GROUNDWATER EXTRACTION AND TREATMENT SYSTEM ANNUAL OPERATIONS REPORT FOR THE PERIOD JANUARY 1 THROUGH DECEMBER 31, 2016 FORMER YORK NAVAL ORDNANCE PLANT

Leidos Project 313271.00.00.2000.100

Prepared for:

Harley-Davidson Motor Company Operations, Inc.
York, PA

January 2017

Leidos, Inc.
6310 Allentown Boulevard, Suite 110 / Harrisburg, PA 17112 / 717.901.8100 leidos.com

Groundwater Extraction and Treatment System
Annual Operations Report
for the Period
January 1 through December 31, 2016
Former York Naval Ordnance Plant

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By:

Leidos, Inc.
6310 Allentown Boulevard
Harrisburg, PA 17112
(717) 901-8100

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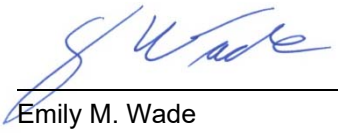
Respectfully submitted,



Emily M. Wade
Project Environmental Scientist

Rodney G. Myers, CHMM
Senior Project Manager

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cfm	-	cubic feet per minute
cis-1,2-DCE	-	cis-1,2-dichloroethene
EPA	-	United States Environmental Protection Agency
ERLC	-	Eden Road Logistics Center
fYNOP	-	former York Naval Ordnance Plant
GAC	-	granular-activated carbon
gpd	-	gallons per day
gpm	-	gallons per minute
GSC	-	Groundwater Sciences Corporation
GWTS	-	groundwater extraction and treatment system
Harley-Davidson	-	Harley-Davidson Motor Company Operations, Inc.
HMI	-	human-machine interface
IDW	-	investigation-derived waste
lbs/day	-	pounds per day
Leidos	-	Leidos, Inc.
MCC	-	motor control center
NB4	-	North Building 4
NPBA	-	Northeast Property Boundary Area
NPDES	-	National Pollutant Discharge Elimination System
NP York	-	NP York 58, LLC
O&M	-	operation and maintenance
PADEP	-	Pennsylvania Department of Environmental Protection
PCE	-	tetrachloroethene
PLC	-	programmable logic controller
ppm	-	parts per million
PTA	-	packed tower aerator
PVC	-	polyvinyl chloride
RACY	-	Redevelopment Authority of the County of York
RI	-	Remedial Investigation
SGWRI	-	Supplemental Groundwater Remedial Investigation, Part 2
SRBC	-	Susquehanna River Basin Commission
TCA	-	1,1,1-trichloroethane
TCE	-	trichloroethene
µg/L	-	trichloroethene
VFD	-	variable frequency drive
VOCs	-	volatile organic compounds
WPL	-	West Parking Lot
YCIDA	-	York County Industrial Development Authority

EXECUTIVE SUMMARY

This report is a summary of the groundwater extraction and treatment system (GWTS) operations and maintenance (O&M) and groundwater quality monitoring that occurred during calendar year 2016 at the former York Naval Ordnance Plant (fYNOP). The GWTS is located at the Harley-Davidson Motor Company Operations, Inc. (Harley-Davidson) facility in York, Pennsylvania, and has been in operation for over 25 years (since November 1990).

The West Parking Lot (WPL) collection wells, including WPL pumping well (CW-20), located in the southwest corner of the WPL, along with the other WPL pumping wells (CW-9, CW-13, CW-15A, and CW-17) were operational during 2016.

The Northeast Property Boundary Area (NPBA) and lift station systems were shut down in late 2013 during part of the Supplemental Groundwater Remedial Investigation (SGWRI) and work plans approved by the United States Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Protection (PADEP), and remained off during 2016 pending completion of shutdown monitoring studies. Collection well CW-8, located in the 1,1,1-trichloroethane (TCA) Tank Area near former Building 2 was not operated during 2016, as it was abandoned in early 2016.

Approximately 1,058 pounds of volatile organic compounds (VOCs) were removed by the GWTS in the 2016 calendar year. The total amount of groundwater extracted during 2016 was approximately 114 million gallons. Cumulatively, approximately 45,301 pounds of VOCs have been removed by the GWTS since 1990.

Site-wide groundwater elevation data were collected in October and December 2016. Site-wide groundwater sampling was also conducted in October 2016, but is not presented in this report. Further evaluation of this data will be provided in a separate report to be issued during the second quarter 2017.

1.0 INTRODUCTION

This report presents a summary of the operating record for the fYNOP GWTS, and includes collection well water quality and groundwater level data obtained during 2016. The fYNOP facility consists of the current Harley-Davidson Motor Company Operations, Inc. (Harley-Davidson) York facility and the West Campus property (as described below). The fYNOP is located in Springettsbury Township, York County, Pennsylvania, as shown on Figure 1-1. This report covers the 12-month period from January 1 through December 31, 2016.

Harley-Davidson sold 58 acres of the western portion of the fYNOP to the York County Industrial Development Authority (YCIDA) on June 14, 2012. Transfer of this property from YCIDA to the Redevelopment Authority of the County of York (RACY) was completed on November 9, 2015, with pending sale agreement between RACY and NP York 58, LLC (NP York) for development. The parcel—now addressed as 1445 Eden Road, York, Pennsylvania —extends from west of the current motorcycle manufacturing operations through the WPL and is identified as the “West Campus”. The West Campus area encompasses the WPL and former TCA systems. Harley-Davidson retains responsibility for the cleanup of the West Campus, and maintains an easement agreement with the new owners to continue remediation, monitoring, and maintenance activities. West Campus site development activities (Eden Road Logistics Center [ERLC]) began during the first quarter of 2016 and were essentially completed by the end of 2016.

At the fYNOP, groundwater can be extracted from 15 pumping wells (CW-1, CW-1A, CW-2 through CW-7, CW-7A, CW-9, CW-13, CW-15A, CW-17, CW-19, and CW-20) operating in three (3) separate areas designated as the NPBA, the WPL Area (which includes the NB4 Area), and the Building 3 Dewatering System. The collection systems are shown on Figure 1-2. WPL pumping (CW-20) located in the southwest corner of the WPL was tested and brought on-line during 2014, and along with four other previously operating WPL pumping wells (CW-9, CW-13, CW-15A, and CW-17). All five WPL pumping wells were operational during 2016. The other groundwater extraction areas were not operational during 2016. Collection well CW-8, located in the former TCA Tank Area near former Building 2 was not operated during 2016, as it was previously shutdown and then abandoned during January 2016.

All extracted groundwater is piped to a treatment system located in the groundwater treatment building (Building 41A) for processing through a packed tower aerator (PTA) prior to discharge to the Codorus Creek, designated as Outfall No. 003 (see Figures 1-1 and 1-2). A rerouted conveyance piping for WPL collection well CW-9 (using some of the former conveyance utility for former CW-8) was installed and connected during construction of the new ERLC during late 2016, and is also shown on Figure 1-2.

Figure 1-3 presents a schematic flow diagram for this treatment system. A chemical sequestering agent (Redux 525) injection system installed in June 2010 to reduce mineral fouling of the GWTS PTA, effluent discharge pumps, and components continued to operate throughout 2015. PTA off-gases are treated by a granular-activated carbon (GAC) filter system for removal of VOCs before being discharged to the atmosphere.

