
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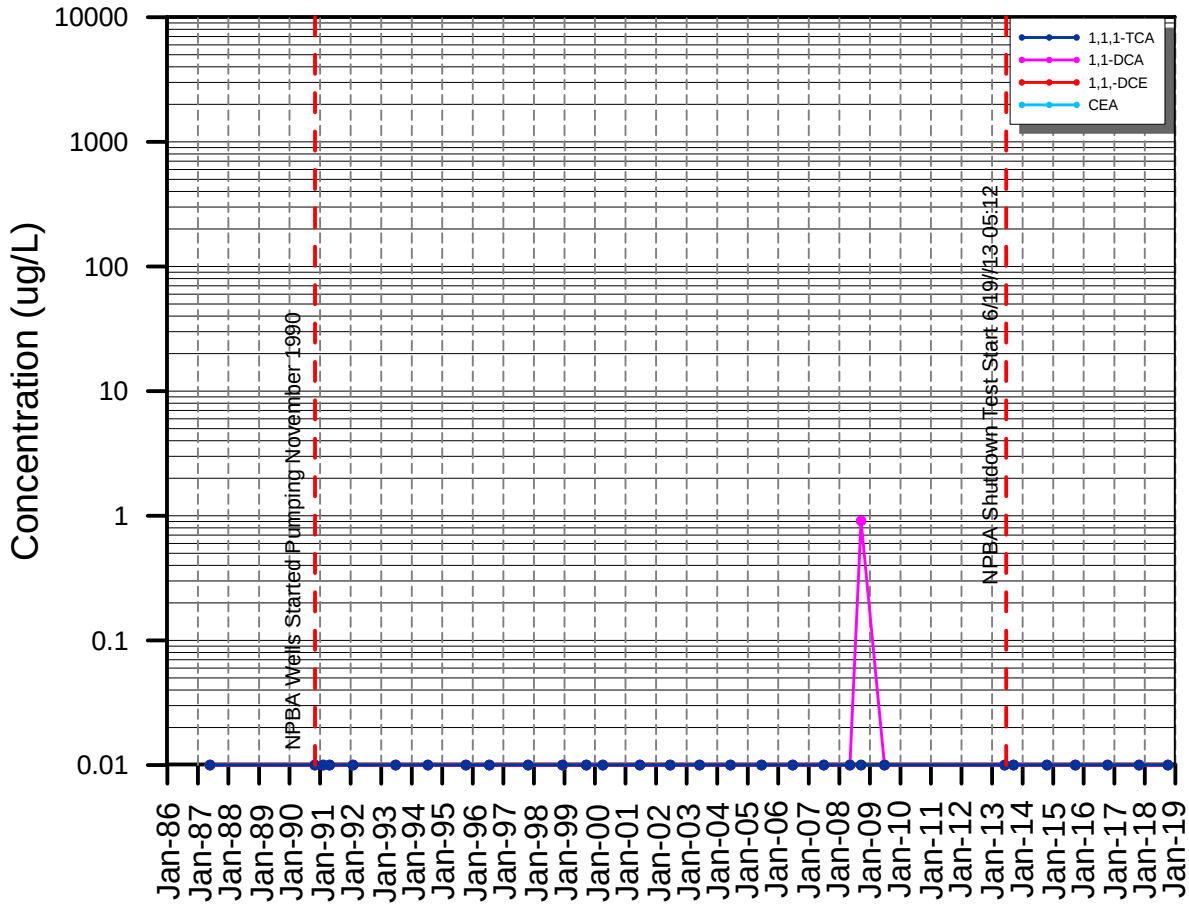
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NPBA Wells Started Pumping November 1990
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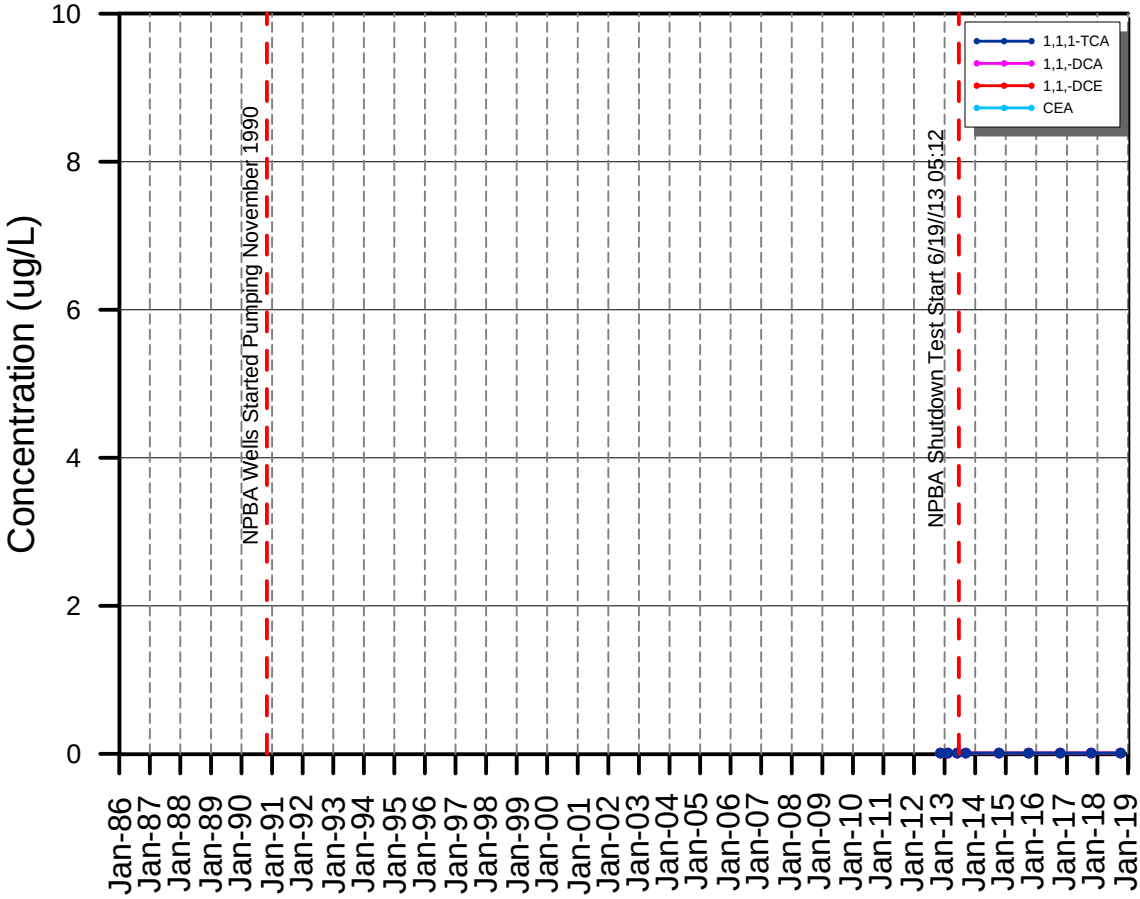
MW-142D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NPBA Wells Started Pumping November 1990
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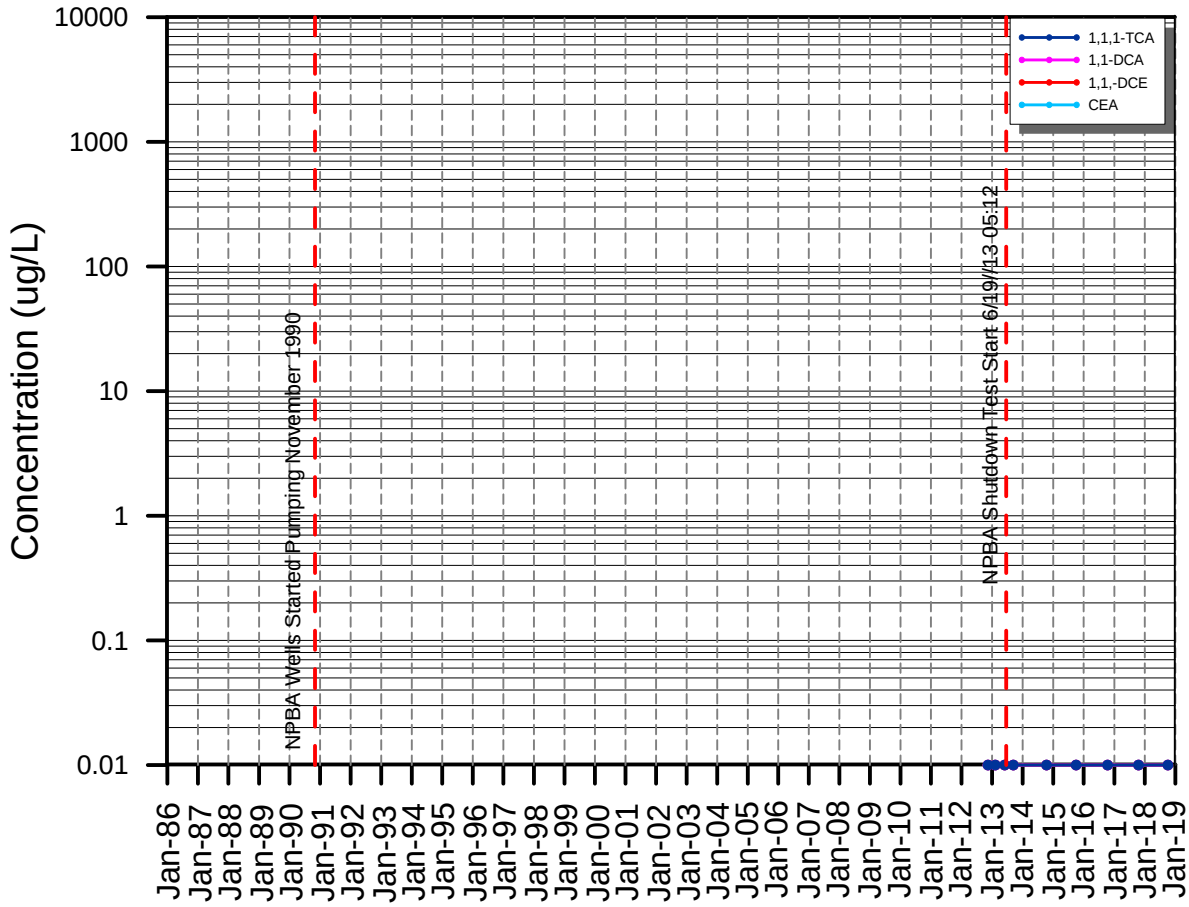
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NPBA Wells Started Pumping November 1990
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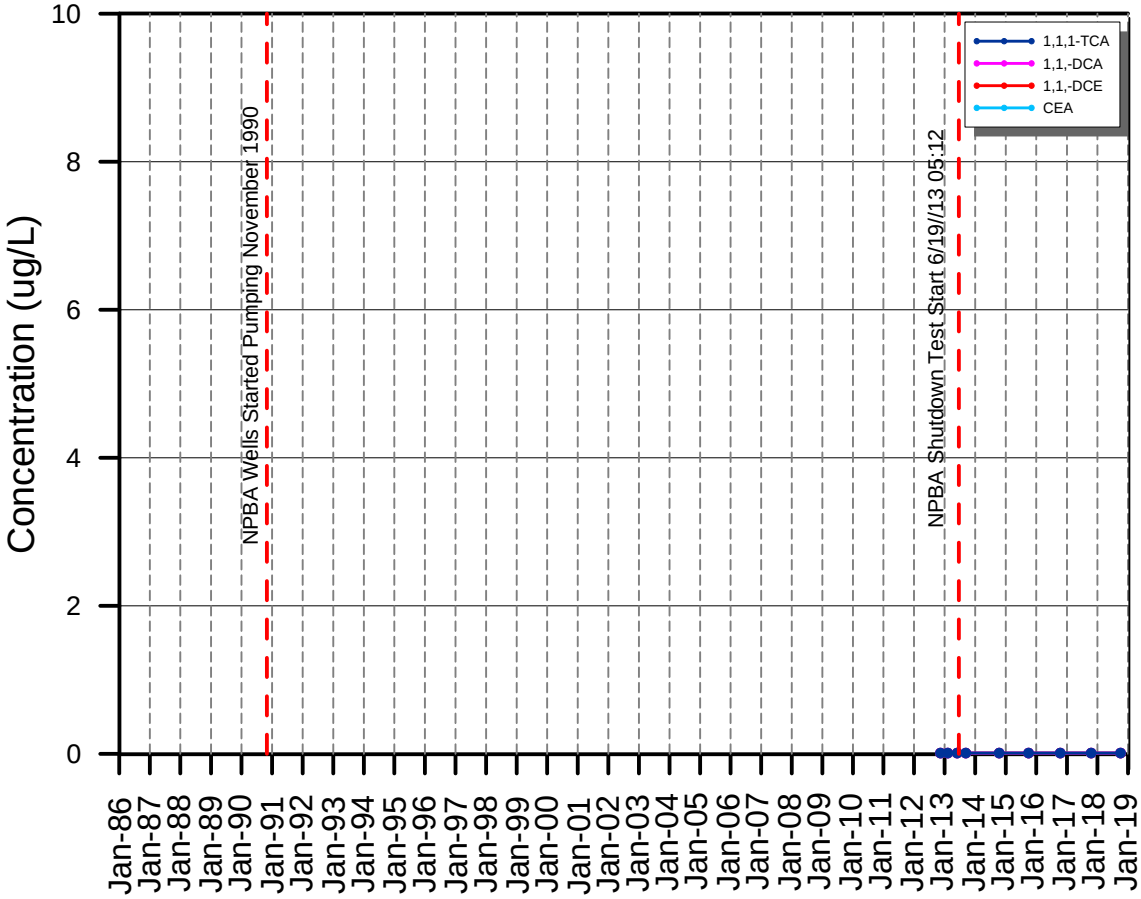
MW-142S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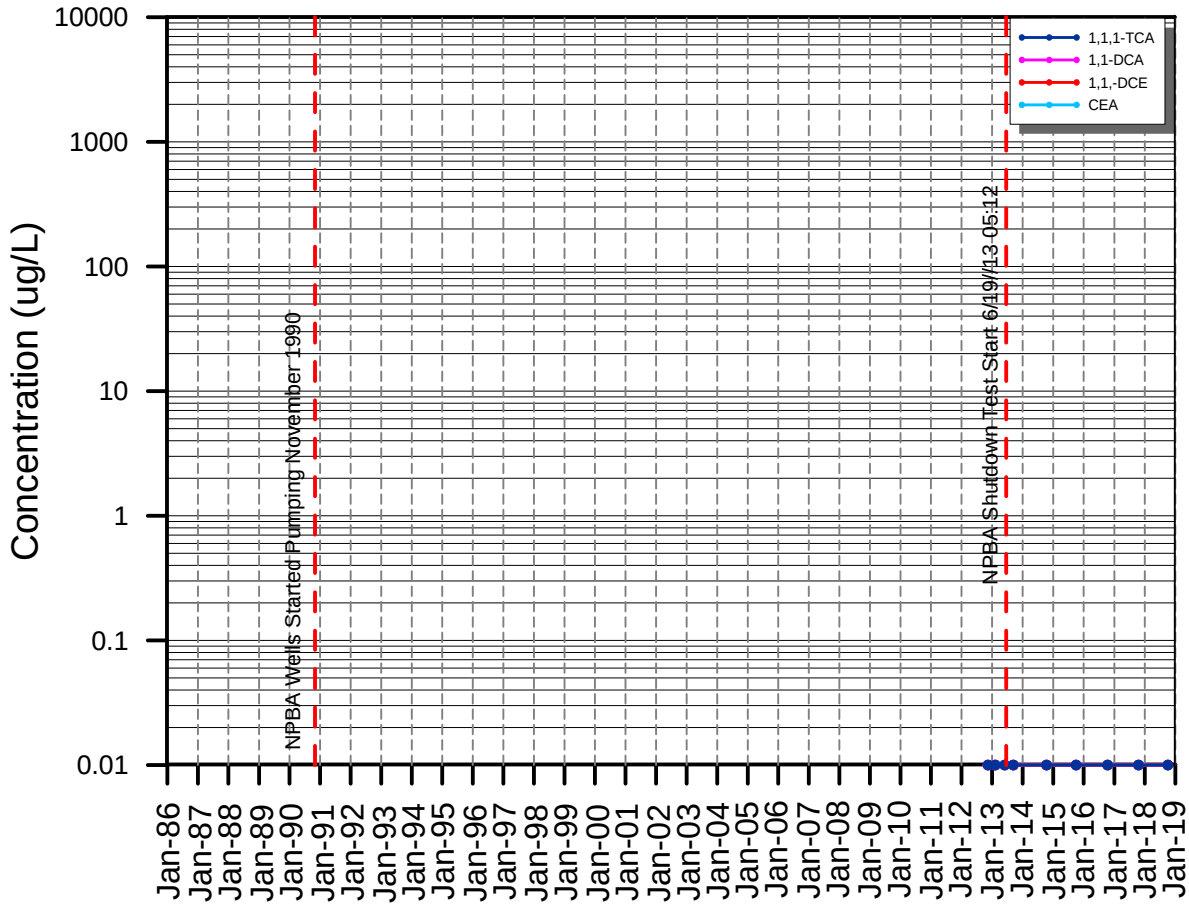
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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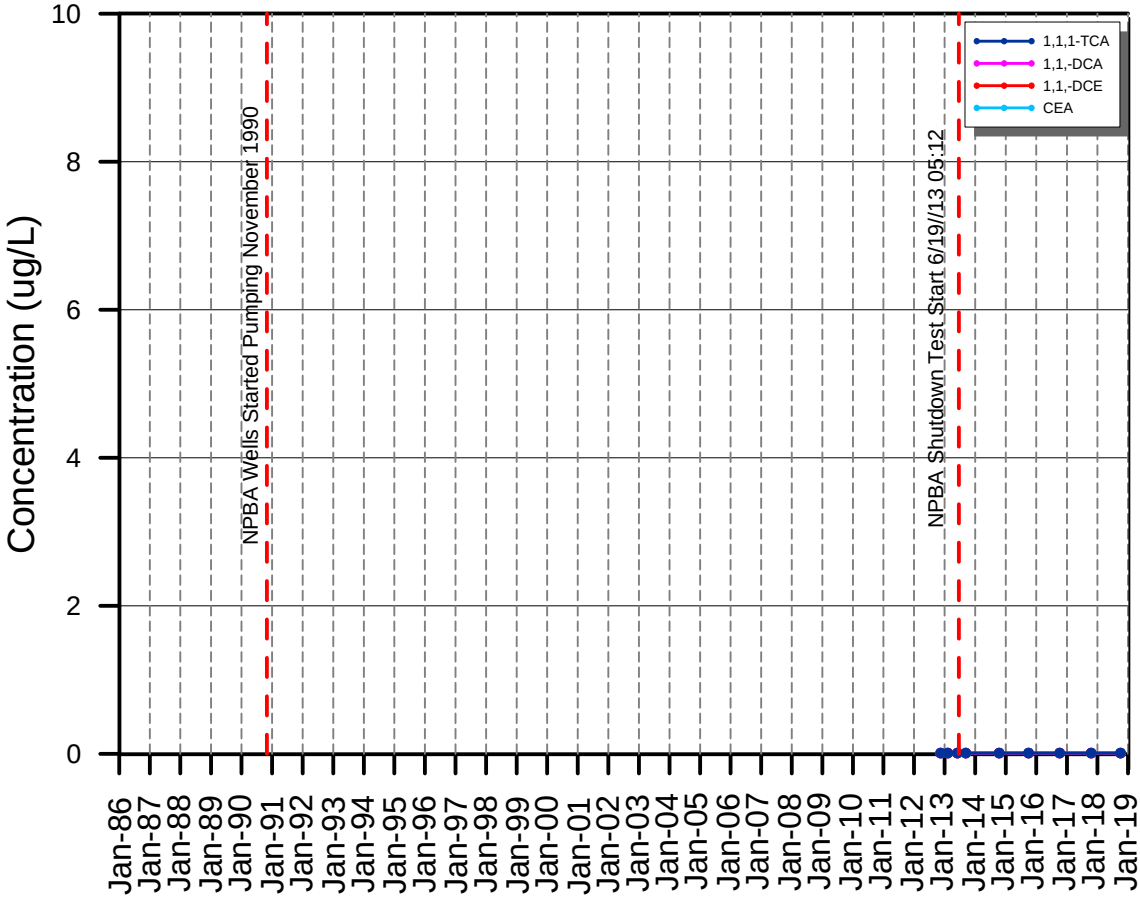
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NPBA Wells Started Pumping November 1990
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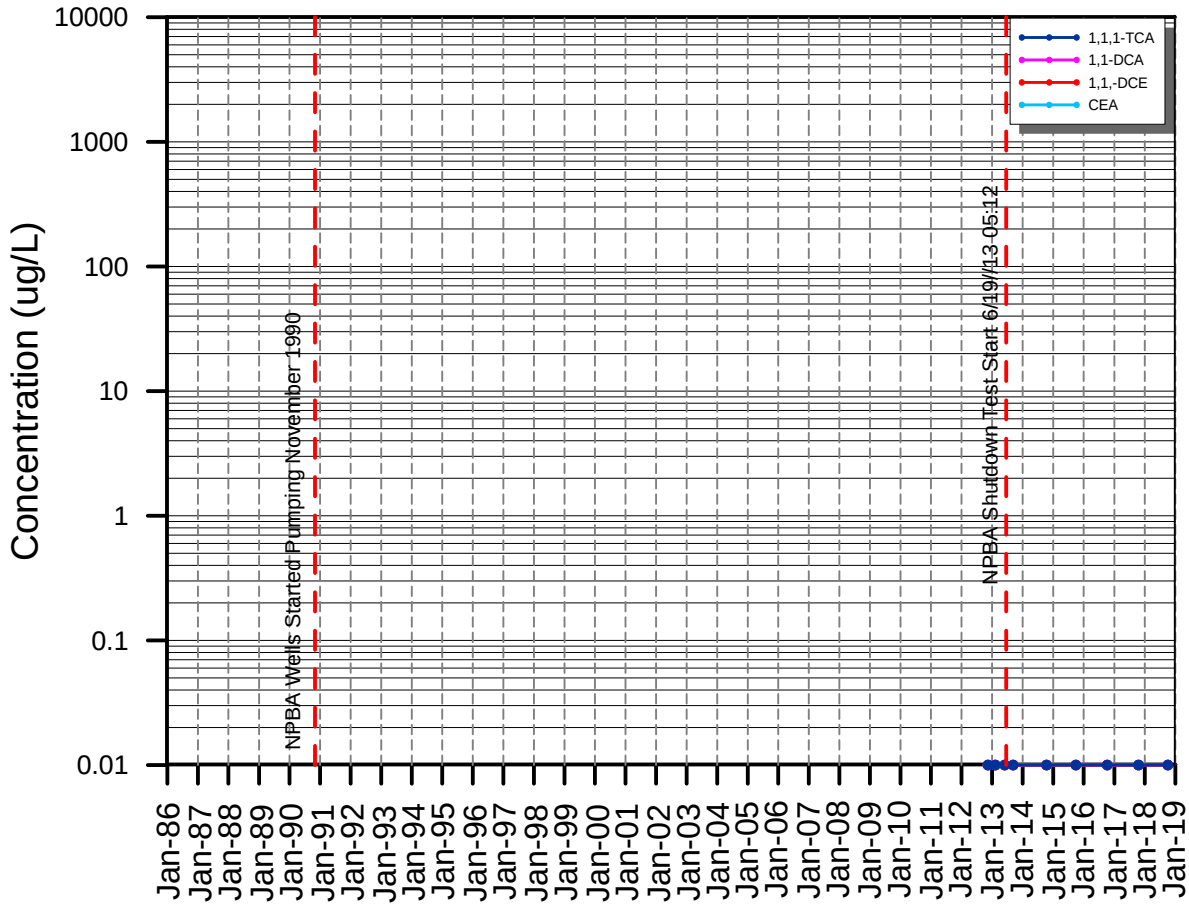
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NPBA Wells Started Pumping November 1990
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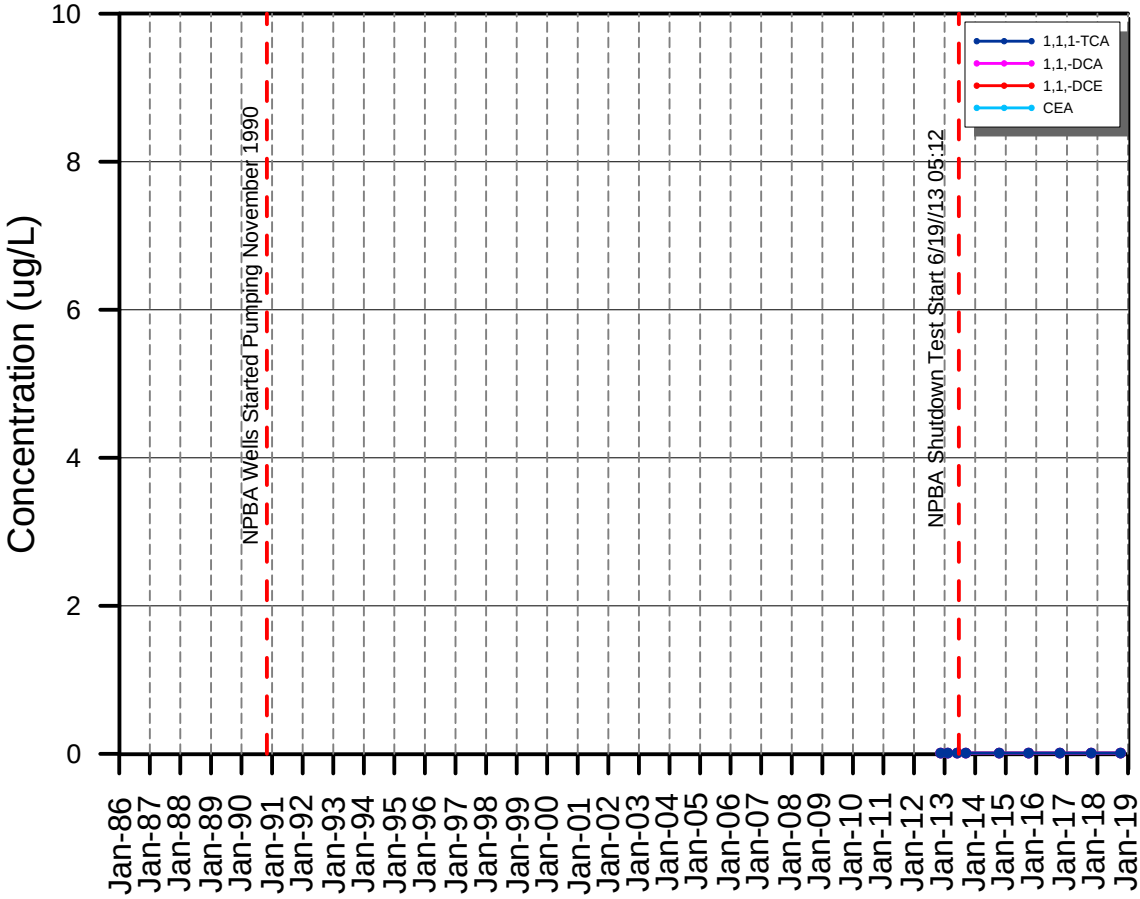
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NPBA Wells Started Pumping November 1990
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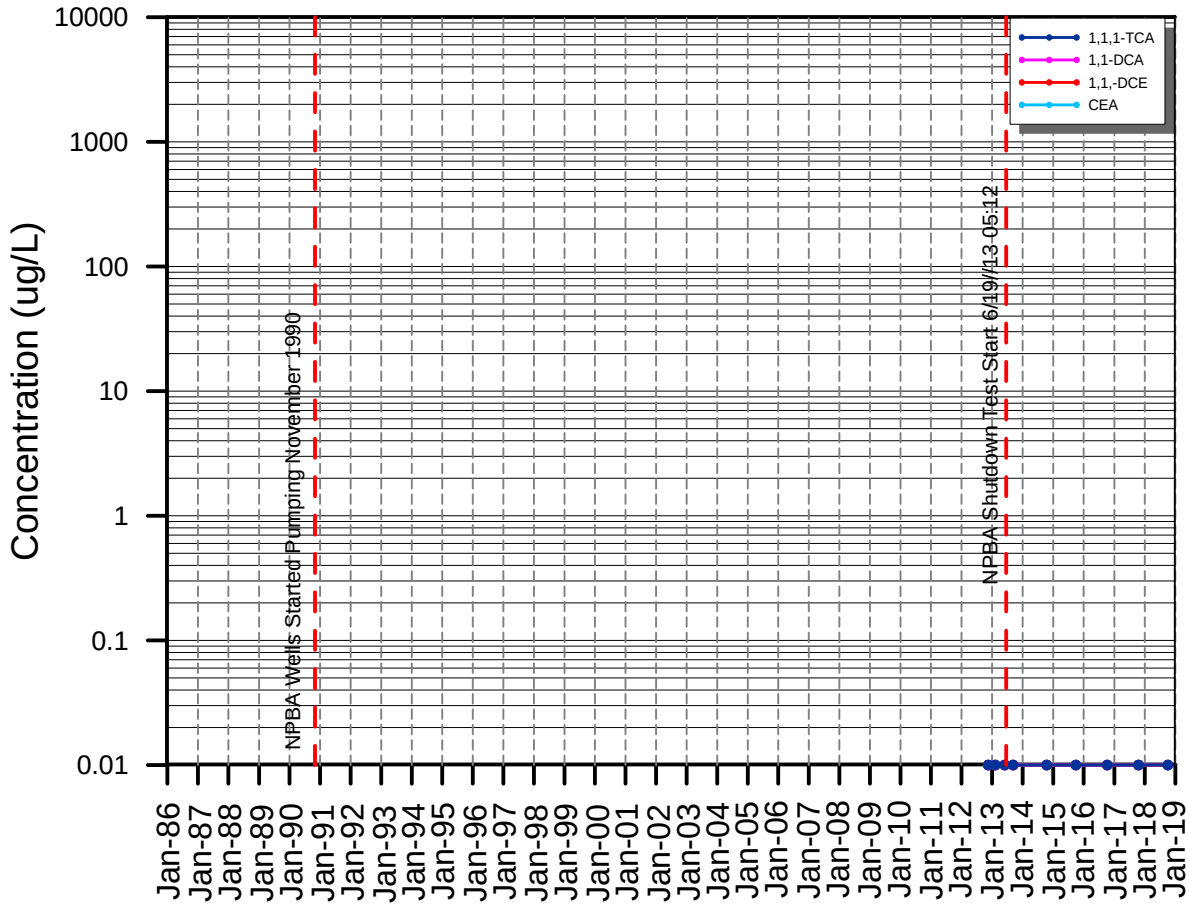
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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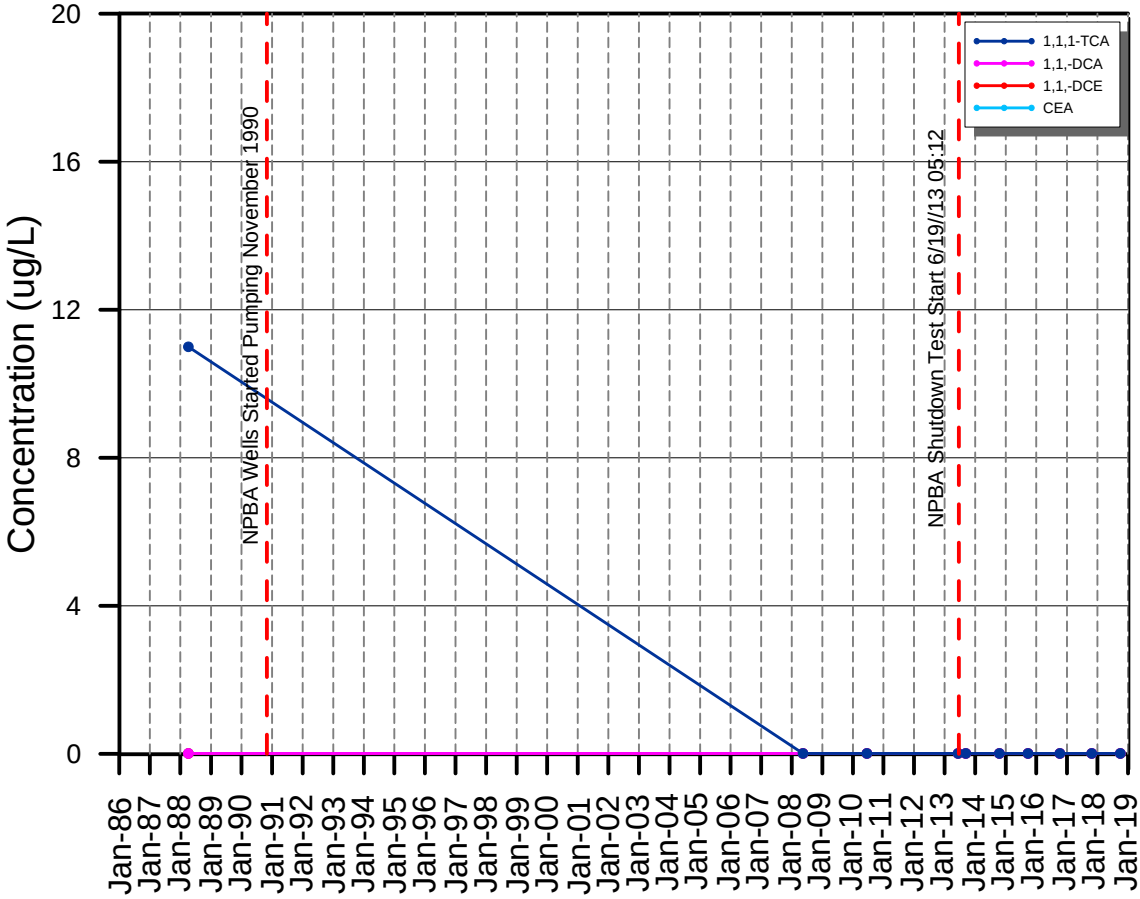
MW-16D