The treatment system operates and discharges under a National Pollutant Discharge Elimination System (NPDES) permit No. PA0085677 issued by PADEP. The current permit was issued on November 22, 2010, and expired on November 30, 2015. Harley-Davidson submitted the renewal application in May 2015 in accordance with the PADEP guidelines, therefore, the permit extends as is until a renewed permit is issued by PADEP [pending]. Treated groundwater is collected in a wet well located immediately northwest of Building 41A (refer to Figure 1-2) and is pumped through a force main to Outfall 003 located near the confluence of Johnsons Run and Codorus Creek.

During 2016, Harley-Davidson completed groundwater RI studies under the work plan entitled Field Sampling Plan for Part II of the Supplemental Remedial Investigation, Former York Naval Ordnance Plant (Groundwater Sciences Corporation [GSC] 2012). Details and regulator (EPA and PADEP) approvals for shutdowns that affected the GWTS during 2016 were facilitated via addendums to the field sampling plan as follows:

- Addendum No. 6 (GSC, 2013a) issued March 20, 2013 – Northeast Property Boundary Area (NPBA) Extraction System Monitored Shutdown (for the NPBA system shutdown). The NPBA collection wells (CW-1, CW-1A, CW-2 through CW-7, and CW-7A) were shut down on June 19, 2013, and are undergoing monitoring by GSC as a separate task. A report was prepared (GSC, April 2014a) and approved by the EPA that recommended continued shutdown and monitoring of the NPBA system for five years. An annual progress report of this shutdown monitoring was prepared in April (GSC, 2016a)

- Addendum No. 7 (GSC, 2013b) issued March 20, 2013 – Building 3 Footer Drain Monitored Shutdown (for the Lift Station system shutdown). The Building 3 Lift Station was shut down on June 19, 2013, and is undergoing monitoring by GSC as a separate task. A report was prepared (GSC, April 2014a) and approved by EPA that recommended continued shutdown and monitoring of the Lift Station for two years. An annual progress report of this shutdown monitoring was prepared in April (GSC, 2016b)

All WPL collection wells (CW-9, CW-13, CW-15A, CW-17, and CW-20) were, operational during 2016.

2.0 GEOLOGY AND HYDROGEOLOGY

Two geologic rock formations underlie the site. Solution-prone (karst) gray carbonate bedrock (limestone and dolostone) underlies the flat lowland (western) portion of the site. Quartzitic sandstone underlies the more steeply sloping hills or upland area present on the eastern part of the site. Groundwater flow is generally westward, from the upland area at the eastern part of the site toward Codorus Creek. A detailed discussion of the geology and hydrogeology is included in the report entitled "Supplemental Remedial Investigation Groundwater Report (Part 2)." (GSC 2016c).

Abandonment of 29 wells and several former soil vapor points was completed in early January, 2016 in advance of pending ERLC site development on the former West Campus. EPA and PADEP approved the wells selected for abandonment during December 2015. A well abandonment report (Leidos, 2016) was finalized and submitted to the Pennsylvania Bureau of Topographic and Geologic Survey (with copy to PADEP and EPA) on March 2, 2016.

Site-wide groundwater elevation data were collected in October and December 2016 from approximately 200 monitoring points. Refer to report entitled "Supplemental Remedial Investigation Groundwater Report (Part 2)." (GSC 2016c) for site groundwater flow evaluation.

3.0 SITE-WIDE GROUNDWATER MONITORING

The groundwater monitoring program at the fYNOP site for 2016 consisted of:

- Measuring depth to water in all available monitoring and observation wells two times during the year.
- Sampling and chemical analysis of groundwater from the collection wells throughout the year (see results summary in Table A-1 found in Appendix A).
- Sampling and chemical analysis of GWTS influent from the combined active collection wells throughout the year (see results summary in Table A-2 found in Appendix A).
- A comprehensive site-wide groundwater sampling event (numerous wells onsite and offsite) was conducted during October (data to be provided in separate report).

Further analysis of the site-wide groundwater data will be provided in a separate report to be issued during the second quarter 2017.

4.0 GROUNDWATER TREATMENT SYSTEM

During 2016, the GWTS remediated groundwater containing dissolved VOCs recovered from the WPL Area of the site. This groundwater extraction portion of the system consists of 5 active pumping wells from the WPL Area. Ten (10) inactive pumping wells from two groundwater pumping areas are undergoing shut down monitoring. The inactive areas include the NPBA and the Building 3 Dewatering Area. The former TCA Tank Area is no longer functional, as former pumping wells CW-8 and CW-16, and a portion of the CW-8 underground utilities were abandoned in early 2016.

4.1 System Description

Collection wells within the WPL groundwater extraction area and the NPBA (when in operation) remove groundwater by means of electric submersible pumps. At Building 3, a lift station pump removes water from a series of collection trenches. The pumping water level within each collection well is maintained by liquid level probes and control circuitry between the “on” and “off” probes. This produces an area of drawdown and groundwater capture. The extracted groundwater is conveyed via underground piping to the treatment system where the dissolved VOCs are removed from the groundwater.

The GWTS is housed in Building 41A. The process flow diagram for the system is presented on Figure 1-3. The treatment system consists of a 2,600-gallon equalization tank; a PTA capable of treating up to 400 gallons per minute (gpm) of groundwater; and a 10,000-pound vapor-phase GAC unit for PTA off-gas treatment.

Extracted groundwater is pumped from the equalization tank to the top of the PTA. Redux 525 sequestering agent is injected into this flow at an approximate rate of 20 parts per million (ppm) to prevent calcium scale deposits on the packing material and effluent pump system. Simultaneous with the downward flow of contaminated water, a 4,000-cubic-foot-per-minute (cfm) centrifugal blower directs fresh air into the lower section of the tower, and up through the packing material. The VOCs are effectively “stripped” from the water and then adsorbed to the GAC in the air-phase. The treated groundwater flows by gravity to a wet well (effluent pump station) located on the north side of Building 41A where it is pumped approximately 1,600 feet via an 8-inch underground force main to Outfall No. 003 and discharged to Codorus Creek (see Figure 1-2).

Automated monitoring and control of the GWTS are facilitated through a series of control panels, Allen-Bradley programmable logic controllers (PLCs) and a patented software package called RSView®. Remote computer terminals can be used to monitor collection well pumping rates and treatment processes, and the WPL wells may be remotely adjusted. System operational data, recorded in an Access® data base during 2016, are included in Appendix B.

4.2 System Maintenance and Modifications

Twice a month, preventive maintenance inspections are performed on the GWTS when the system is operating. The purpose of these inspections is to ensure effective operation of the system. A summary of O&M data recorded during these visits is included in Appendix C. Items reviewed during each visit include the following:

- Check for system alarms.
- Inspect control panels.
- Check water conveyance line pressures.
- Check pressure differential across the stripping tower.
- Check piping and pumps for leaks.
- Clean Y-strainers of buildup, etc., as necessary.
- Check and record amperage draws on all motors (quarterly).
- Record flow rates on recovery wells and transfer pump.

The GWTS operated under normal conditions during 2016, except for the following interruptions:

- A snow storm power outage interrupted operations during January 23 to 27, 2016;
- A scheduled plant-wide power outage occurred in late June (28 – 30).
- A brief shutdown occurred on August 29 to remove an effluent pump for annual maintenance.
- Brief shutdowns on Nov. 14, 15, & 16 for construction safety precautions.
- A York facility communications maintenance activity required the shutdown of the GWTS on November 18-20, 2016.
- The GWTS was shut down during scheduled granular activated carbon (GAC) change-outs in April, July and December.
- The GWTS was shutdown for approximately 20 hours on December 29-30 as a result of an effluent pump drive fault.

Several noteworthy treatment system maintenance, repairs, or modifications were identified and addressed during 2016. A brief summary is presented below:

- Collection wells CW-8 and CW-16 were abandoned in early January 2016 by a Pennsylvania Licensed Water Well Driller. A list of proposed wells to be abandoned (in advance of pending site development on the West Campus), including these former TCA Tank Area collection wells, was submitted to EPA and PADEP on October 19, 2015, and were subsequently approved. The abandonments were completed by Tremie pressure grouting from the bottom of the well to the surface using Type II Portland cement with 5% benseal (bentonite). Well vaults and caps were removed, and the surface was sealed flush with concrete. Well abandonment forms were filed electronically via WebDriller as required by the Pennsylvania Department of Conservation and Natural Resources. A closure report, providing the well abandonment detail for 29 site wells was issued to the Pennsylvania Bureau of Topographic and Geologic Survey (Leidos, 2016).

- Performed breakthrough monitoring of the GAC to determine when to complete the GAC change-out. Spent GAC was replaced in April, July and December 2016.
- The GWTS discharge effluent pumps were removed one at a time to be cleaned and repaired. The repairs included general pump maintenance and replacing damaged parts.
- Annual pump flow meter calibrations were completed.
- The Sensaphone 2000 autodialer alarm system was replaced with a cellular Sensaphone Sentinel alarm system.
- Stone was added to repair ruts along portions of the north property boundary access roadway in December 2016.
- The treatment building gas-fired heater malfunctioned and required repairs to an ignition switch.
- An updated GWTS Operations and Maintenance manual was finalized in May 2016, and documented the GWTS upgrades that occurred in 2014 and 2015.

4.3 Groundwater Withdrawal and VOC Removal

Table 4-1 presents recorded groundwater withdrawal and total VOC removal accomplished through operation of the GWTS. A system-wide total of approximately 45,301 pounds of VOCs have been removed since the GWTS began operation in November 1990.

The total amount of groundwater extracted during the period from January 1 through December 31, 2016, was approximately 114 million gallons (an average of 312,258 gallons per day [gpd] or 217 gpm). The 2016 extraction volumes are slightly higher than the previous year (2015) when the average flows were approximately 289,715 gpd (or 201 gpm). Approximately 19,000 gallons of impacted groundwater was removed from a utility excavation on the West Campus as a result of some construction activity, and was treated and discharged via the GWTS by Harley-Davidson during October, 2016. This volume was accounted in the system totalizer flow, but no analysis was conducted.

The GWTS was not operating from January 23 to 27, 2016, due to a snow storm power outage; a York facility communications maintenance activity required the shutdown of the GWTS during November 18-20, 2016; and GAC change-outs caused partial day shutdowns on April 21, July 28, and December 22, 2016; an overload fault at collection well CW-20 on March 25, 2016; CW-20 was shut off on March 26, 2016 in response to an overload fault, was restarted on April 7, 2016; CW-20 was inspected, cleaned and redeveloped from April 4 - 7, 2016; CW-15a was shut down August 24 - 25, 2016 due to exposed wiring that was uncovered during construction/excavation work on the West Campus; CW-9 and CW-20 were shutdown on August 30, 2016, at the request of the NP York construction contractors, due to reroute construction, and were restarted on September 29, 2016; with sporadic shutdowns due to construction-related issues . The TCA area has been abandoned, and the NPBA, and lift station systems were off during the entire year. A graphical comparison of the volumes of groundwater treated from the various site extraction systems is presented on Figure 4-1.

During 2016, the GWTS was shut down for 6 days due to scheduled or emergency maintenance activities. PADEP was involved with and notified of these activities, in accordance with NPDES requirements.

Quarterly PTA influent analyses (shown in Table A-2, Appendix A), along with the measured extraction volumes, are used to calculate the mass of VOCs removed from site groundwater during the reporting period. The quarterly influent samples collected in January, April, July, and October 2016, represent combined flow-weighted sampling of the five active collection wells (CW-9, CW-13, CW-15A, CW-17, and CW-20) that were pumped to the GWTS. Using these data, the total estimated mass of VOCs removed from January through December 2016 was 1,058 pounds. This mass removal rate is slightly lower than the value calculated during 2015 (approximately 1,501 pounds). The calculated VOC mass removal rates (pounds per day [lbs/day]) extracted by the GWTS for the last four calendar years are shown below:

- 2016 – 4.0 lbs/day
- 2015 – 5.7 lbs/day
- 2014 – 2.2 lbs/day [from 118 total days of pumping from CW-20 and 16 days from CW-9]
- 2013 – 3.6 lbs/day

The predominant VOCs in the PTA influent have historically been trichloroethene (TCE), TCA, and tetrachloroethene (PCE) [see Figure 4-2]. Levels of total VOCs have generally declined with time, and have been somewhat stable over the last few years. The predominant influent VOC changed from TCE to PCE during the spring of 2013, and the concentration of PCE further increased upon startup of CW-20 during 2014. Concurrent with the GWTS shutdown and restart, a spike in the influent concentration of cis-1,2-dichloroethene (cis-1,2-DCE) was noted during 2015 and early 2016 (see Figure 4-2). The predominant VOCs during 2016 are now PCE, TCE, and cis-1,2-DCE, with generally decreasing levels of TCA.

4.4 Groundwater System Inspection and Reporting

Groundwater system compliance reporting includes routine monthly and quarterly NPDES permit reports – Discharge Monitoring Reports, quarterly Susquehanna River Basin Commission (SRBC) reporting, and an annual operations report for the GWTS. In accordance with Chapter 110 (formerly Act 220), PADEP also requires an annual groundwater withdrawal report from this facility.

The PTA effluent was sampled and reported four times during 2016. Analytical testing results for the 2016 PTA effluent and influent sampling is presented in Table A-2 (Appendix A). The treatment system effluent has maintained non-detectable concentrations of target VOCs during this reporting period.

On a quarterly basis, groundwater withdrawal data are submitted to the Susquehanna River Basin Commission (SRBC) regarding non-consumptive groundwater withdrawal associated with the GWTS in accordance with docket Nos. 19900715-1 and 19980901-1. Information provided to the SRBC includes

daily groundwater withdrawal totals (i.e., groundwater volumes extracted) from all collection wells and the overall system influent groundwater quality.

A PADEP inspection was conducted of the GWTS Outfall 003 area on April 25, 2016 and a brief report was issued, due to a reported red discharge that was observed on Friday April 22, 2016. There was no discoloration observed, and no violation found during PADEP's inspection and meeting with Sharon Fisher on April 25. Harley-Davidson confirmed (same day) that the observed discharge was a PADEP-approved red dye that was used for site investigation activities, and related to some recent GWTS well development activity. Harley-Davidson agreed to post a sign at the outfall in response to the event.

Beginning in August, weather data software was automatically uploaded to the Harley-Davidson network for tracking and storing weather data from a weather station that is mounted on the roof of Building 41A.

5.0 NPBA GROUNDWATER EXTRACTION SYSTEM

Groundwater extraction at the NPBA commenced in November 1990. Nine groundwater collection wells (CW-1, CW-1A, CW-2, CW-3, CW-4, CW-5, CW-6, CW-7, and CW-7A) located on the Harley-Davidson property pump to the NPBA control building where individual pumping rates are controlled and measured. The groundwater from each well is combined and transmitted a distance of approximately 2,000 feet to the groundwater treatment system.