Concentration (ug/L)
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CEA
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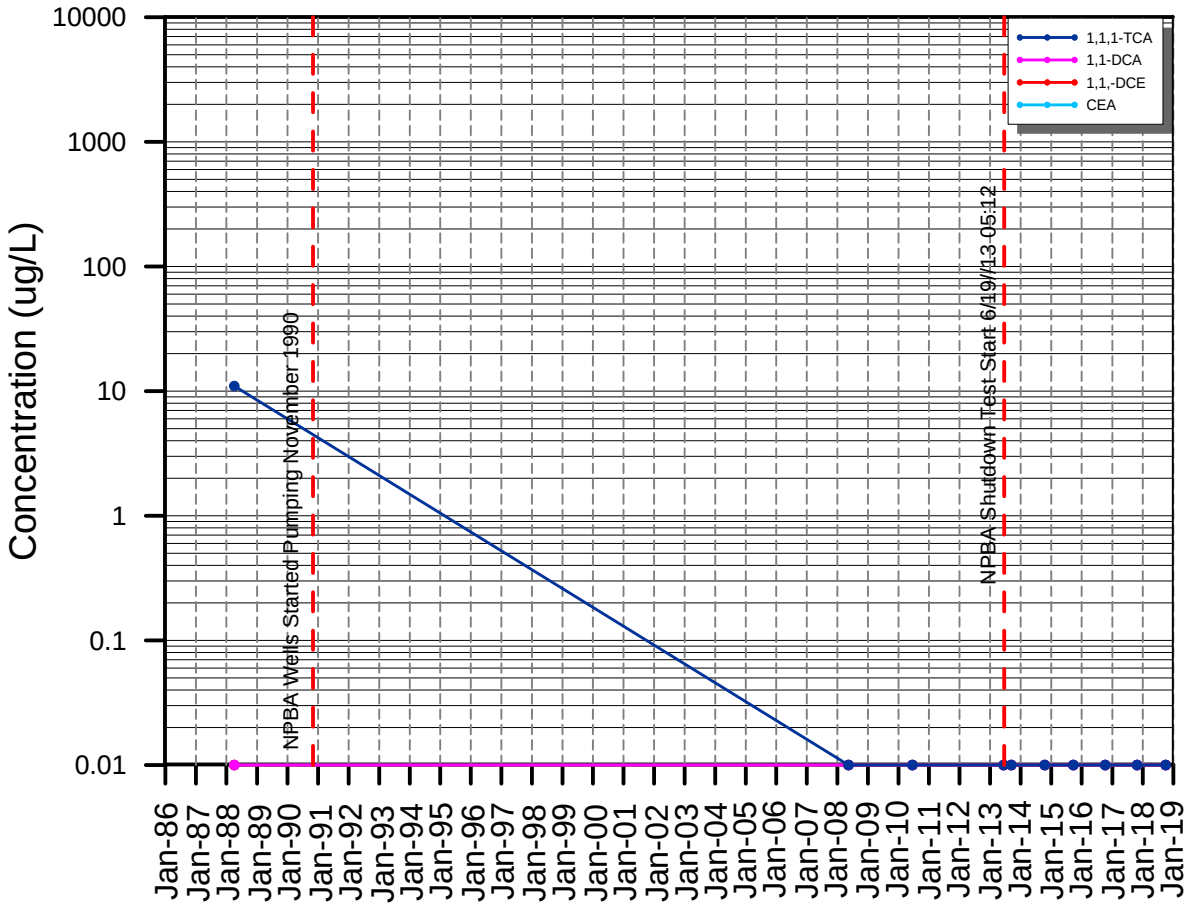
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NPBA Wells Started Pumping November 1990
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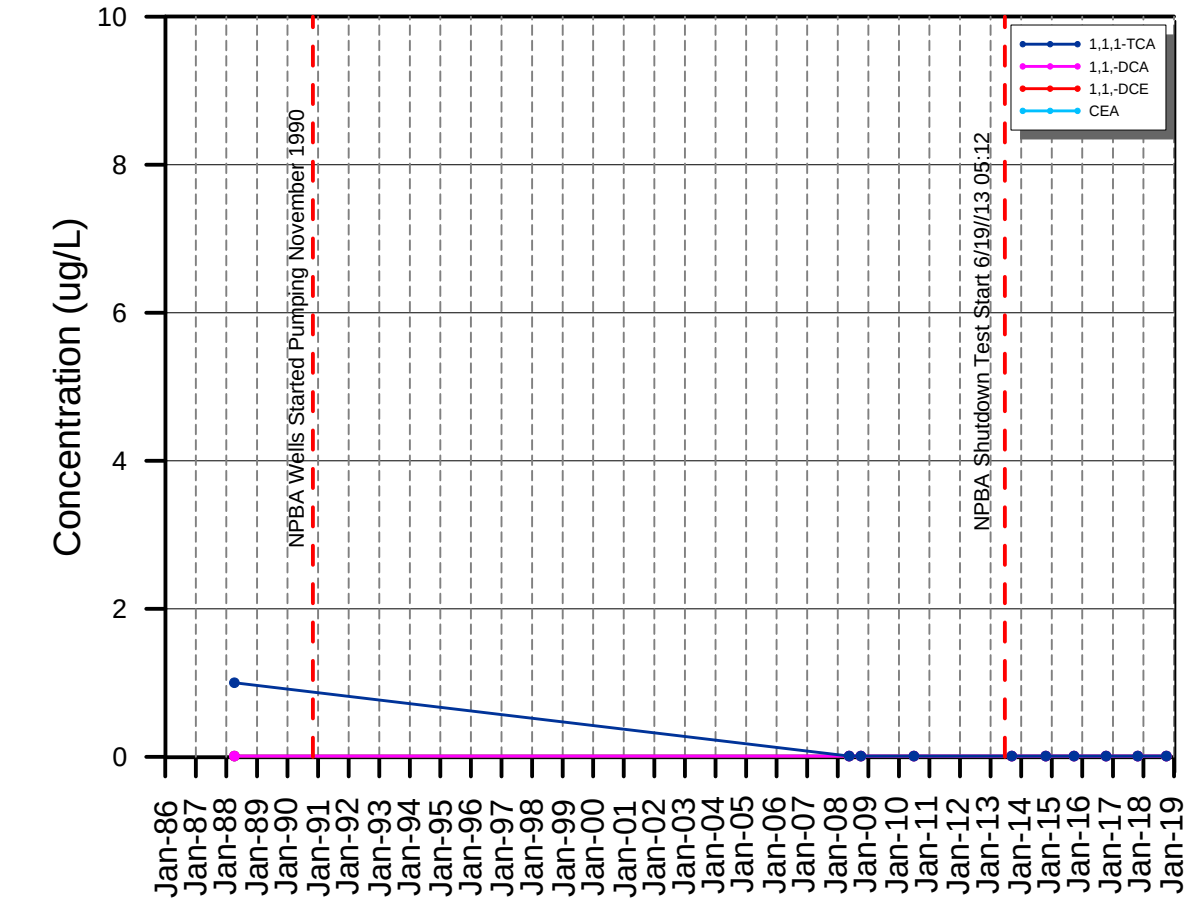
MW-16S