5.1 System Shutdown Conditions

The NPBA extraction wells were shut down on June 19, 2013, and remained off during the remainder of 2013, and throughout 2014 and 2015 for the five-year NPBA Extraction System Monitored shutdown study. The 2015 shutdown status of the NPBA extraction system was reported to EPA and PADEP in an annual monitoring report (GSC, 2016a). The NPBA wells were started for a short duration in October 2016 to conduct sampling during the site-wide comprehensive sampling event but were not operated during the remainder of the year.

5.2 Maintenance

There was no maintenance activity for the NPBA collection wells during 2016. However, packers were installed and monitored in artesian monitoring wells (MW-18D and MW-16S/D) near collection wells CW-5 and CW-3, respectively, during 2016.

5.3 Groundwater Chemistry

The groundwater quality analysis data from the comprehensive well sampling (October 2015), which included the inactive NPBA collection wells and several surrounding monitoring wells, will be provided in the Year 3 Shutdown monitoring report [prepared by GSC].

6.0 WEST PARKING LOT GROUNDWATER EXTRACTION SYSTEM

Four (4) groundwater collection wells (CW-9, CW-13, CW-17, and CW-20) are now operable in the WPL Area of the West Campus. One additional collection well (CW-15A) is located near the exterior northwest corner of former Building 4 (also known as NB4 area). These five wells are referred to as the WPL wells. Collection wells CW-9, CW-13, CW-14, and CW-15A began operation in May 1994. Collection well CW-17 began operation in September 1995 and was a replacement extraction well for CW-14, which was discontinued due to excessive sediment buildup in the well. Collection well CW-20 became operational in April 2014.

Groundwater extraction from the WPL wells is conducted via underground piping to the GWTS in Building 41A. The wells are individually piped to the GWTS so that flow control, flow measurements, and water samples may be obtained for each well at this central location. Water is piped the following distances from the wells to the treatment plant: CW-20 (1,600 feet), CW-9 (1,400 feet), CW-13 (890 feet), CW-15A (310 feet), and CW-17 (590 feet). Approximately 114 million gallons of groundwater were extracted from the WPL Area during 2016 (see Table 6-1).

6.1 System Modifications and Operational Conditions

CW-20 was activated in the spring of 2014. The addition of CW-20 provides more efficient control of a VOC source near the southwest corner of the WPL, while continuing to address migration of groundwater from the WPL and areas to the east of the WPL, including the former central plant area (and former TCA Tank area). The WPL system and all five (5) of its collection wells were operational during most of 2016. Details of various maintenance and construction-related interruptions during 2016 are provided in Section 6.2, below.

As part of the West Campus construction activities, underground conveyance piping from CW-9, and CW-20 were rerouted in late December 2016. Highlights of the modifications are as follows:

- Cut, extended and rerouted CW-20 conveyance pipe (3” HDPE) beneath a newly installed 42-inch diameter stormwater pipe in WPL. Connections were butt welded. Pressure tested welds and flange fitting, and restarted the CW-20 pump.
- Rerouted wiring for CW-9/CW-20 over top of the new 42” SW pipe in WPL, without splicing.
- Cut/capped existing (2” HDPE) CW-9 conveyance pipe near the WPL stormwater pipe excavation; and butt welded to new 4” HDPE reroute pipe via reducer and flange connection. The reroute goes towards the old Gate 3 guardhouse, and then connects to the former CW-8 conveyance pipeline.

6.2 Maintenance

A brief summary of maintenance actions addressed for the WPL Area in 2016 is presented below:

- Collection well CW-20 was shut off on March 26, 2016 in response to an overload fault.
- Video inspection, cleaning and rehabilitation of the well screen at CW-20 was conducted in early April 2016. The well pump was replaced at CW-20, and normal pumping operations resumed on April 7, 2016.
- A faulty pump and motor were replaced at WPL collection well CW-13 on June 10.
- CW-15A was shutdown due to construction activity in the area during the following dates: August 8-9; August 24-25; September 23; November 1-5; and November 21 through December 7, 2016. A pump end was replaced on collection well CW-15A on November 21, 2016.
- Wells CW-9 and CW-20 were shutdown due to construction activity in the area during the following dates: August 30 through September 29; October 3; December 15-16; and December 28-30, 2016. CW-20 was restarted on December 30, 2016, but CW-9 cannot be restarted until a leak within the last 90 feet of reroute pipe is located and repaired [pending].
- CW-17 was shutdown due to construction activity in the area during October 24-26, 2016. CW-17 was also shutdown during November 20-23, 2016 due to a faulty pump motor that needed replaced.
- Wellhead modifications at CW-15A were completed in late 2016, as this wellhead is located within a trailer parking area for the new ERLC. The pitless adapter and wellhead were lowered to meet the planned parking area finish grade elevation.

6.3 Groundwater Chemistry

The groundwater quality analysis data from the 2016 collection well sampling is presented in Table A-1 (Appendix A). Figure 6-1 illustrates the historical concentration of TCE that has been measured in the four original WPL extraction wells (excluding CW-20). The historical concentrations of the dominant VOCs (TCE, PCE, TCA, and cis-1,2-DCE) are illustrated in Figures 6-2 through 6-6 for CW-9, CW-13, CW-15A, CW-17, and CW-20, respectively. The highest concentration of VOCs continue to be found at CW-15A, with the level of TCA (up to 11,000 ug/L) being the highest VOC detected at this extraction well during 2016, followed by cis-1,2-DCE with levels around 9,700 ug/L. TCA is not significant in any of the other WPL extraction wells. Extraction well CW-20 had the second highest levels of VOCs, dominated by PCE at concentrations of approximately 1,700 ug/L, and TCE with a concentration of approximately 600 ug/L. Although the amount of VOCs detected in extraction well CW-17 was less than the other WPL extraction wells, the dominant VOC for this well changed from TCE to cis-1,2-DCE following the 2013 shutdown. PCE concentrations spiked after this well was restarted in 2015, but PCE and TCE concentrations seem to have re-stabilized during 2016 (see Figure 6-5).

7.0 BUILDING 3 DEWATERING SYSTEM

The Building 3 Dewatering System was constructed in 2002 and consists of approximately 800 feet of deep interceptor trench, approximately 600 feet of shallow interceptor trench (toe drain), a collection well CW-19 (inactive since installation), and a lift station. All three components of the groundwater collection system are designed to flow to a pumping station (also referred to as a Lift Station). From the pumping station, the groundwater is transported via underground piping to the groundwater treatment facility located in Building 41A (see Figure 1-2). Groundwater collection via this system was initiated in March 2002.

7.1 System Shutdown Conditions

The Building 3 Dewatering System and Lift Station was shut down on June 19, 2013, and remained off during 2016 for the monitored shutdown study. A toe drain plug was installed at the lift station connection during the Addendum No. 7 study on June 19, 2013, preventing discharge throughout 2016. The 2015 shutdown status of the Building 3 dewatering system was reported to EPA and PADEP in an annual monitoring report (GSC, 2016b). CW-19 also did not operate in 2016 due to the lack of any groundwater in this well and the in-progress monitored shutdown study.

7.2 Groundwater Chemistry

A groundwater sample was collected from the deep drain of the lift station in October 2016. The toe drain was not sampled because a packer was installed in the drain for the Addendum No. 7, Building 3 Footer Drain Monitored Shutdown study in April 2013.

The results of the lift station sampling and further evaluation of the Building 3 Dewatering system conditions will be provided in the Year 3 Shutdown monitoring report [by GSC].

8.0 REFERENCES

GSC, 2012. Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation at the former York Naval Ordnance Plant in York, Pennsylvania, April.

GSC, 2013a. Addendum #6, to Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation Former York Naval Ordnance Plant, March 20.

GSC, 2013b. Addendum #7, to Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation Former York Naval Ordnance Plant, March 20.

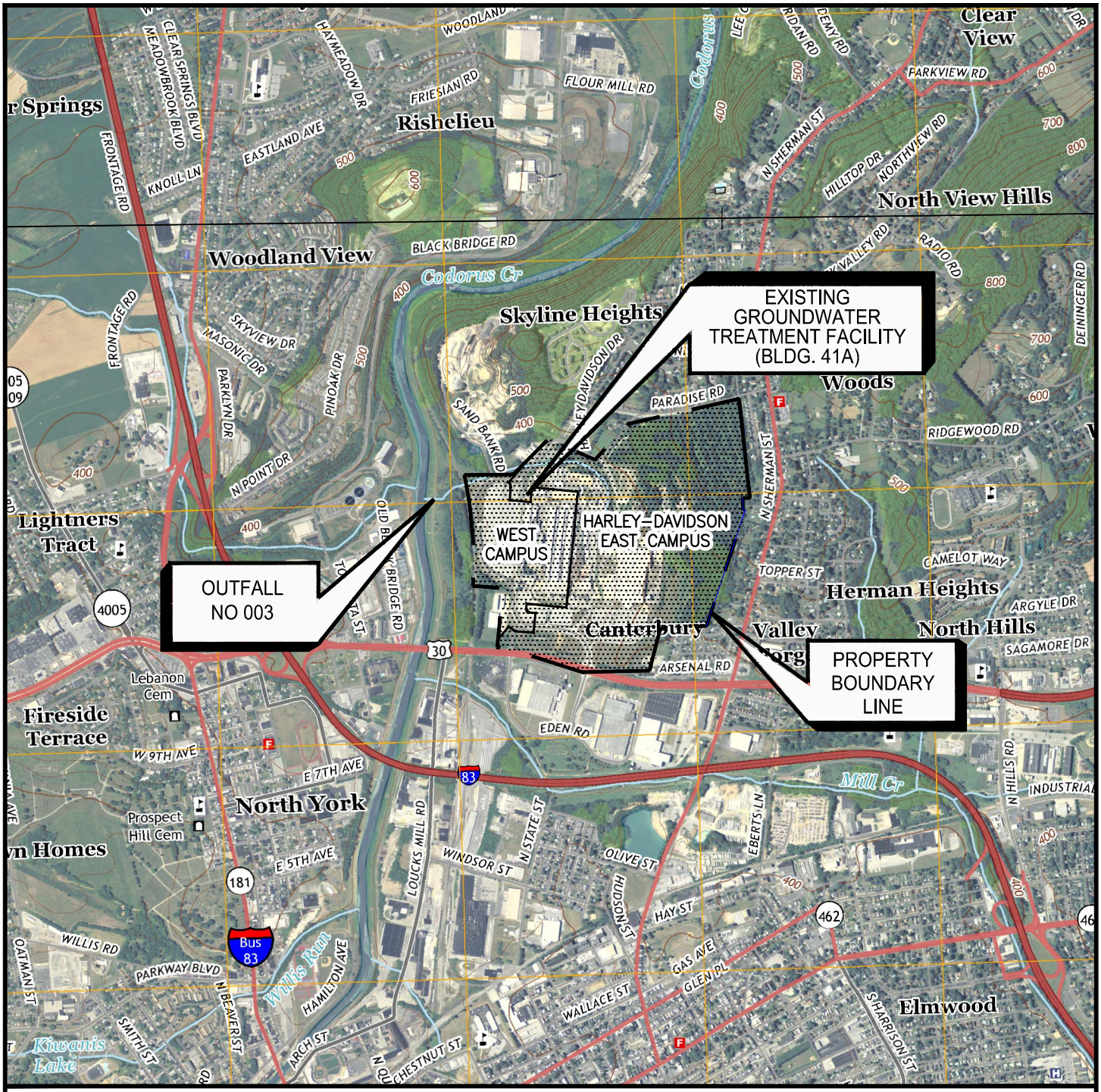
GSC, 2016a. 2015 Annual Monitoring Progress Report for the NPBA Extraction System Shutdown, Former York Naval Ordnance Plant, April.

GSC, 2016b. Second Year Progress Report of the Building 3 Footer Drain System Shutdown Monitoring, Former York Naval Ordnance Plant, April.

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

Leidos, 2016. Well Abandonment Documentation, Harley-Davidson Motor Company Operations, Inc., Former York Naval Ordnance Plant, York PA, Letter to Pennsylvania Bureau of Topographic and Geologic Survey, March 2.

FIGURES



NOTE: BASE MAP FROM THE YORK PA., USGS 7 1/2 MIN TOPOGRAPHIC QUADRANGLE 2013.

2000' 0 2000'

SCALE IN FEET

N

PA STATE PLANES
NAD 83 US FT

PENNSYLVANIA

QUADRANGLE LOCATION

FORMER YORK NAVAL ORDNANCE PLANT

1425 EDEN ROAD, YORK, PA 17402

SITE LOCATION MAP

leidos

job no.	313271.00.00.2000.100	
file no.	OM2015-001.dwg	
drawn RAM	date 11/05/15	figure no. 1-1
checked	date	
approved	date	

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NPBA CONTROL BUILDING

NPBA GROUNDWATER CONVEYANCE PIPE TO TREATMENT PLANT

GROUNDWATER TREATMENT PLANT (BLDG 41A)

TREATMENT SYSTEM DISCHARGE LINE

NPBA GROUNDWATER COLLECTION PIPE TO CONTROL BUILDING

WPL COLLECTION PIPES TO TREATMENT PLANT

LIFT STATION

BUILDING 3 DEWATERING SYSTEM

S-6-Tate Spring
S-7-Herman Spring
RW-1
RW-2
RW-3
Folk (RW-4)
RW-5
MW-1
MW-2
MW-3
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-14
MW-15
MW-17
MW-19
MW-20S
MW-20M
MW-20D
MW-22
MW-26
MW-28
MW-30
MW-32S
MW-32D
MW-36S
MW-36D
MW-37S
MW-37D
MW-38D
MW-39S
MW-39D
MW-40S
MW-40D
MW-43S
MW-43D
MW-45
MW-46
MW-47
MW-49S
MW-49D
MW-50S
MW-50D
MW-51S
MW-51D
MW-57
MW-64S
MW-64D
MW-65S
MW-65D
MW-66S
MW-66D
MW-67S
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MW-68
MW-69
MW-70S
MW-70D
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MW-74D
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MW-79
MW-80
MW-81S
MW-81D
MW-82
MW-84
MW-85
MW-86S
MW-86D
MW-87
MW-88
MW-91
MW-92
MW-93S
MW-93D
MW-95
MW-96S
MW-96D
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MW-100I
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MW-102S
MW-102D
MW-103S
MW-103D
MW-104
MW-105
MW-106
MW-107
MW-108S
MW-108D
MW-111
MW-112
MW-113
MW-114
MW-115
MW-116
MW-126
MW-127
MW-128
MW-129
MW-131
MW-134
MW-136A
MW-137A
MW-138A
MW-139A
MW-140A
MW-141A
MW-142S
MW-142D
MW-143S
MW-143D
MW-144
MW-146
MW-147A
MW-148A
MW-150
MW-151
MW-155
MW-156
MW-161
MW-162
MW-164
MW-165
MW-166
MW-167
MW-168
MW-169
MW-170
MW-171
MW-172
MW-173
MW-174
MW-175
MW-16S
MW-16D
MW-18S
MW-18D
Ru-MW-1
Ru-MW-2
Ru-MW-3
Ru-MW-4
Ru-MW-4R
Ru-MW-5
Ru-MW-6
Ru-MW-7
Ru-MW-8
Ru-MW-9
Ru-MW-10
Ru-MW-100
Ru-MW-101
Ru-MW-102
Ru-MW-103
Ru-MW-109S
Ru-MW-109D
WPL-SS-7
WPL-SS-8
S-1
S-2
S-3
S-4
S-9
CW-1
CW-1A
CW-2
CW-3
CW-4
CW-5
CW-6
CW-7
CW-7A
CW-9
CW-13
CW-14
CW-15A
CW-17
CW-19
CW-20
Codorus 1
Codorus 2
Spring at Bldg 14 S2
Spring at Bldg 14 S1
Former USTs T-4, T-9
Former TCA Tank Area
Building 2 Drum Storage Area
North End Test Track
Bunker and Shell Ranges
East Landfill Area
Cyanide Spill Area
South Property Boundary Area
North Property Boundary Area
Cole D
Cole Steel Well 1
Cole E Shallow
Cole E Deep
Cole F
Cole Steel Well 2