Concentration (ug/L)
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NPBA Shutdown Test Start 6/19//13 05:12
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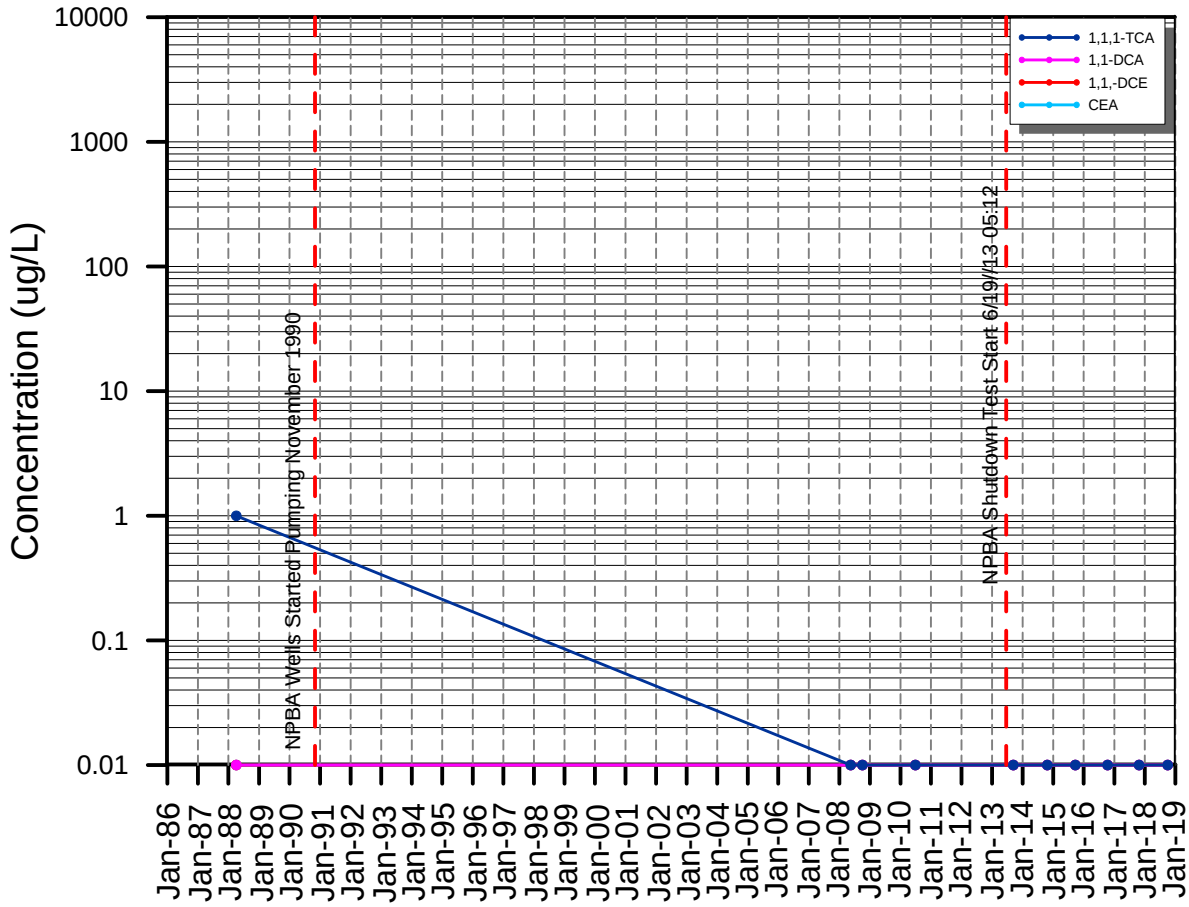
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NPBA Wells Started Pumping November 1990
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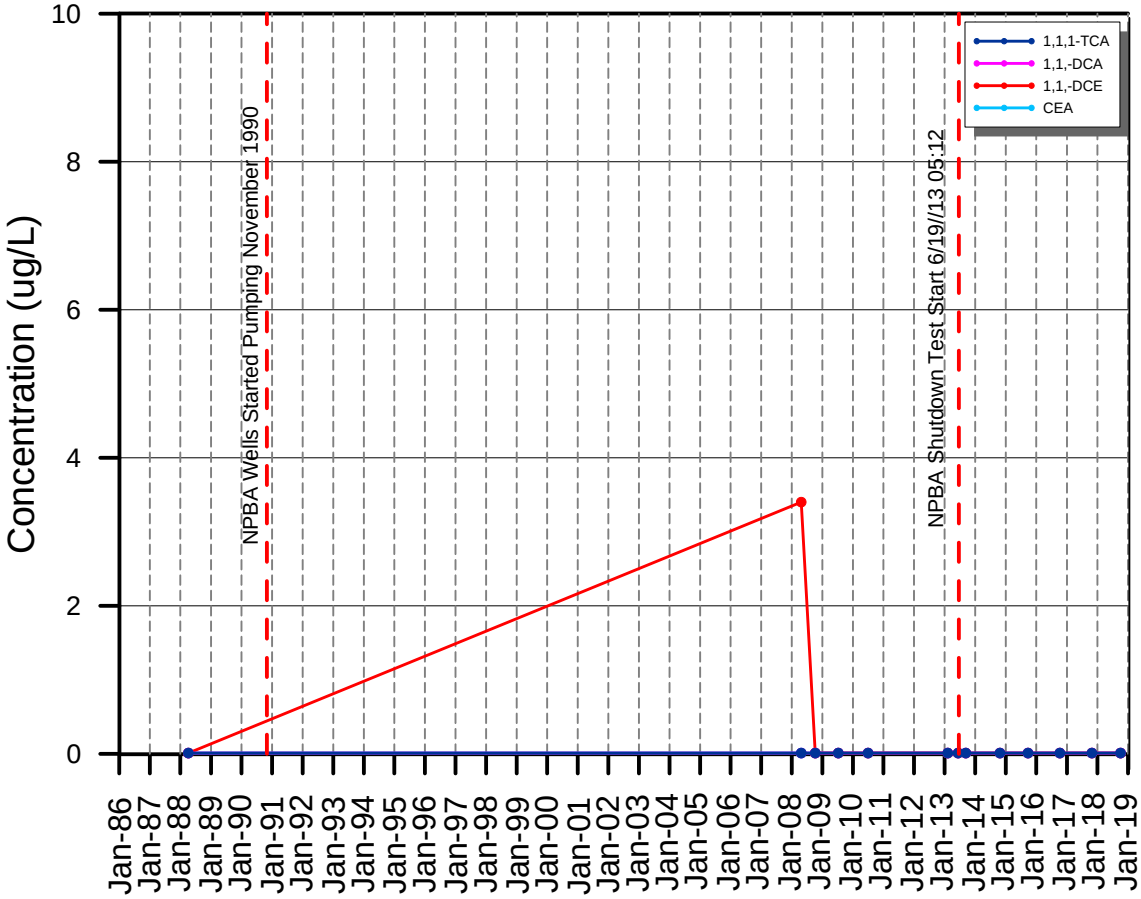
MW-18D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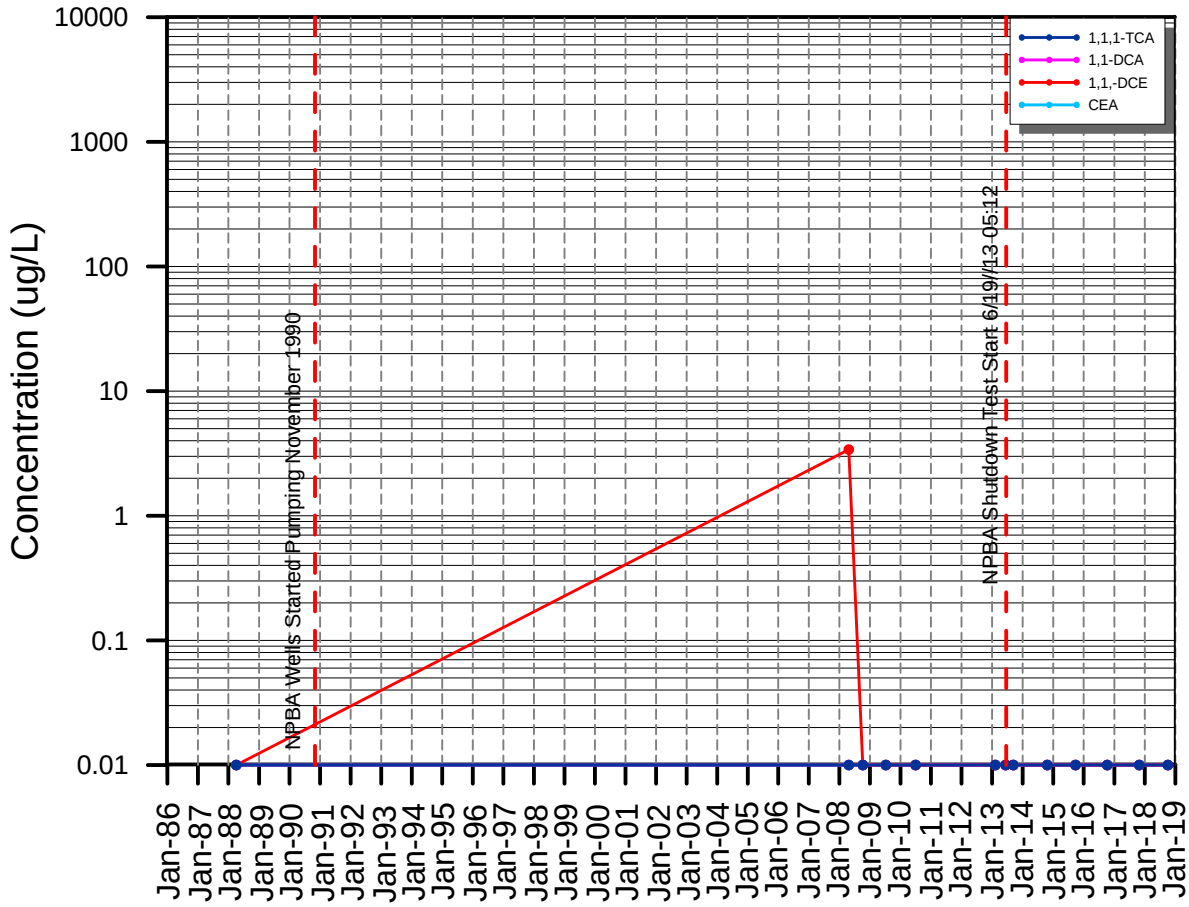
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NPBA Wells Started Pumping November 1990
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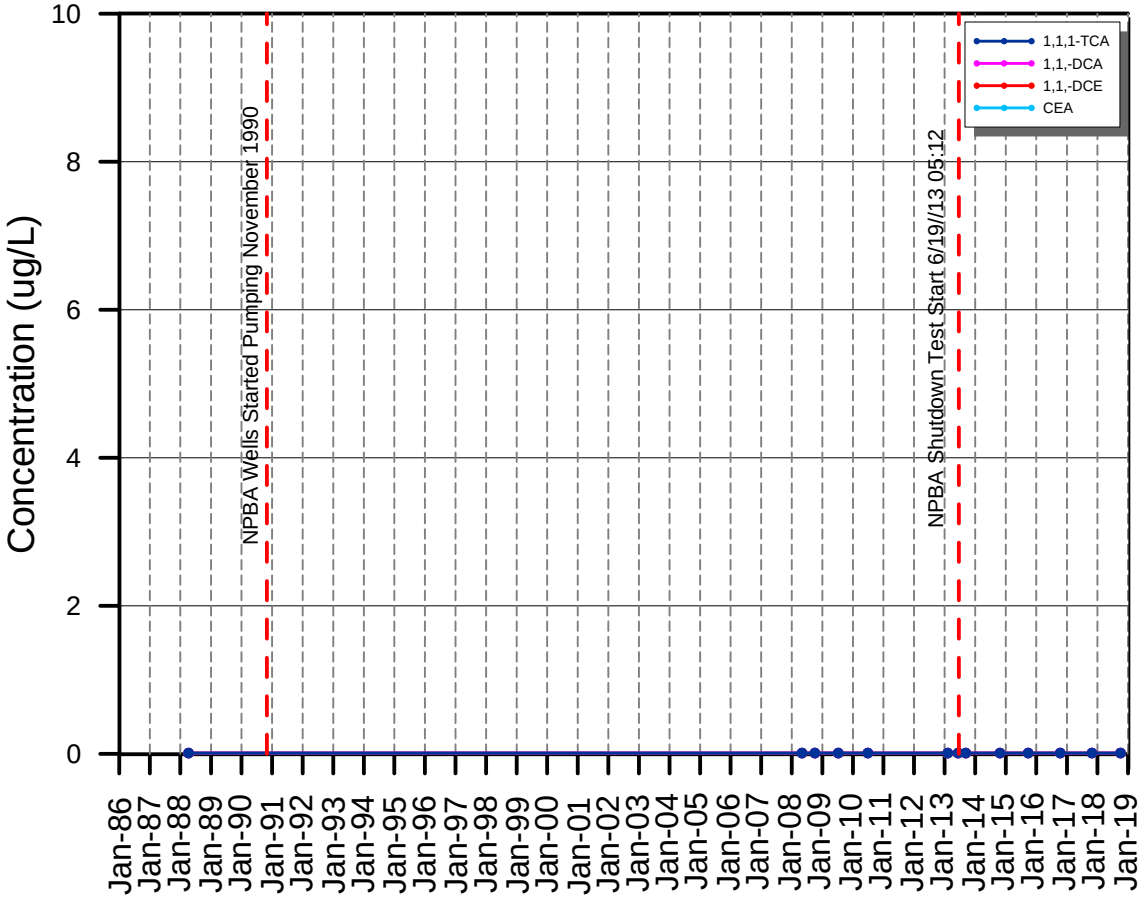
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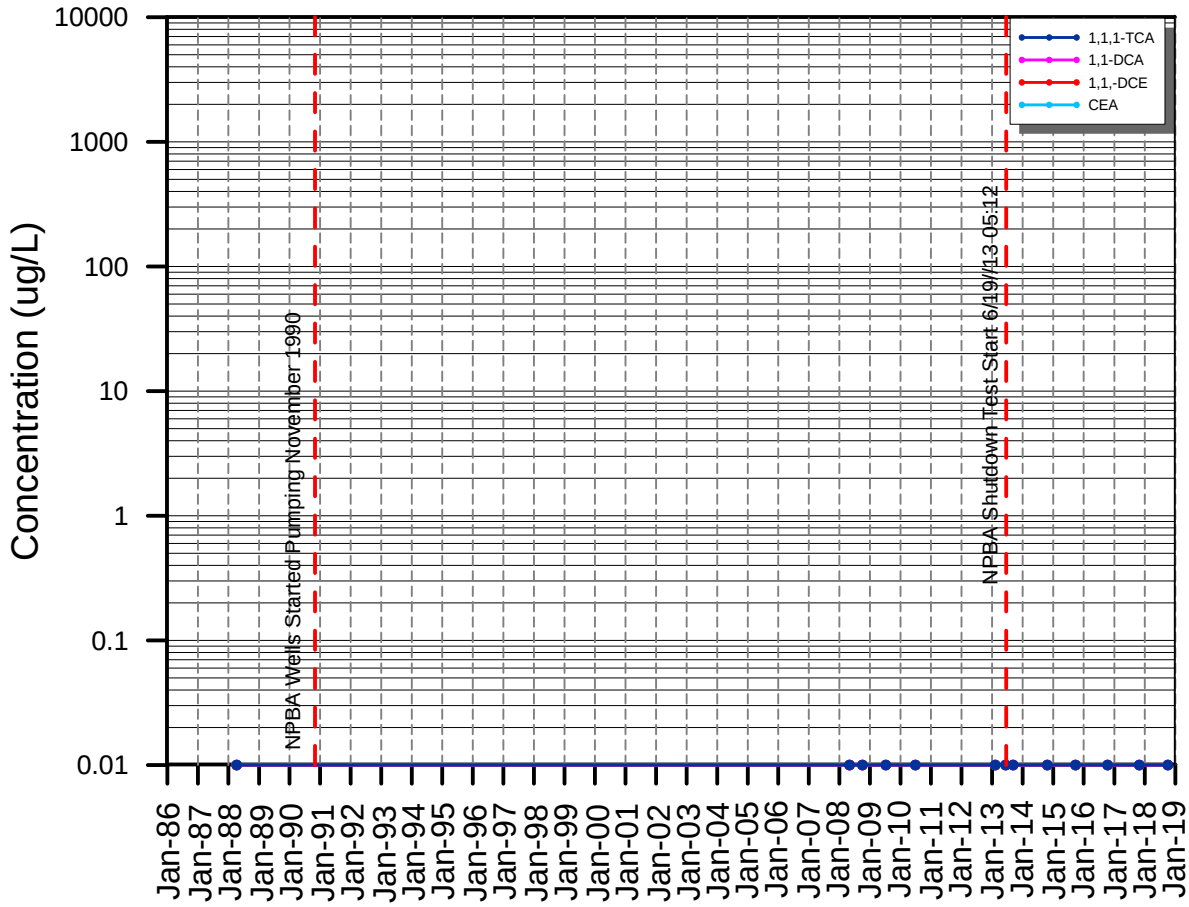
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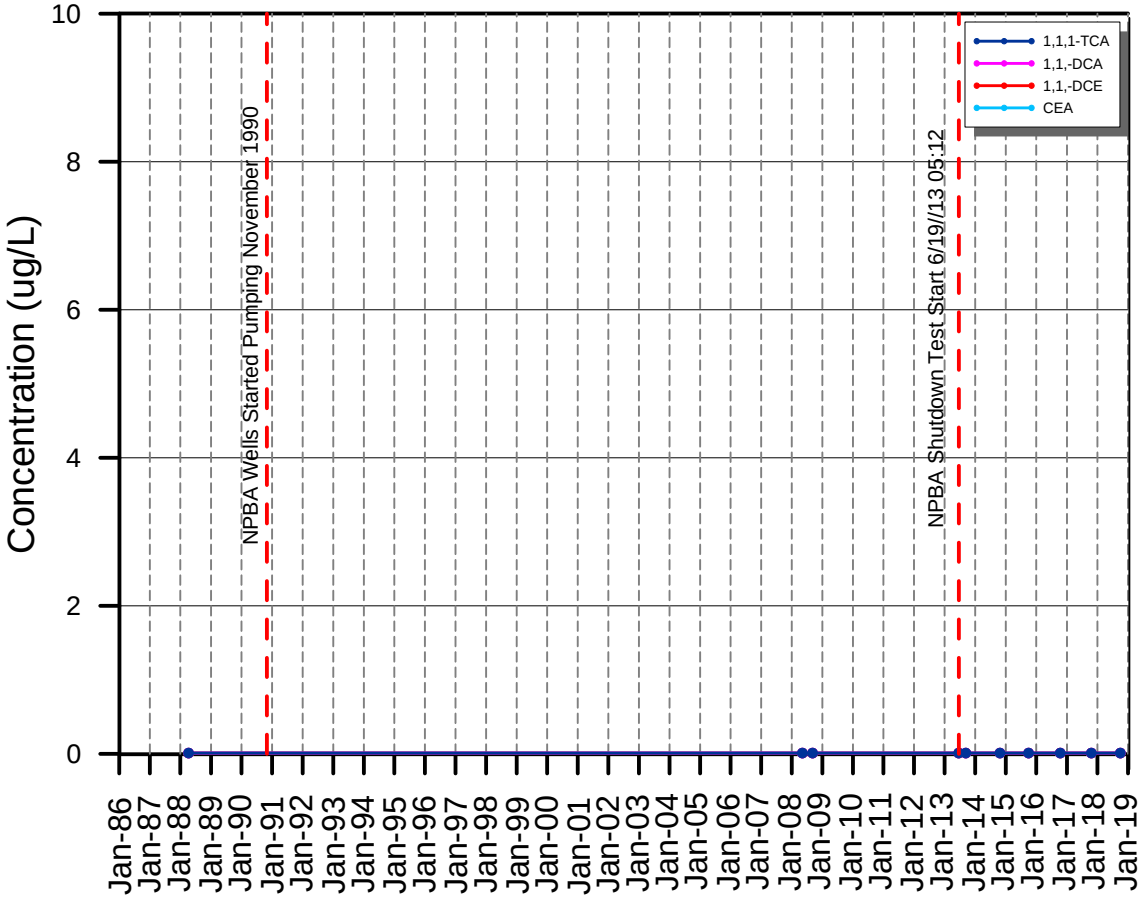
MW-20D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NPBA Shutdown Test Start 6/19//13 05:12
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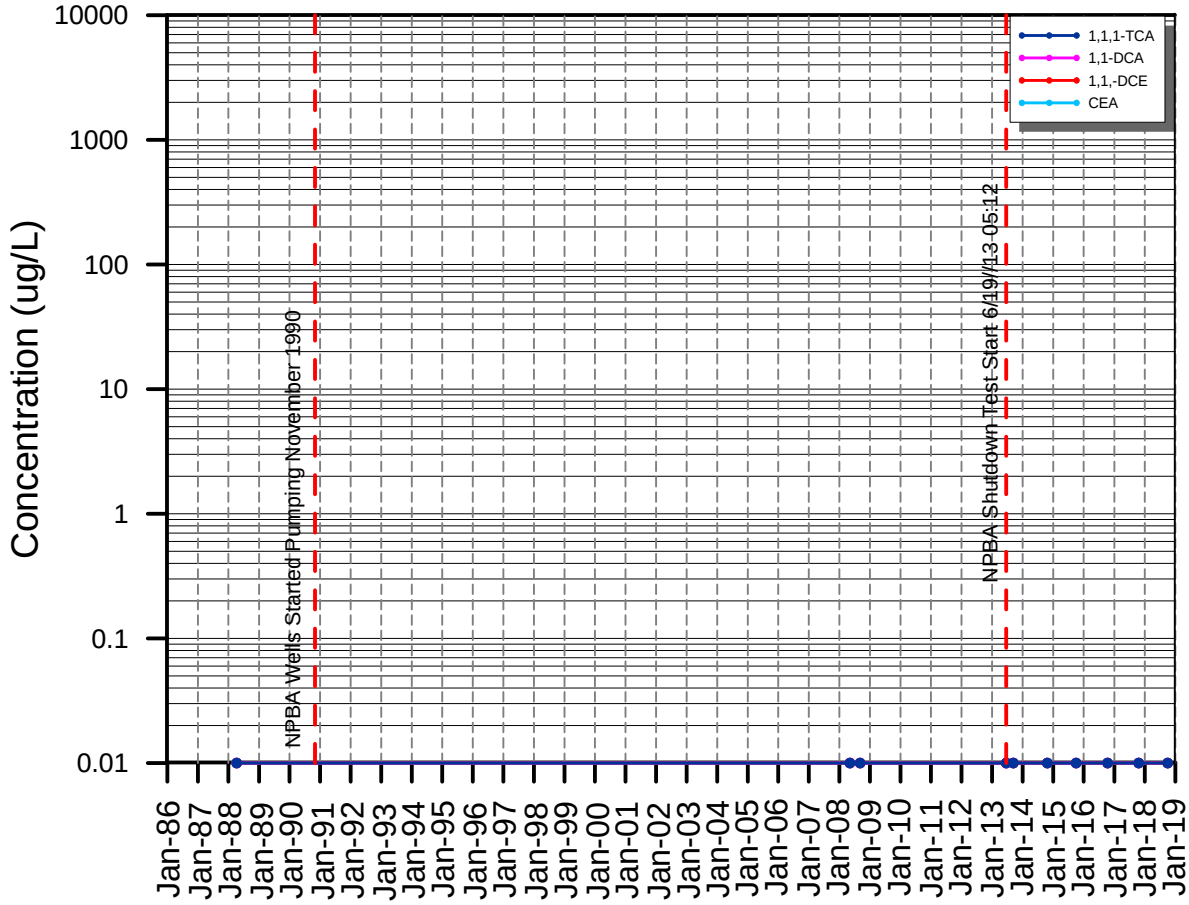
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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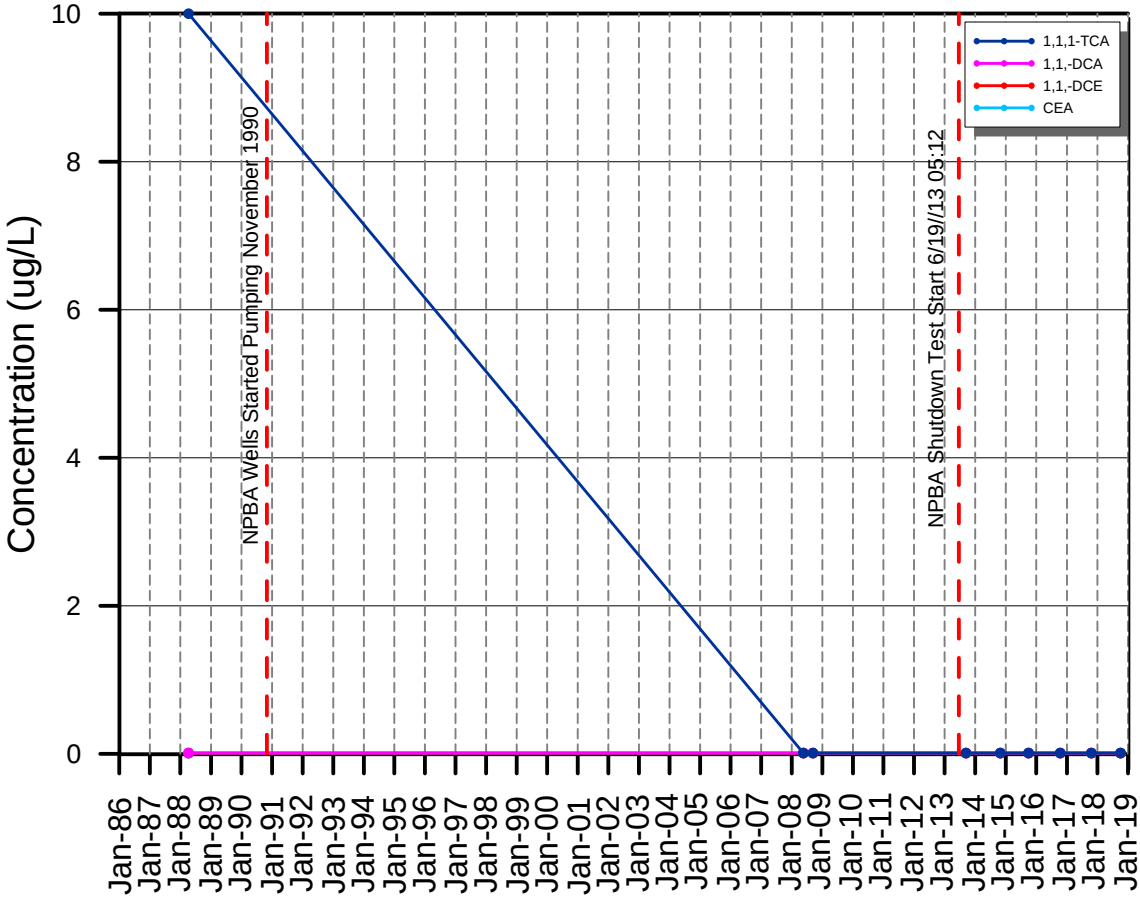
MW-20M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CEA
NPBA Wells Started Pumping November 1990
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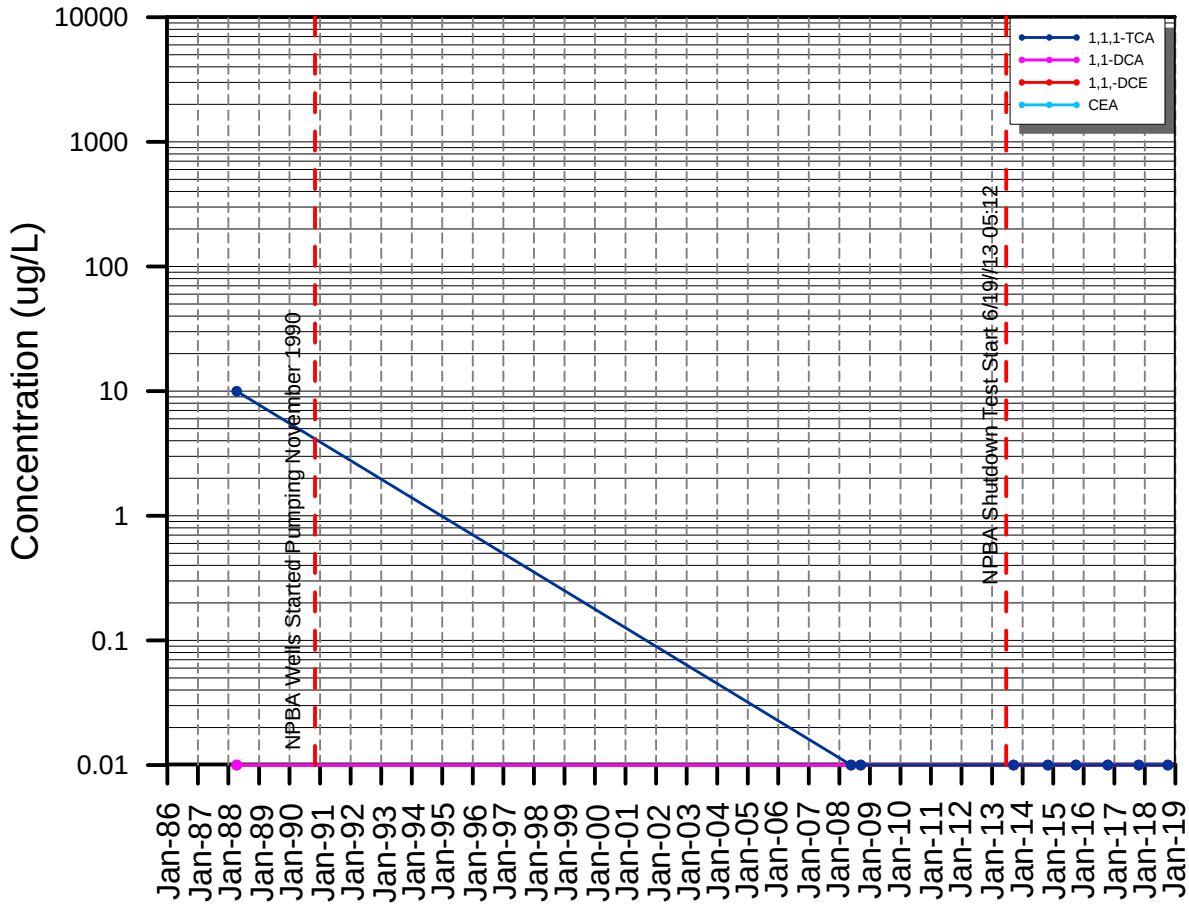
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CEA
NPBA Wells Started Pumping November 1990
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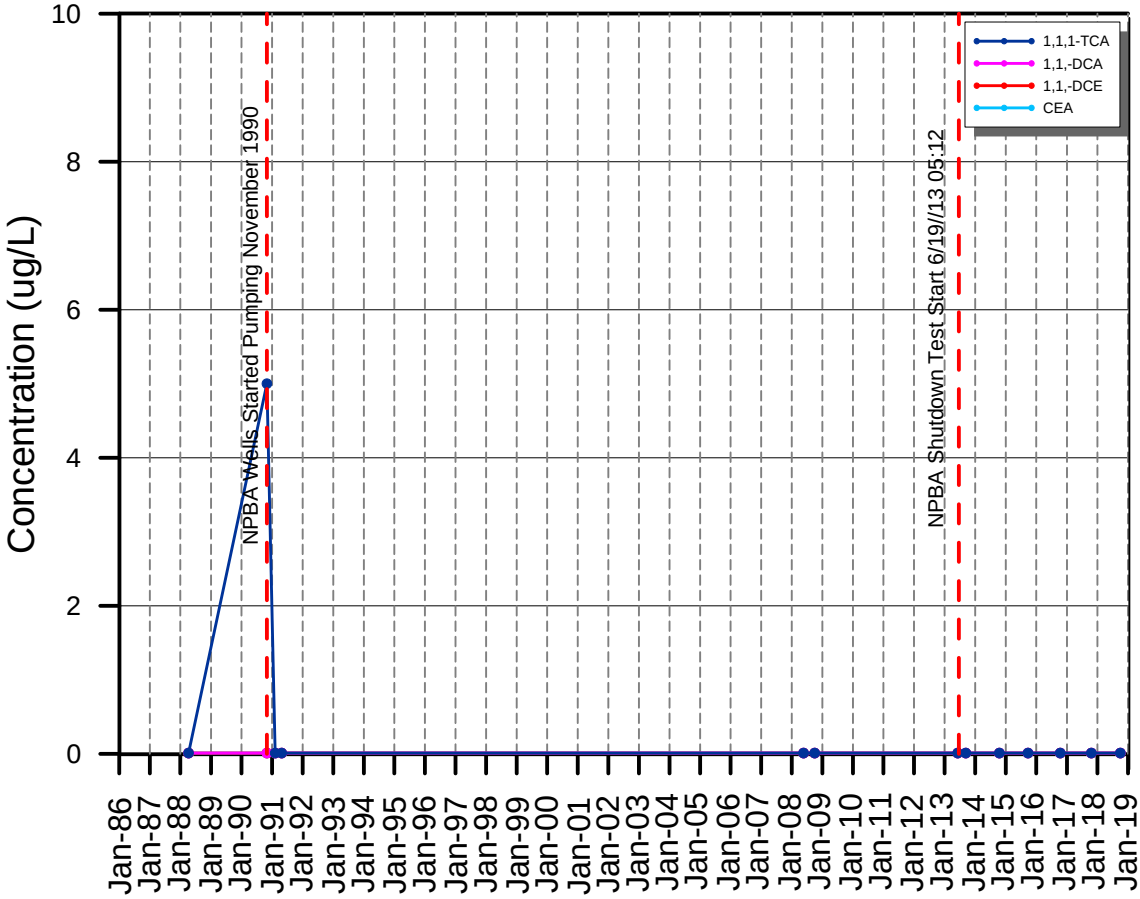
MW-20S