Legend

- Stream Gauge and Designation
- Extraction Well and Designation
- Monitoring Well and Designation
- Spring
- Stream and Ponds
- Abandoned Piping
- Treatment System Features
- Harley-Davidson (East Campus) Boundary
- West Campus Boundary
- Groundwater Interceptor Trenches
- NPBA Area
- Former TCA Area
- WPL Area
- Stormwater Basin
- Existing Building
- Removed Building
- Roads Curb Boundary
- Railroad

N

NOTE:
1. *Base data (Buildings, Building Boundaries, Roads and Curbs) from NuTec Survey conducted in 2006.*

0 205 410 820
SCALE IN FEET

FORMER YORK NAVAL ORDNANCE PLANT
1425 Eden Rd York, Pa 17402

GROUNDWATER TREATMENT SYSTEM LOCATION

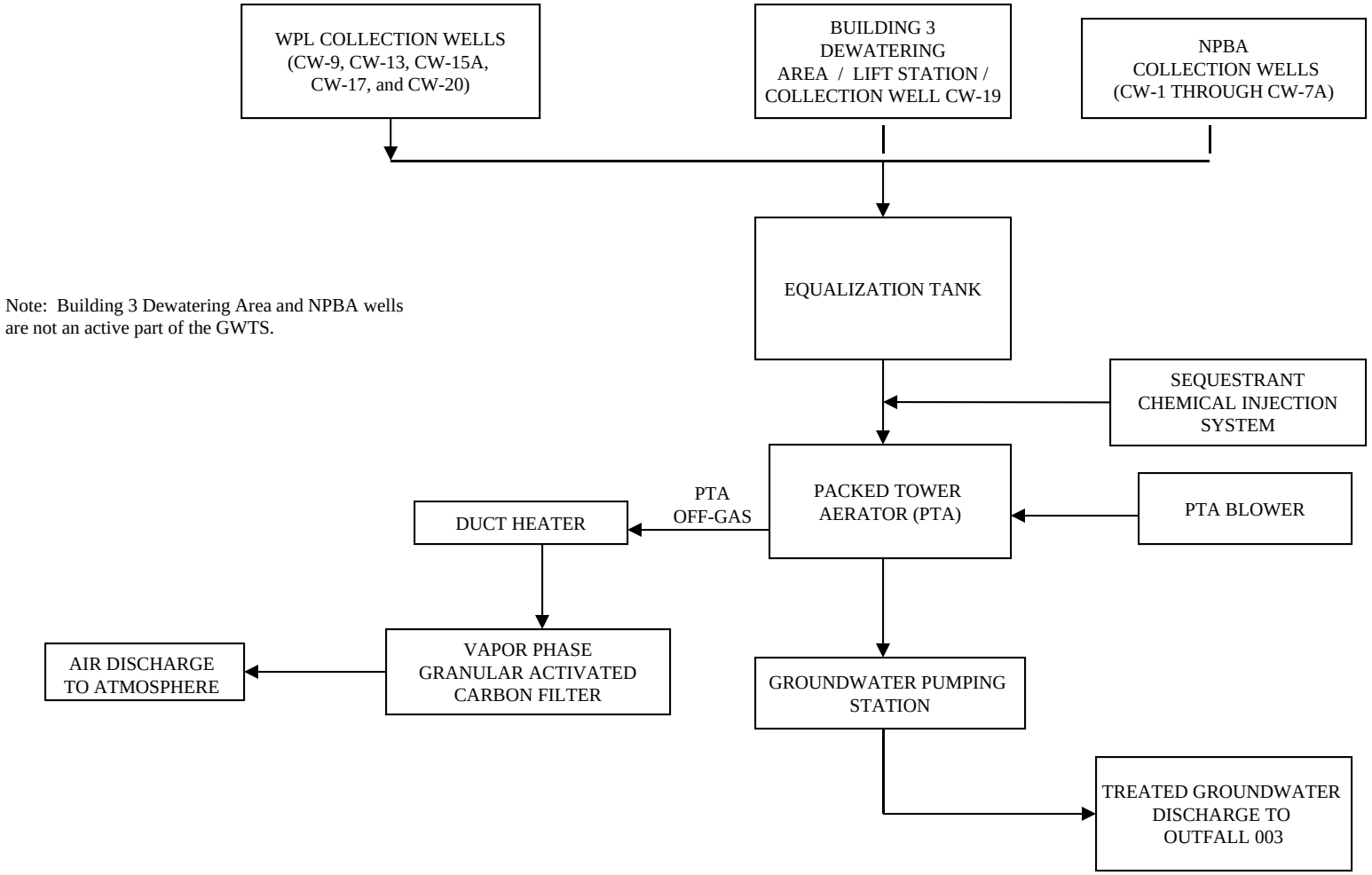
drawn JEB	checked	approved	figure no. 1-2
date 2/13/2011	date	date	
job no. 313271.00.00.2000.100			file no. OM_GWTS_Site_Map

initials	date	revision
RAM	11/15/12	AS BUILT UPDATES
TAY	01/05/17	AS BUILT UPDATES

leidos

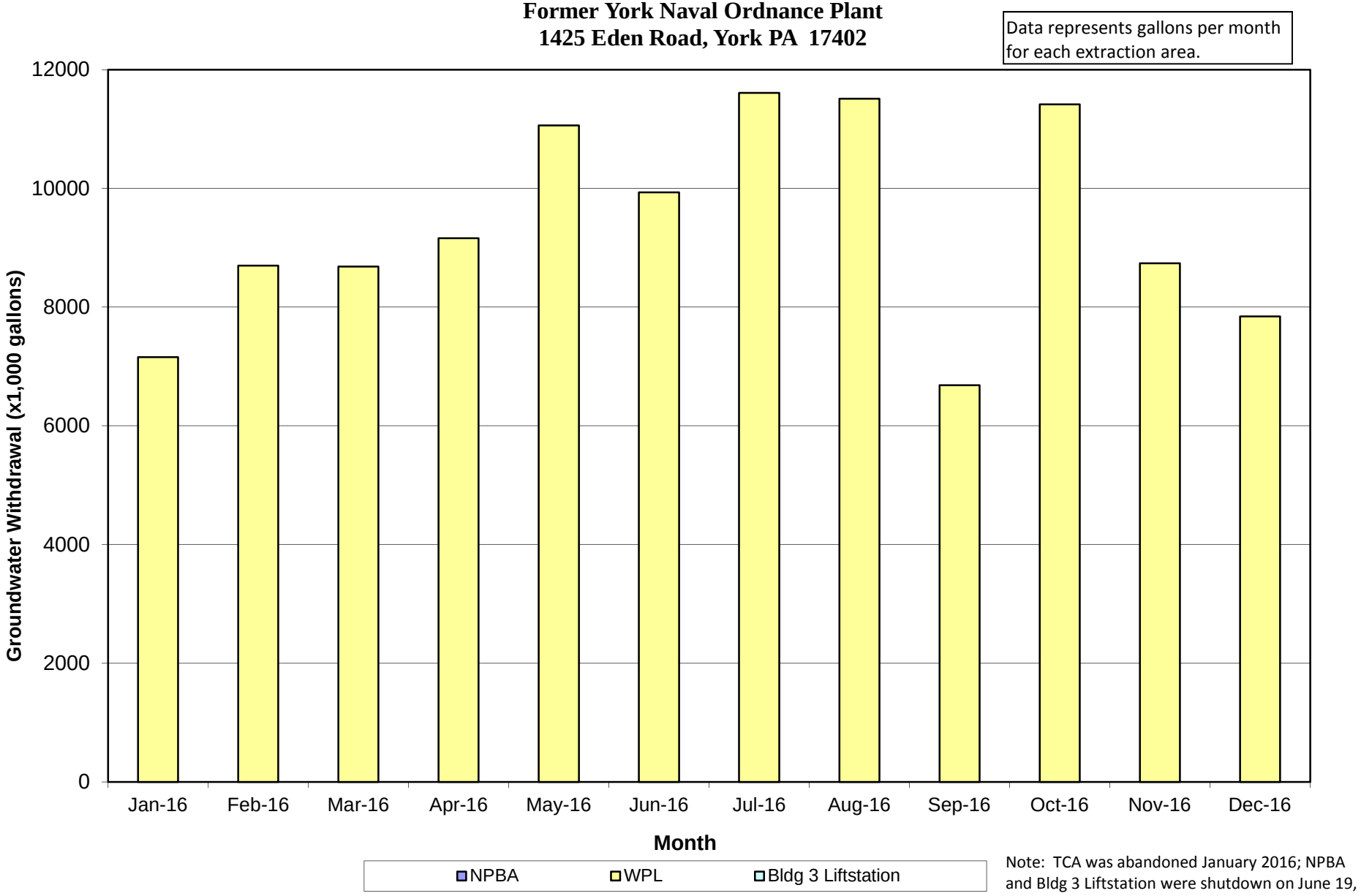
Path: D:\Harrisburg\GISData\Harley\Projects\Key Well Reports\2011 Key Well\Final\OM_GWTS_Site_Map.mxd

FIGURE 1-3
GROUNDWATER TREATMENT SYSTEM FLOW DIAGRAM
Former York Naval Ordnance Plant



Note: Building 3 Dewatering Area and NPBA wells are not an active part of the GWTS.

Figure 4-1
2016 Groundwater Withdrawals
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402



Note: TCA was abandoned January 2016; NPBA and Bldg 3 Liftstation were shutdown on June 19, 2013 for a PADEP and USEPA approved shutdown

Figure 4-2
Packed Tower Aerator Influent Chemistry
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

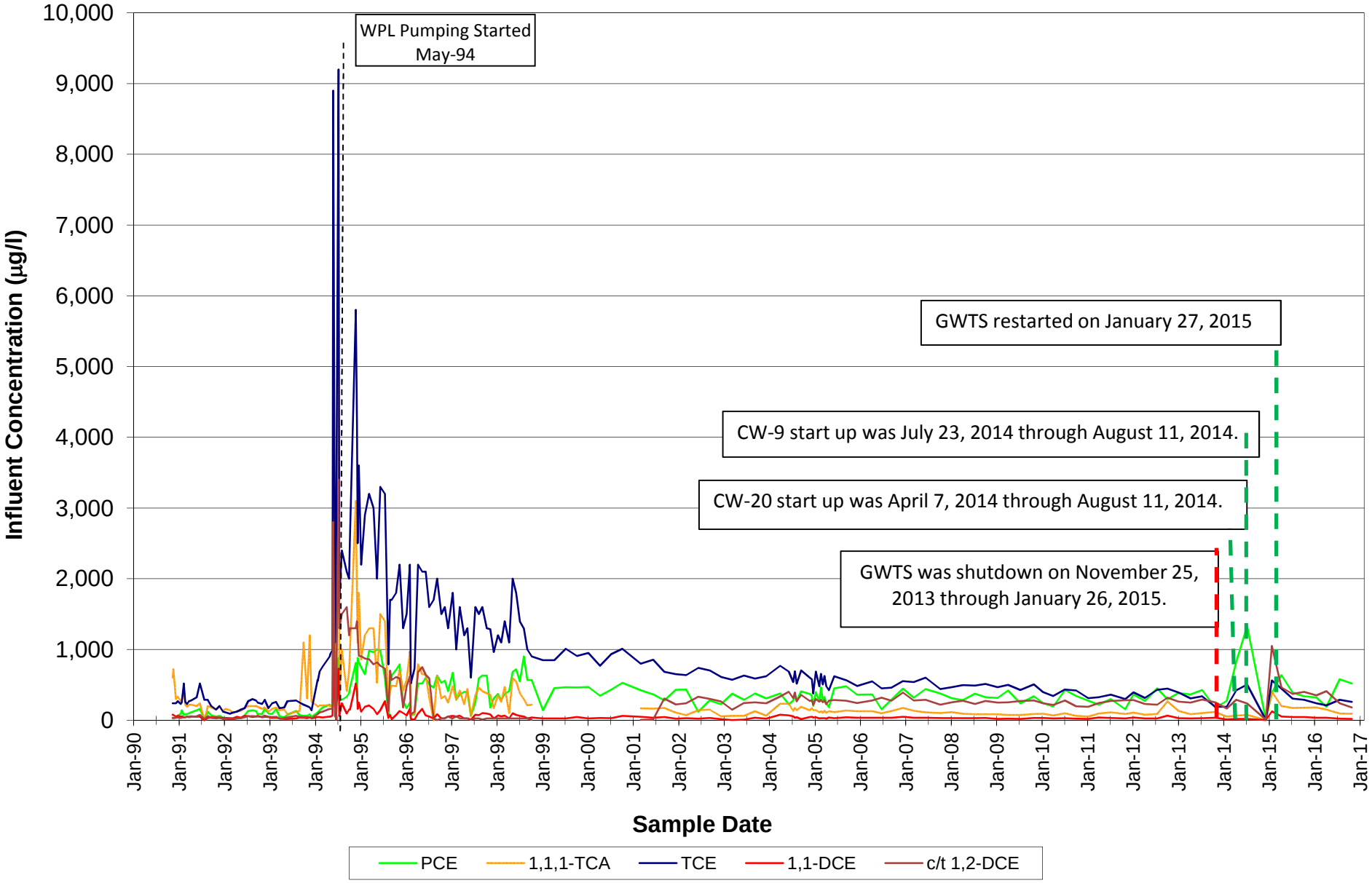


Figure 6-1
TCE in WPL Collection Wells
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