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
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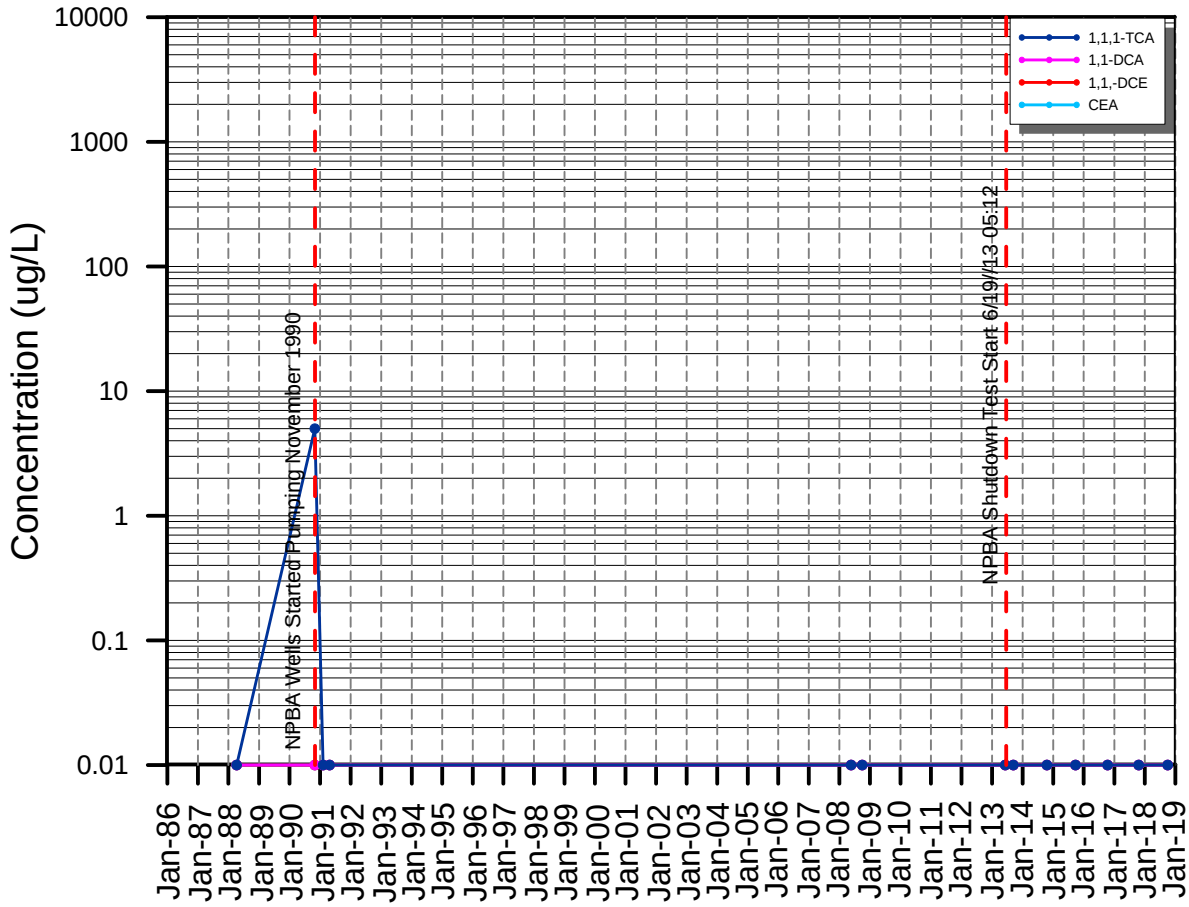
Concentration (ug/L)
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CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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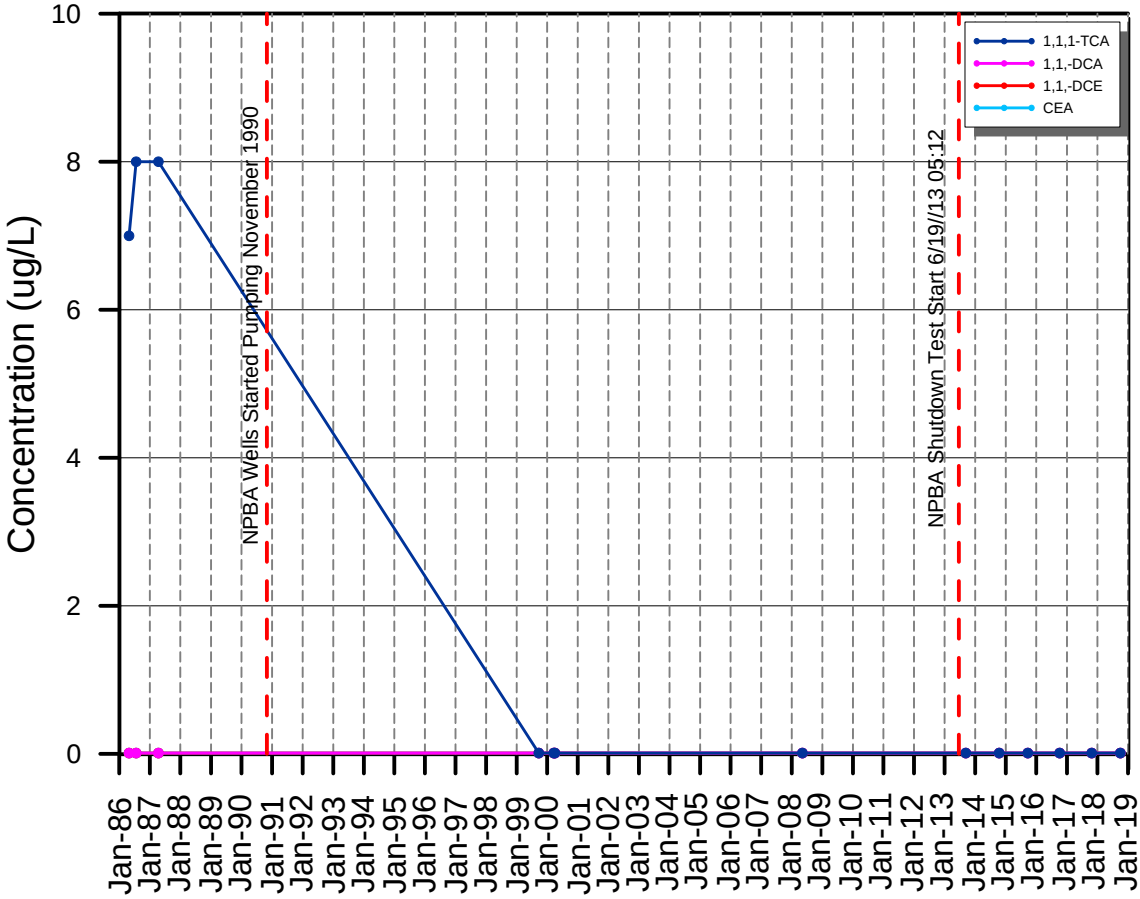
MW-3


Concentration (ug/L)
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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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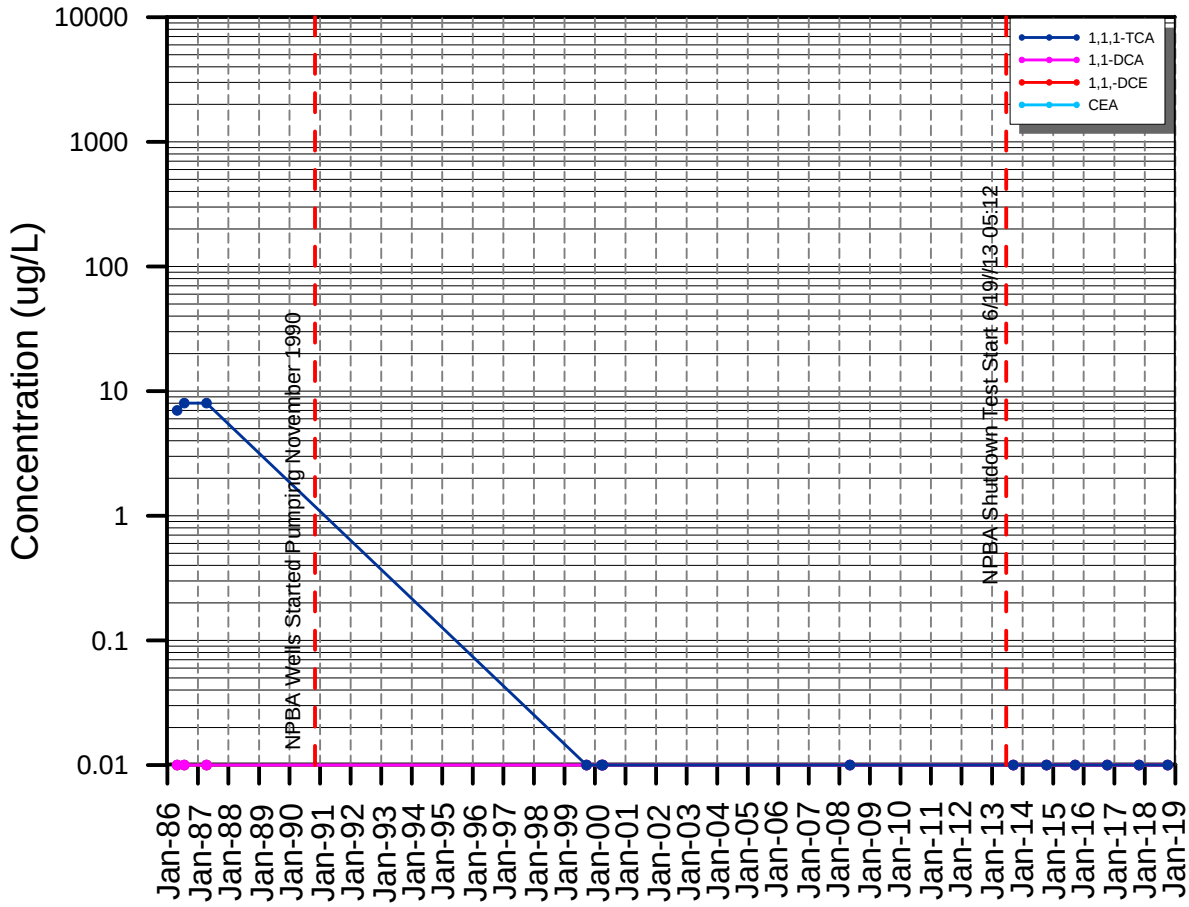
Concentration (ug/L)
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CEA
NPBA Wells Started Pumping November 1990
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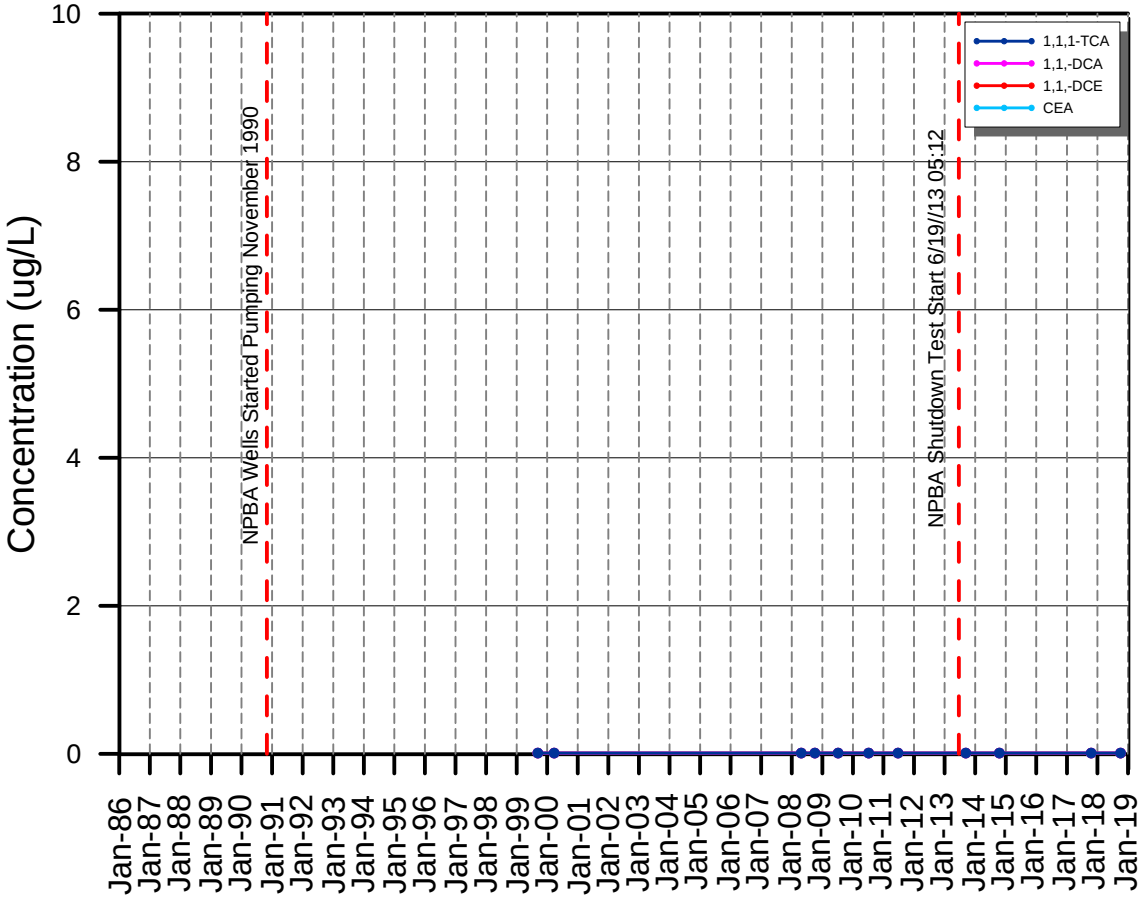
MW-77


Concentration (ug/L)
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CEA
NPBA Wells Started Pumping November 1990
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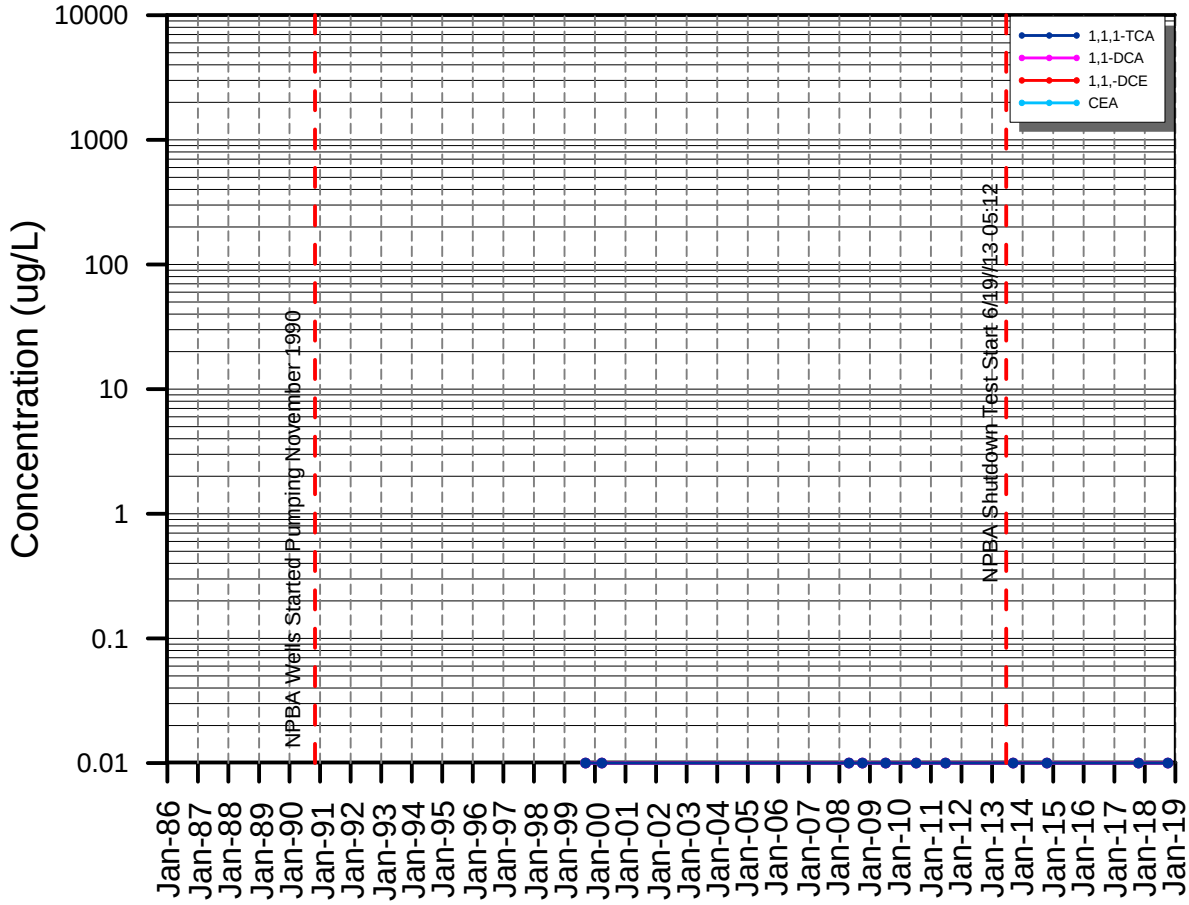
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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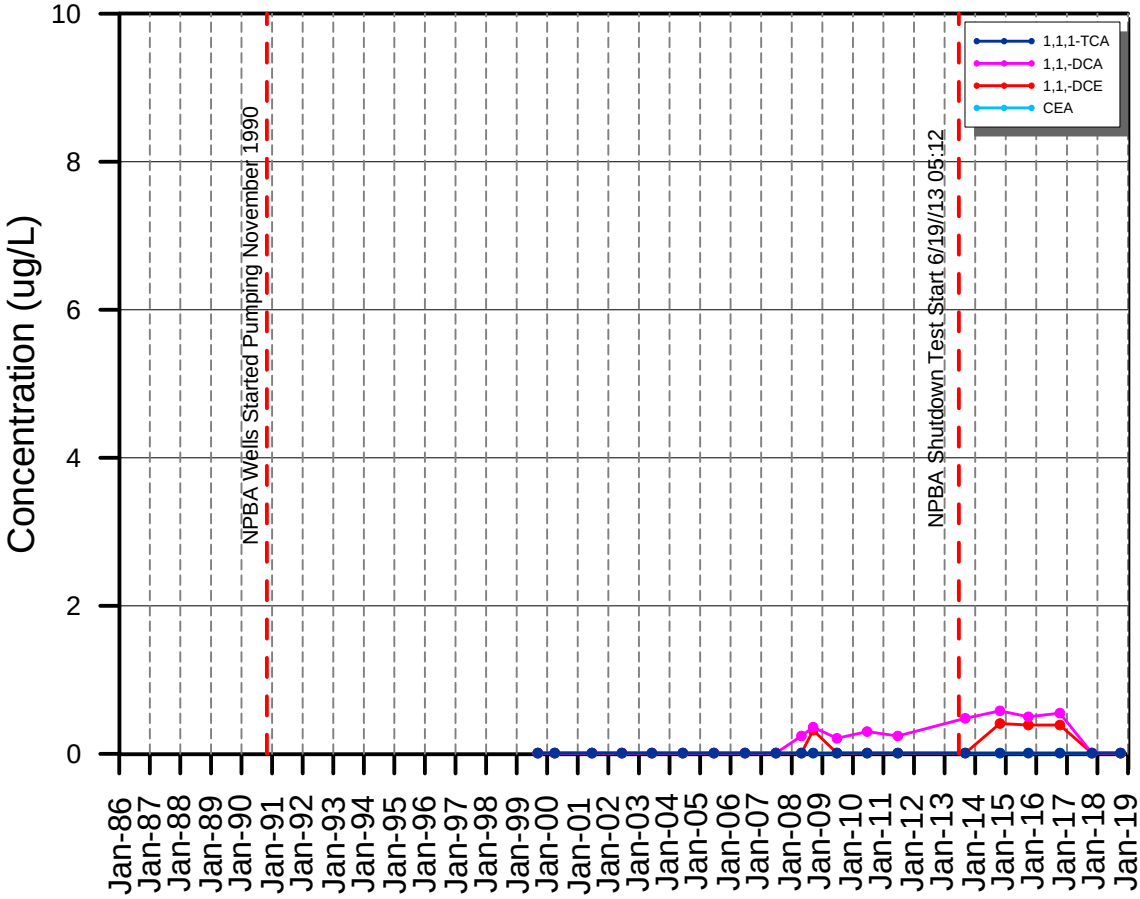
MW-82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1,1,-DCE
CEA
NPBA Wells Started Pumping November 1990
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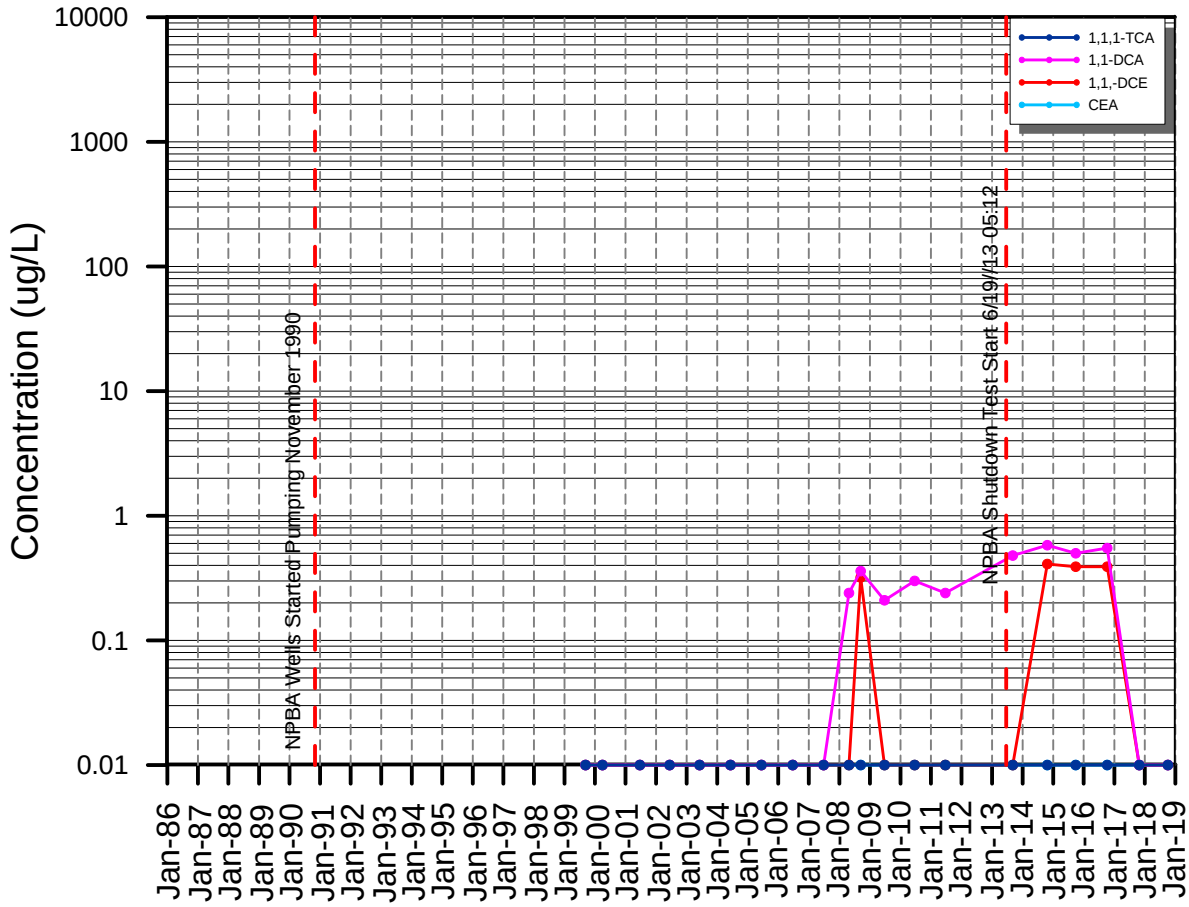
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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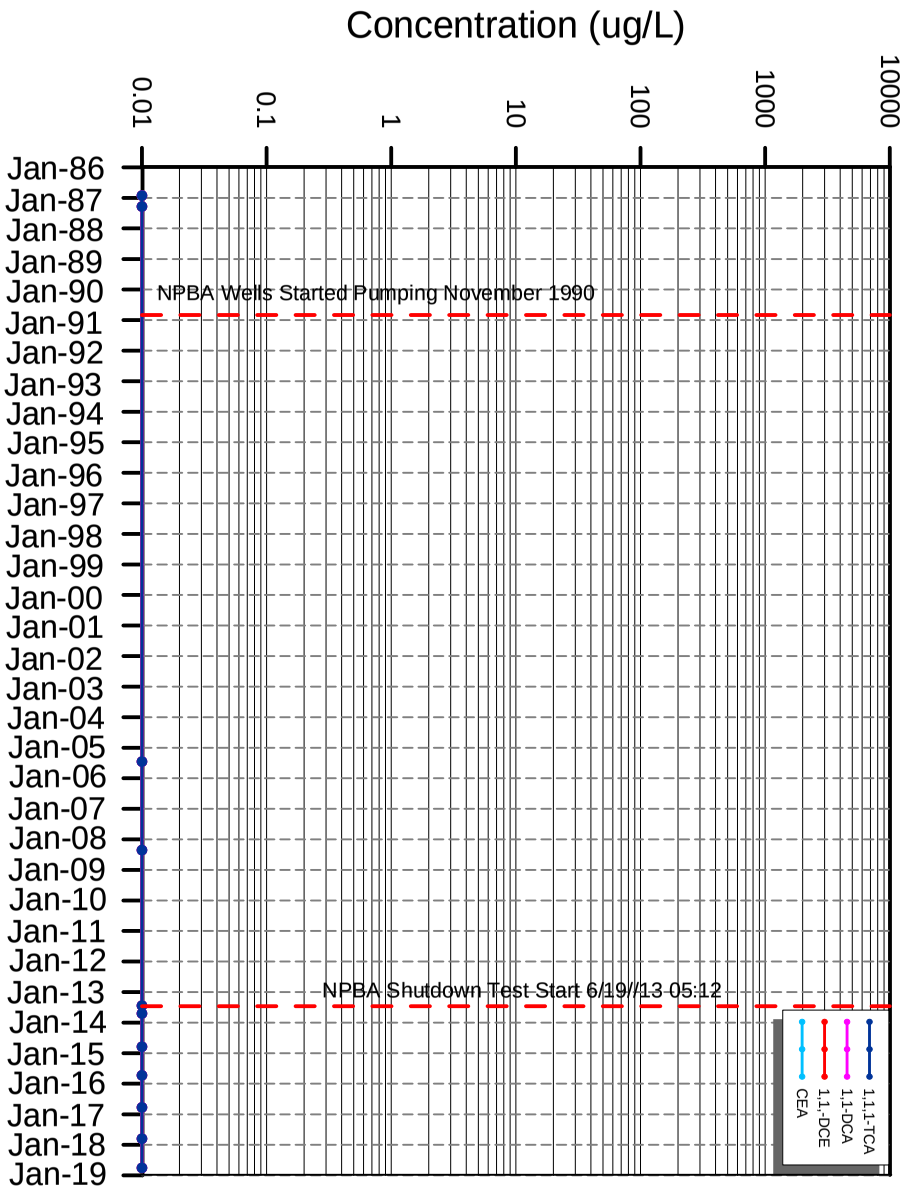
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
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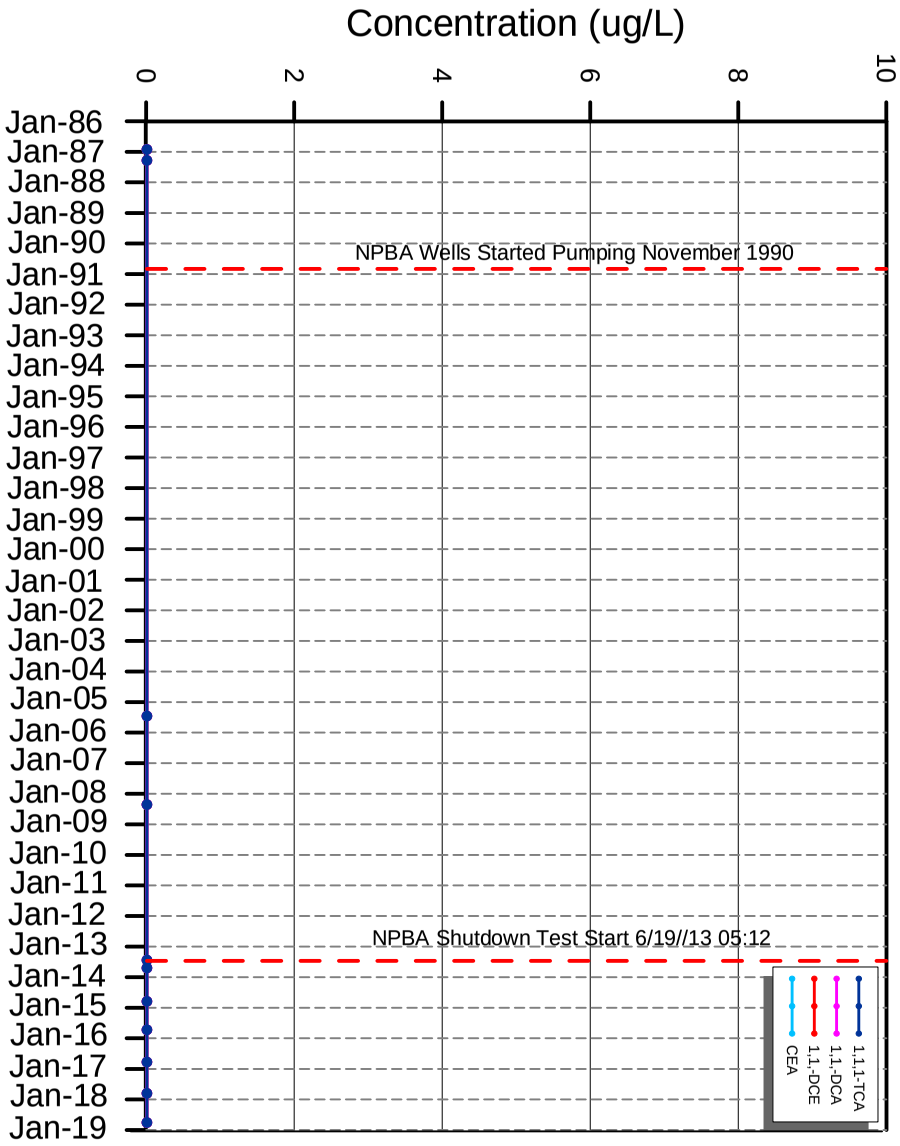
Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
CEA
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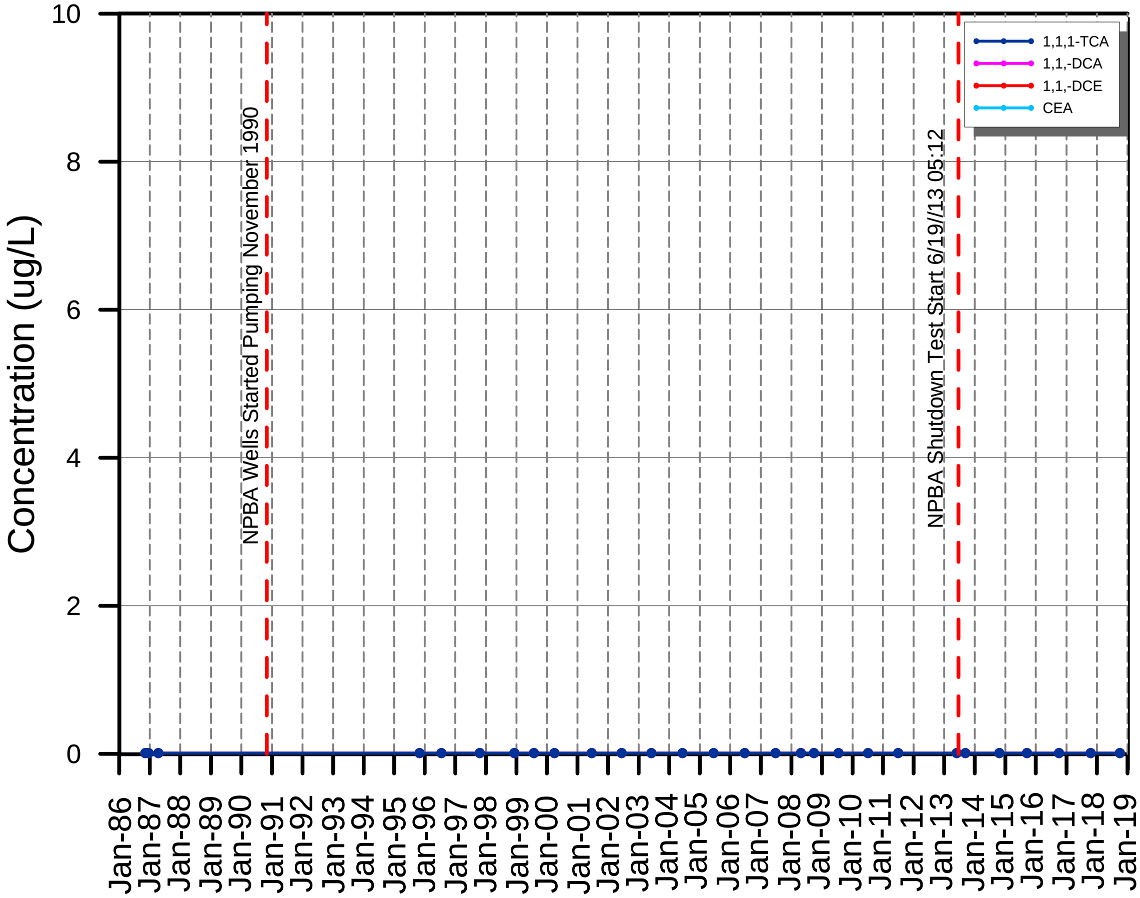
MW-9

RW-2



Concentration (ug/L)
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NPBA Shutdown Test Start 6/19/13 05:12
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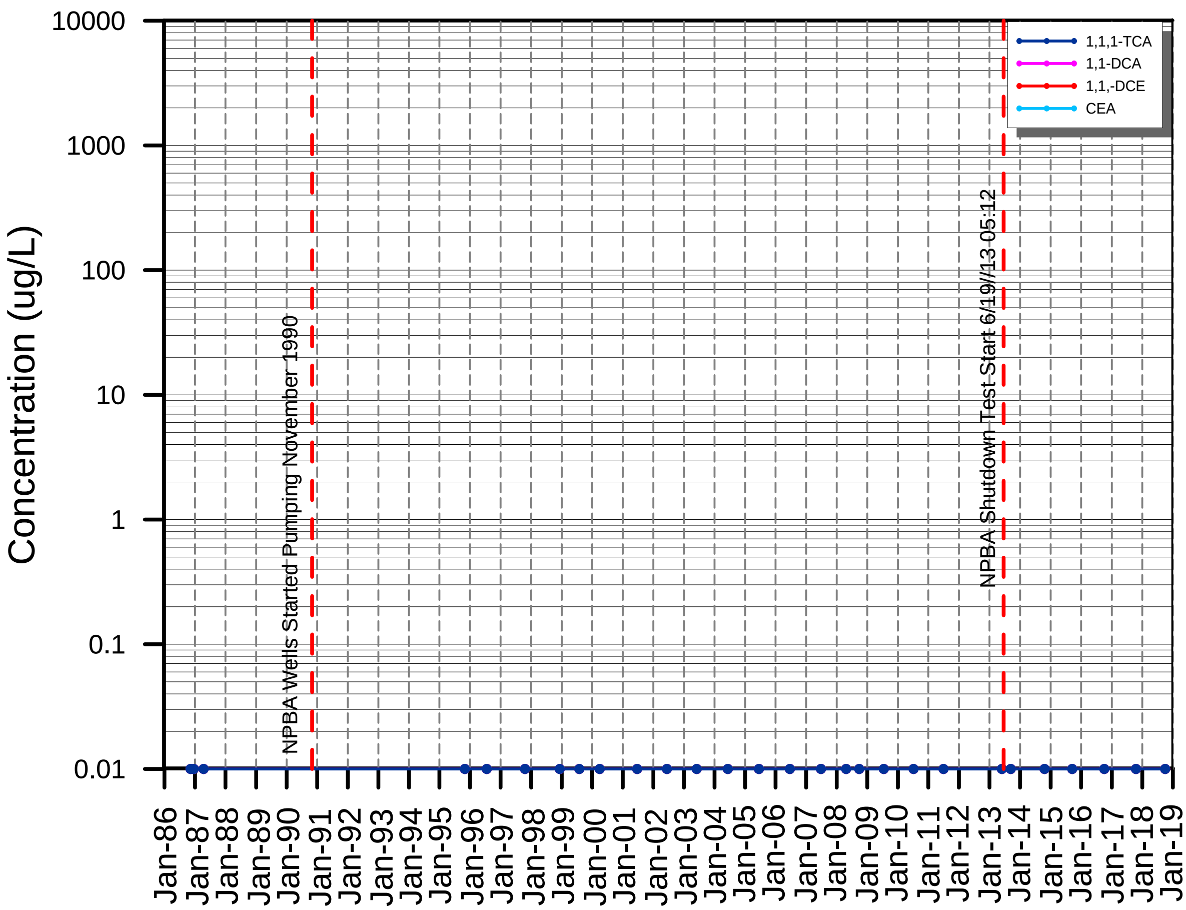

Concentration (ug/L)
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NPBA Shutdown Test Start 6/19/13 05:12
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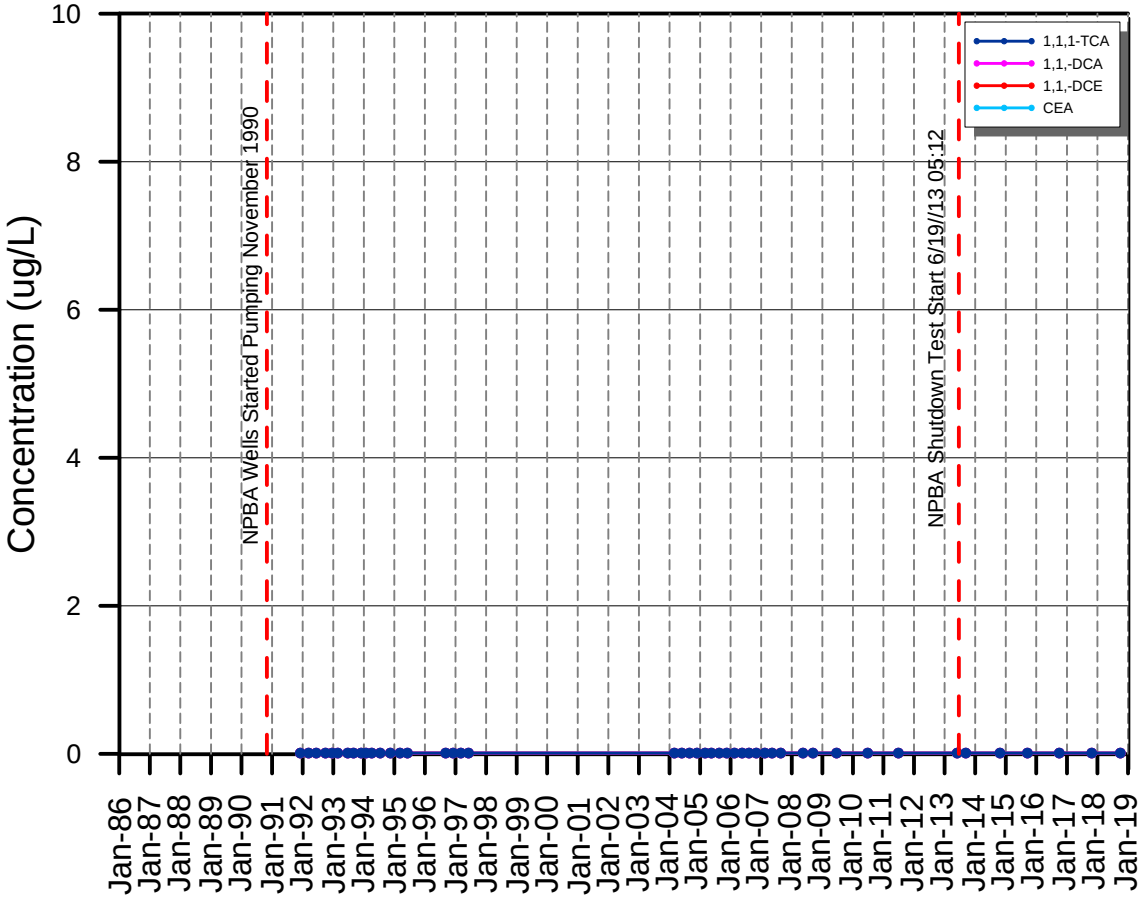
RW-4 (Folk)


Concentration (ug/L)
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NPBA Wells Started Pumping November 1990
NPBA Shutdown Test Start 6/19//13 05:12
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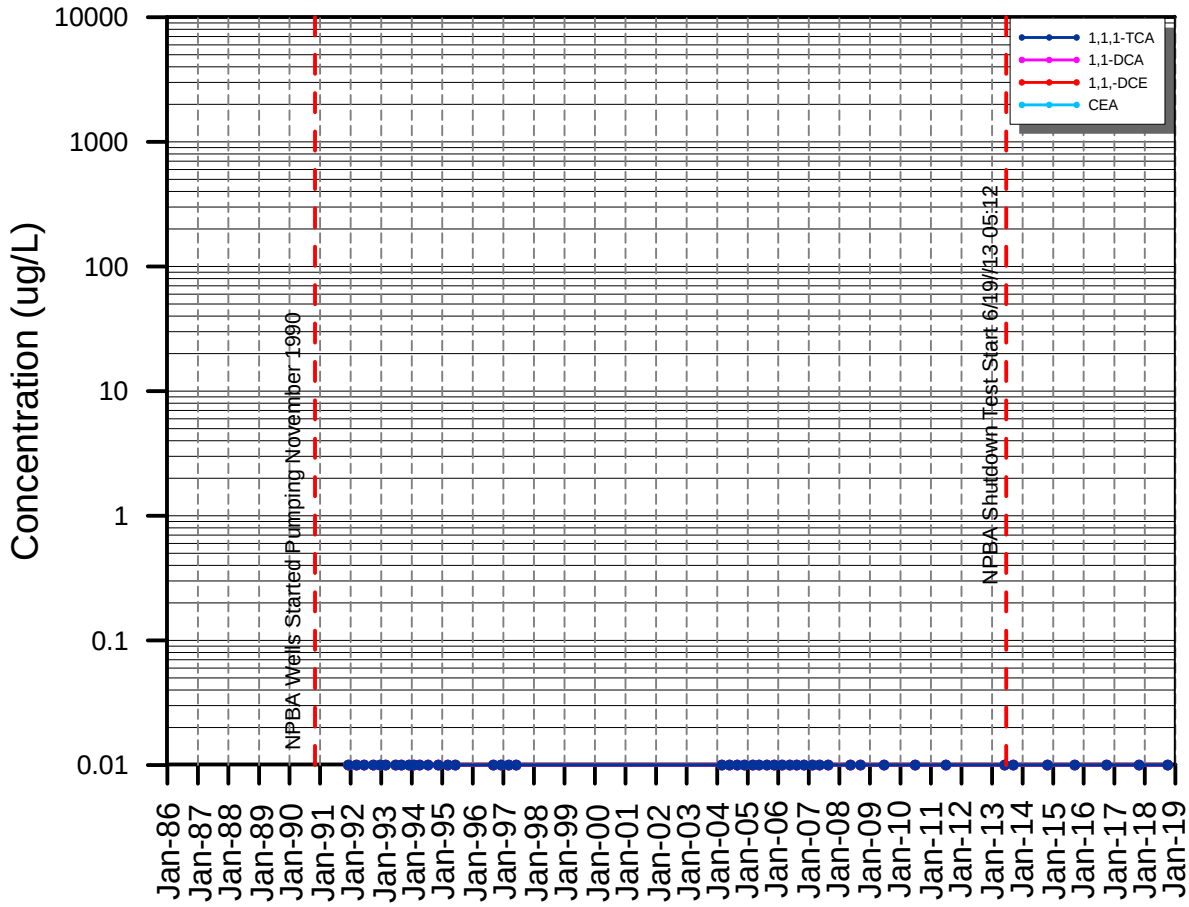
Concentration (ug/L)
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1,1-DCA
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CEA
NPBA Wells Started Pumping November 1990
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Appendix C

PCE,TCE and cis12DCE Trend Analysis Data Sheets

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:05:57 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-3 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	18
Maximum	32
Mean	28.67
Geometric Mean	28.13
Median	31
Standard Deviation	5.428
Coefficient of Variation	0.189

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.132
Standardized Value of S	-1.169
Approximate p-value	0.121

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:06:20 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-9 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	19
Maximum	44
Mean	30
Geometric Mean	28.51
Median	28
Standard Deviation	10.47
Coefficient of Variation	0.349

Mann-Kendall Test	
M-K Test Value (S)	-9
Tabulated p-value	0.068
Standard Deviation of S	5.323
Standardized Value of S	-1.503
Approximate p-value	0.0664

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:06:34 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-11 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.4
Maximum	4.9
Mean	3.233
Geometric Mean	3.133
Median	3
Standard Deviation	0.935
Coefficient of Variation	0.289

Mann-Kendall Test	
M-K Test Value (S)	-4
Tabulated p-value	0.235
Standard Deviation of S	5.228
Standardized Value of S	-0.574
Approximate p-value	0.283

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:10:05 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-12 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	61
Maximum	130
Mean	93.5
Geometric Mean	90.06
Median	91.5
Standard Deviation	27.59
Coefficient of Variation	0.295

Mann-Kendall Test	
M-K Test Value (S)	-9
Tabulated p-value	0.068
Standard Deviation of S	5.323
Standardized Value of S	-1.503
Approximate p-value	0.0664

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:10:20 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	8.7
Maximum	20.5
Mean	15.12
Geometric Mean	14.39
Median	16.25
Standard Deviation	4.84
Coefficient of Variation	0.32

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:10:49 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	5.8
Maximum	20
Mean	11.33
Geometric Mean	9.964
Median	8.5
Standard Deviation	6.453
Coefficient of Variation	0.569

Mann-Kendall Test	
M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:11:11 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW18D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	4.3
Maximum	42
Mean	12.67
Geometric Mean	8.922
Median	7.35
Standard Deviation	14.49
Coefficient of Variation	1.144

Mann-Kendall Test	
M-K Test Value (S)	-9
Tabulated p-value	0.068
Standard Deviation of S	5.323
Standardized Value of S	-1.503
Approximate p-value	0.0664

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:11:28 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-18S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.2
Maximum	45
Mean	12.27
Geometric Mean	6.708
Median	6.15
Standard Deviation	16.36
Coefficient of Variation	1.334

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	5.323
Standardized Value of S	-0.751
Approximate p-value	0.226

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:11:51 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:12:07 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20M TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.85
Maximum	32
Mean	14.74
Geometric Mean	9.147
Median	15.5
Standard Deviation	11.27
Coefficient of Variation	0.764

Mann-Kendall Test	
M-K Test Value (S)	5
Tabulated p-value	0.235
Standard Deviation of S	5.323
Standardized Value of S	0.751
Approximate p-value	0.226

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:12:23 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	32
Maximum	130
Mean	81.83
Geometric Mean	73.69
Median	85.5
Standard Deviation	36.9
Coefficient of Variation	0.451

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	-0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:12:39 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-77 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	4
Number Values Reported (n)	4
Minimum	0.5
Maximum	25
Mean	7.625
Geometric Mean	2.973
Median	2.5
Standard Deviation	11.62
Coefficient of Variation	1.524

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.375
Standard Deviation of S	2.769
Standardized Value of S	-0.722
Approximate p-value	0.235

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:12:54 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-82 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	5.4
Maximum	8.5
Mean	7
Geometric Mean	6.902
Median	7
Standard Deviation	1.274
Coefficient of Variation	0.182

Mann-Kendall Test	
M-K Test Value (S)	-11
Tabulated p-value	0.028
Standard Deviation of S	5.323
Standardized Value of S	-1.879
Approximate p-value	0.0301

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:13:13 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.2
Maximum	140
Mean	68.27
Geometric Mean	20.18
Median	62.25
Standard Deviation	71.65
Coefficient of Variation	1.05

Mann-Kendall Test	
M-K Test Value (S)	-14
Tabulated p-value	0.001
Standard Deviation of S	5.228
Standardized Value of S	-2.487
Approximate p-value	0.00645

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:13:32 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	24
Maximum	35
Mean	28
Geometric Mean	27.76
Median	28
Standard Deviation	4.099
Coefficient of Variation	0.146

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.36
Standard Deviation of S	5.132
Standardized Value of S	-0.39
Approximate p-value	0.348

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:13:48 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.2
Maximum	79
Mean	29.77
Geometric Mean	13
Median	11.35
Standard Deviation	35.21
Coefficient of Variation	1.183

Mann-Kendall Test	
M-K Test Value (S)	-12
Tabulated p-value	0.008
Standard Deviation of S	5.228
Standardized Value of S	-2.104
Approximate p-value	0.0177

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:14:10 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	54
Maximum	160
Mean	98.33
Geometric Mean	92.09
Median	85
Standard Deviation	39.46
Coefficient of Variation	0.401

Mann-Kendall Test	
M-K Test Value (S)	-12
Tabulated p-value	0.008
Standard Deviation of S	5.228
Standardized Value of S	-2.104
Approximate p-value	0.0177

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:15:15 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:15:32 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.15
Maximum	0.5
Mean	0.383
Geometric Mean	0.335
Median	0.5
Standard Deviation	0.181
Coefficient of Variation	0.471

Mann-Kendall Test	
M-K Test Value (S)	6
Tabulated p-value	0.136
Standard Deviation of S	4.32
Standardized Value of S	1.157
Approximate p-value	0.124

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:15:48 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143D TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:16:09 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143S TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.1
Maximum	3
Mean	1.767
Geometric Mean	1.644
Median	1.6
Standard Deviation	0.753
Coefficient of Variation	0.426

Mann-Kendall Test	
M-K Test Value (S)	-12
Tabulated p-value	0.008
Standard Deviation of S	5.228
Standardized Value of S	-2.104
Approximate p-value	0.0177

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:16:29 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.79
Maximum	9.4
Mean	2.715
Geometric Mean	1.831
Median	1.6
Standard Deviation	3.296
Coefficient of Variation	1.214

Mann-Kendall Test	
M-K Test Value (S)	-8
Tabulated p-value	0.068
Standard Deviation of S	5.228
Standardized Value of S	-1.339
Approximate p-value	0.0903

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:16:48 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1A TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	26
Maximum	56
Mean	39.17
Geometric Mean	37.42
Median	36
Standard Deviation	12.98
Coefficient of Variation	0.331

Mann-Kendall Test	
M-K Test Value (S)	7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:17:04 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-2 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	4.9
Maximum	15
Mean	10.37
Geometric Mean	9.59
Median	11
Standard Deviation	4.096
Coefficient of Variation	0.395

Mann-Kendall Test	
M-K Test Value (S)	3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:17:22 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-3 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	9.9
Mean	2.45
Geometric Mean	1.301
Median	1.2
Standard Deviation	3.672
Coefficient of Variation	1.499

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	5.132
Standardized Value of S	-0.779
Approximate p-value	0.218

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:17:41 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-4 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	19
Mean	5.533
Geometric Mean	3.138
Median	3.1
Standard Deviation	6.813
Coefficient of Variation	1.231

Mann-Kendall Test	
M-K Test Value (S)	-13
Tabulated p-value	0.008
Standard Deviation of S	5.323
Standardized Value of S	-2.254
Approximate p-value	0.0121

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:17:59 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-5 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	5.3
Maximum	12
Mean	7.65
Geometric Mean	7.275
Median	6.9
Standard Deviation	2.723
Coefficient of Variation	0.356

Mann-Kendall Test	
M-K Test Value (S)	3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:18:18 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-6 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	5.5
Maximum	13
Mean	8.9
Geometric Mean	8.558
Median	8.25
Standard Deviation	2.72
Coefficient of Variation	0.306

Mann-Kendall Test	
M-K Test Value (S)	11
Tabulated p-value	0.028
Standard Deviation of S	5.323
Standardized Value of S	1.879
Approximate p-value	0.0301

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:18:36 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	9.8
Mean	2.387
Geometric Mean	1.272
Median	0.88
Standard Deviation	3.647
Coefficient of Variation	1.528

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	5.228
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:18:53 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7A TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	52
Maximum	160
Mean	94
Geometric Mean	86.33
Median	87.5
Standard Deviation	42.27
Coefficient of Variation	0.45

Mann-Kendall Test	
M-K Test Value (S)	-12
Tabulated p-value	0.008
Standard Deviation of S	5.228
Standardized Value of S	-2.104
Approximate p-value	0.0177

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:19:21 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-2 TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.9
Maximum	3.8
Mean	3.017
Geometric Mean	2.92
Median	3.25
Standard Deviation	0.794
Coefficient of Variation	0.263

Mann-Kendall Test	
M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:19:39 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-4 Folk TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/2/2019 5:19:58 PM
From File	NPBA ProUCL.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

S-6 Tate TCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 8:13:55 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-3 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.33
Maximum	0.54
Mean	0.455
Geometric Mean	0.449
Median	0.485
Standard Deviation	0.0792
Coefficient of Variation	0.174

Mann-Kendall Test	
M-K Test Value (S)	6
Tabulated p-value	0.136
Standard Deviation of S	5.228
Standardized Value of S	0.956
Approximate p-value	0.169

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 8:55:48 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-9 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.22
Maximum	2.5
Mean	0.787
Geometric Mean	0.57
Median	0.5
Standard Deviation	0.847
Coefficient of Variation	1.076

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	4.435
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 8:56:19 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-11 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.24
Maximum	0.5
Mean	0.377
Geometric Mean	0.364
Median	0.355
Standard Deviation	0.105
Coefficient of Variation	0.278

Mann-Kendall Test	
M-K Test Value (S)	8
Tabulated p-value	0.068
Standard Deviation of S	5.228
Standardized Value of S	1.339
Approximate p-value	0.0903

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:22:54 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-12 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.7
Maximum	6.4
Mean	4.6
Geometric Mean	4.447
Median	4.5
Standard Deviation	1.252
Coefficient of Variation	0.272

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:23:12 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:23:29 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.1
Maximum	450
Mean	103.1
Geometric Mean	17.67
Median	27.85
Standard Deviation	175.1
Coefficient of Variation	1.699

Mann-Kendall Test	
M-K Test Value (S)	-13
Tabulated p-value	0.008
Standard Deviation of S	5.323
Standardized Value of S	-2.254
Approximate p-value	0.0121

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:23:42 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW18D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	2.5
Mean	0.833
Geometric Mean	0.654
Median	0.5
Standard Deviation	0.816
Coefficient of Variation	0.98

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	3.416
Standardized Value of S	-1.171
Approximate p-value	0.121

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:24:03 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-18S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	2.5
Mean	0.833
Geometric Mean	0.654
Median	0.5
Standard Deviation	0.816
Coefficient of Variation	0.98

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	3.416
Standardized Value of S	-1.171
Approximate p-value	0.121

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:24:18 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:53:33 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20M PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.3
Maximum	0.74
Mean	0.507
Geometric Mean	0.49
Median	0.5
Standard Deviation	0.14
Coefficient of Variation	0.277

Mann-Kendall Test	
M-K Test Value (S)	4
Tabulated p-value	0.235
Standard Deviation of S	5.228
Standardized Value of S	0.574
Approximate p-value	0.283

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:53:45 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.6
Maximum	17
Mean	6.033
Geometric Mean	4.738
Median	4.05
Standard Deviation	5.499
Coefficient of Variation	0.911

Mann-Kendall Test	
M-K Test Value (S)	3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:54:49 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-77 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	4
Number Values Reported (n)	4
Minimum	0.5
Maximum	25
Mean	7.625
Geometric Mean	2.973
Median	2.5
Standard Deviation	11.62
Coefficient of Variation	1.524

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.375
Standard Deviation of S	2.769
Standardized Value of S	-0.722
Approximate p-value	0.235

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:55:04 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-82 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.3
Maximum	1.9
Mean	1.667
Geometric Mean	1.653
Median	1.75
Standard Deviation	0.225
Coefficient of Variation	0.135

Mann-Kendall Test	
M-K Test Value (S)	-4
Tabulated p-value	0.235
Standard Deviation of S	5.228
Standardized Value of S	-0.574
Approximate p-value	0.283

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:55:17 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	7.3
Maximum	11
Mean	9.433
Geometric Mean	9.341
Median	9.25
Standard Deviation	1.426
Coefficient of Variation	0.151

Mann-Kendall Test	
M-K Test Value (S)	-4
Tabulated p-value	0.235
Standard Deviation of S	5.228
Standardized Value of S	-0.574
Approximate p-value	0.283

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:55:30 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	12
Maximum	24
Mean	14.92
Geometric Mean	14.45
Median	13.25
Standard Deviation	4.587
Coefficient of Variation	0.308

Mann-Kendall Test	
M-K Test Value (S)	8
Tabulated p-value	0.068
Standard Deviation of S	5.228
Standardized Value of S	1.339
Approximate p-value	0.0903

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:55:47 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	7
Maximum	10.4
Mean	9.083
Geometric Mean	9.004
Median	9.45
Standard Deviation	1.266
Coefficient of Variation	0.139

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	-0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:56:01 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	15
Maximum	29
Mean	23.83
Geometric Mean	23.21
Median	26
Standard Deviation	5.601
Coefficient of Variation	0.235

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:56:17 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:56:33 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:56:50 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143D PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:57:03 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143S PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	1.1
Mean	0.72
Geometric Mean	0.692
Median	0.665
Standard Deviation	0.228
Coefficient of Variation	0.317

Mann-Kendall Test	
M-K Test Value (S)	-9
Tabulated p-value	0.068
Standard Deviation of S	5.323
Standardized Value of S	-1.503
Approximate p-value	0.0664

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:57:15 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.19
Maximum	0.5
Mean	0.448
Geometric Mean	0.426
Median	0.5
Standard Deviation	0.127
Coefficient of Variation	0.282

Mann-Kendall Test	
M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	3.416
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:57:29 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1A PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.7
Maximum	2.8
Mean	2.05
Geometric Mean	2.017
Median	1.85
Standard Deviation	0.423
Coefficient of Variation	0.206

Mann-Kendall Test	
M-K Test Value (S)	-2
Tabulated p-value	0.36
Standard Deviation of S	5.228
Standardized Value of S	-0.191
Approximate p-value	0.424

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 9:57:44 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-2 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.91
Maximum	3.2
Mean	1.797
Geometric Mean	1.578
Median	1.35
Standard Deviation	1.029
Coefficient of Variation	0.573

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:14:32 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-3 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.41
Maximum	2.5
Mean	1.118
Geometric Mean	0.879
Median	0.75
Standard Deviation	0.855
Coefficient of Variation	0.764

Mann-Kendall Test	
M-K Test Value (S)	2
Tabulated p-value	0.36
Standard Deviation of S	5.228
Standardized Value of S	0.191
Approximate p-value	0.424

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:15:52 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-4 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	3.5
Mean	1.18
Geometric Mean	0.882
Median	0.69
Standard Deviation	1.17
Coefficient of Variation	0.992

Mann-Kendall Test	
M-K Test Value (S)	-14
Tabulated p-value	0.001
Standard Deviation of S	5.228
Standardized Value of S	-2.487
Approximate p-value	0.00645

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:16:10 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-5 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	7.4
Maximum	41
Mean	21.57
Geometric Mean	18.27
Median	19.5
Standard Deviation	12.87
Coefficient of Variation	0.597

Mann-Kendall Test	
M-K Test Value (S)	3
Tabulated p-value	0.36
Standard Deviation of S	5.323
Standardized Value of S	0.376
Approximate p-value	0.354

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:16:26 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-6 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	22
Maximum	46
Mean	37.17
Geometric Mean	36.24
Median	38.5
Standard Deviation	8.256
Coefficient of Variation	0.222

Mann-Kendall Test	
M-K Test Value (S)	7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:16:43 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.6
Maximum	1.1
Mean	0.885
Geometric Mean	0.868
Median	0.925
Standard Deviation	0.185
Coefficient of Variation	0.209

Mann-Kendall Test	
M-K Test Value (S)	8
Tabulated p-value	0.068
Standard Deviation of S	5.228
Standardized Value of S	1.339
Approximate p-value	0.0903

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:16:59 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7A PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.4
Maximum	8.9
Mean	5.433
Geometric Mean	5.194
Median	5.2
Standard Deviation	1.884
Coefficient of Variation	0.347

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:17:14 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-2 PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:17:29 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-4 Folk PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 10:17:52 AM
From File	NPBA ProUCL_a.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

S-6 Tate PCE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A
Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:31:25 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-3 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.63
Maximum	0.82
Mean	0.735
Geometric Mean	0.731
Median	0.74
Standard Deviation	0.0792
Coefficient of Variation	0.108

Mann-Kendall Test	
M-K Test Value (S)	8
Tabulated p-value	0.068
Standard Deviation of S	5.228
Standardized Value of S	1.339
Approximate p-value	0.0903

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:36:25 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-9 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	27
Maximum	36
Mean	32
Geometric Mean	31.87
Median	32.5
Standard Deviation	3.162
Coefficient of Variation	0.0988

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:36:37 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-11 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:36:49 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-12 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	42
Maximum	58
Mean	50.17
Geometric Mean	49.84
Median	49.5
Standard Deviation	6.21
Coefficient of Variation	0.124

Mann-Kendall Test	
M-K Test Value (S)	7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:42:26 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.4
Maximum	8.9
Mean	6.417
Geometric Mean	6.141
Median	6.9
Standard Deviation	1.911
Coefficient of Variation	0.298

Mann-Kendall Test	
M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:42:52 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-16S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	7.4
Maximum	42
Mean	29.23
Geometric Mean	24.26
Median	37
Standard Deviation	15.33
Coefficient of Variation	0.524

Mann-Kendall Test	
M-K Test Value (S)	-11
Tabulated p-value	0.028
Standard Deviation of S	5.323
Standardized Value of S	-1.879
Approximate p-value	0.0301

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:46:10 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW18D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	14
Maximum	66
Mean	26.33
Geometric Mean	22.1
Median	17.5
Standard Deviation	20.13
Coefficient of Variation	0.764

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	5.228
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:46:25 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-18S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.7
Maximum	71
Mean	23.95
Geometric Mean	15.66
Median	18
Standard Deviation	24.57
Coefficient of Variation	1.026

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:46:43 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:47:00 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20M Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.81
Mean	0.552
Geometric Mean	0.542
Median	0.5
Standard Deviation	0.127
Coefficient of Variation	0.229

Mann-Kendall Test	
M-K Test Value (S)	5
Tabulated p-value	0.235
Standard Deviation of S	3.416
Standardized Value of S	1.171
Approximate p-value	0.121

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:47:14 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-20S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.95
Maximum	2.5
Mean	1.575
Geometric Mean	1.469
Median	1.4
Standard Deviation	0.649
Coefficient of Variation	0.412

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:47:34 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-77 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	4
Number Values Reported (n)	4
Minimum	0.5
Maximum	25
Mean	7.625
Geometric Mean	2.973
Median	2.5
Standard Deviation	11.62
Coefficient of Variation	1.524

Mann-Kendall Test	
M-K Test Value (S)	-3
Tabulated p-value	0.375
Standard Deviation of S	2.769
Standardized Value of S	-0.722
Approximate p-value	0.235

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:47:49 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-82 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	15
Maximum	22
Mean	18.92
Geometric Mean	18.76
Median	19
Standard Deviation	2.654
Coefficient of Variation	0.14

Mann-Kendall Test	
M-K Test Value (S)	-10
Tabulated p-value	0.028
Standard Deviation of S	5.228
Standardized Value of S	-1.721
Approximate p-value	0.0426

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:48:03 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.3
Maximum	11
Mean	7.067
Geometric Mean	6.32
Median	7.25
Standard Deviation	3.405
Coefficient of Variation	0.482

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:48:22 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-102S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.7
Maximum	99
Mean	21.04
Geometric Mean	8.56
Median	5.6
Standard Deviation	38.22
Coefficient of Variation	1.817

Mann-Kendall Test	
M-K Test Value (S)	7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:48:36 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.7
Maximum	5.9
Mean	2.8
Geometric Mean	2.531
Median	2.3
Standard Deviation	1.581
Coefficient of Variation	0.565

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	5.323
Standardized Value of S	-0.751
Approximate p-value	0.226

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:48:49 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-103S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	3.7
Maximum	7.2
Mean	5.7
Geometric Mean	5.528
Median	5.95
Standard Deviation	1.476
Coefficient of Variation	0.259

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:49:03 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.75
Maximum	6.2
Mean	2.703
Geometric Mean	1.834
Median	1.695
Standard Deviation	2.415
Coefficient of Variation	0.893

Mann-Kendall Test	
M-K Test Value (S)	-11
Tabulated p-value	0.028
Standard Deviation of S	5.323
Standardized Value of S	-1.879
Approximate p-value	0.0301

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 4:49:23 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-142S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1.1
Maximum	8.7
Mean	3.05
Geometric Mean	2.38
Median	2.15
Standard Deviation	2.82
Coefficient of Variation	0.925

Mann-Kendall Test	
M-K Test Value (S)	13
Tabulated p-value	0.008
Standard Deviation of S	5.323
Standardized Value of S	2.254
Approximate p-value	0.0121

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:00:21 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143D Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.25
Maximum	1.5
Mean	0.647
Geometric Mean	0.538
Median	0.525
Standard Deviation	0.459
Coefficient of Variation	0.71

Mann-Kendall Test	
M-K Test Value (S)	15
Tabulated p-value	0.001
Standard Deviation of S	5.323
Standardized Value of S	2.63
Approximate p-value	0.00427

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:00:37 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

MW-143S Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:00:55 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	5.6
Mean	1.937
Geometric Mean	1.44
Median	1.4
Standard Deviation	1.854
Coefficient of Variation	0.957

Mann-Kendall Test	
M-K Test Value (S)	-11
Tabulated p-value	0.028
Standard Deviation of S	5.323
Standardized Value of S	-1.879
Approximate p-value	0.0301

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:01:15 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-1A Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.31
Maximum	0.73
Mean	0.508
Geometric Mean	0.493
Median	0.5
Standard Deviation	0.133
Coefficient of Variation	0.262

Mann-Kendall Test	
M-K Test Value (S)	2
Tabulated p-value	0.36
Standard Deviation of S	4.967
Standardized Value of S	0.201
Approximate p-value	0.42

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:01:29 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-2 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	6.1
Mean	2.758
Geometric Mean	1.769
Median	1.735
Standard Deviation	2.547
Coefficient of Variation	0.923

Mann-Kendall Test	
M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:01:43 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-3 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	28
Maximum	36
Mean	32.83
Geometric Mean	32.72
Median	32.5
Standard Deviation	2.994
Coefficient of Variation	0.0912

Mann-Kendall Test	
M-K Test Value (S)	-5
Tabulated p-value	0.235
Standard Deviation of S	5.132
Standardized Value of S	-0.779
Approximate p-value	0.218

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:01:59 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-4 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	40
Mean	29.08
Geometric Mean	17.1
Median	33.5
Standard Deviation	14.33
Coefficient of Variation	0.493

Mann-Kendall Test	
M-K Test Value (S)	-7
Tabulated p-value	0.136
Standard Deviation of S	5.323
Standardized Value of S	-1.127
Approximate p-value	0.13

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:03:54 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-5 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	2.1
Maximum	12
Mean	6.917
Geometric Mean	5.834
Median	5.45
Standard Deviation	4.159
Coefficient of Variation	0.601

Mann-Kendall Test	
M-K Test Value (S)	10
Tabulated p-value	0.028
Standard Deviation of S	5.228
Standardized Value of S	1.721
Approximate p-value	0.0426

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:04:16 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-6 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	19
Maximum	41
Mean	27.83
Geometric Mean	26.75
Median	26
Standard Deviation	8.704
Coefficient of Variation	0.313

Mann-Kendall Test	
M-K Test Value (S)	13
Tabulated p-value	0.008
Standard Deviation of S	5.323
Standardized Value of S	2.254
Approximate p-value	0.0121

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:04:33 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:04:47 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

CW-7A Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	1
Maximum	3.7
Mean	2.1
Geometric Mean	1.936
Median	1.95
Standard Deviation	0.932
Coefficient of Variation	0.444

Mann-Kendall Test	
M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	5.323
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:05:03 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-2 Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:05:20 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

RW-4 Folk Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.14/3/2019 5:05:40 PM
From File	NPBA ProUCL_b.xls
Full Precision	OFF
Confidence Coefficient	0.9
Level of Significance	0.1

S-6 Tate Cis

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	6
Number Values Reported (n)	6
Minimum	0.5
Maximum	0.5
Mean	0.5
Geometric Mean	0.5
Median	0.5
Standard Deviation	0
Coefficient of Variation	N/A

Mann-Kendall Test	
M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	0
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.