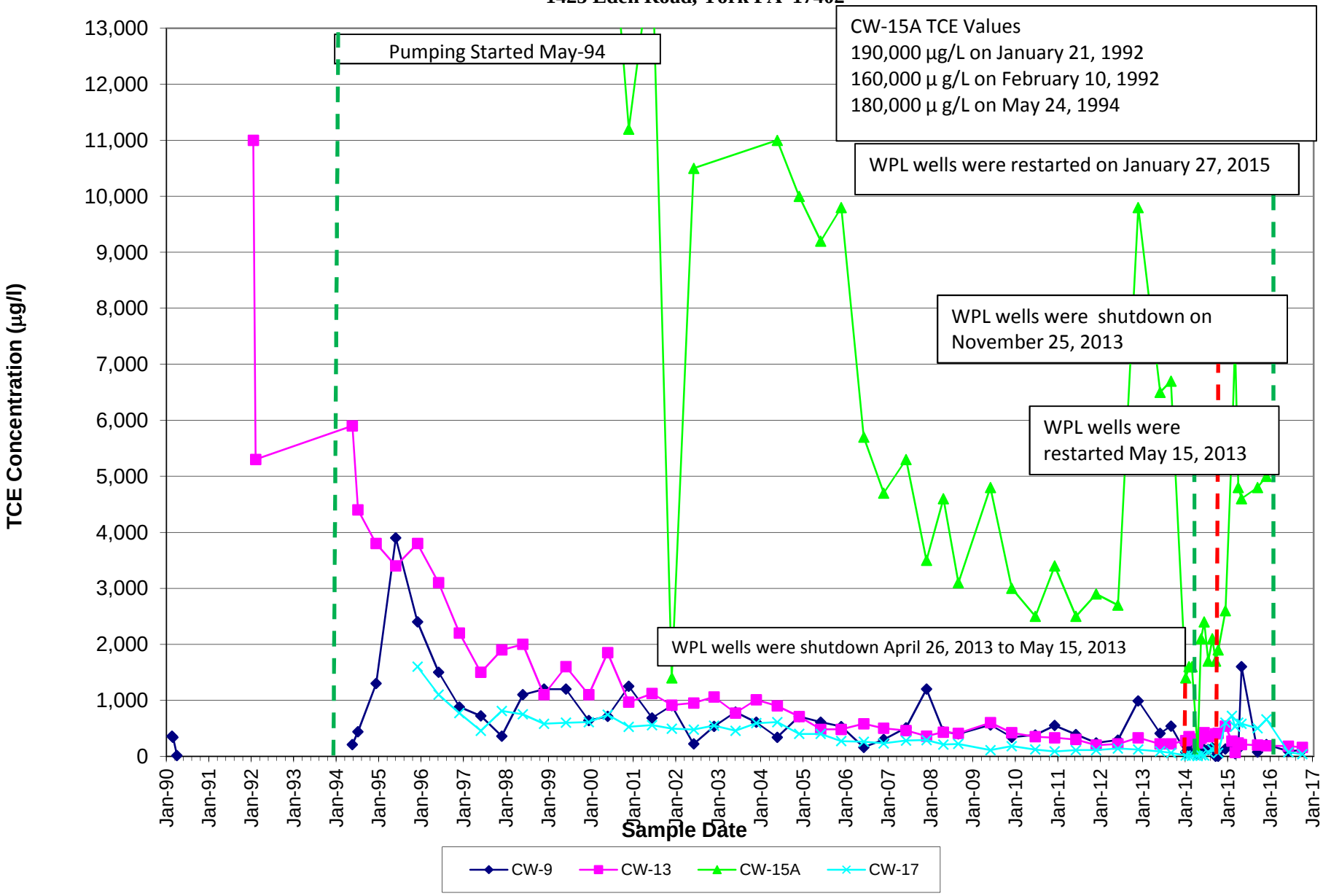


Figure 6-2
Predominant VOC Concentrations - Collection Well CW-9
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

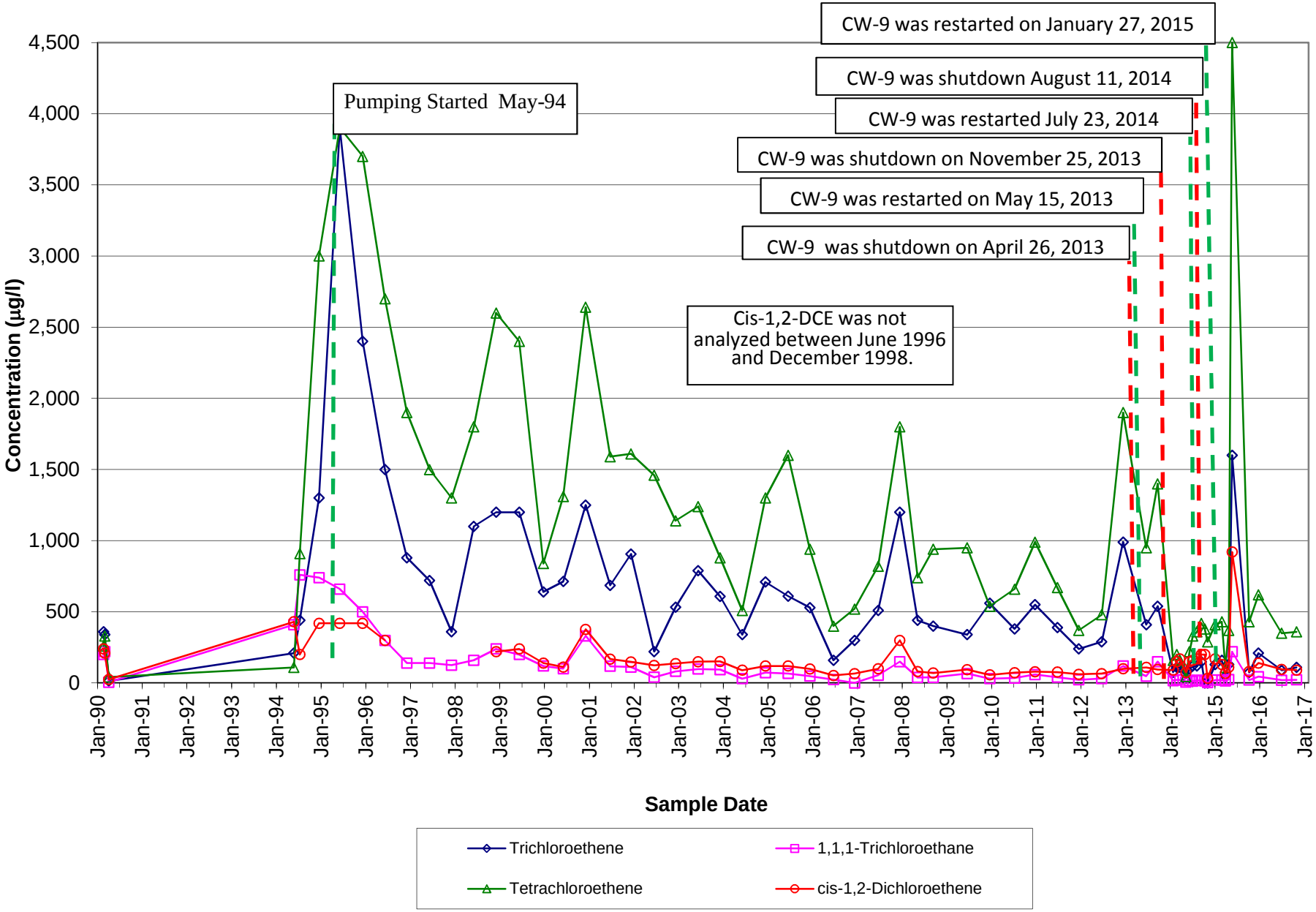


Figure 6-3
Predominant VOC Concentrations - Collection Well CW-13
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

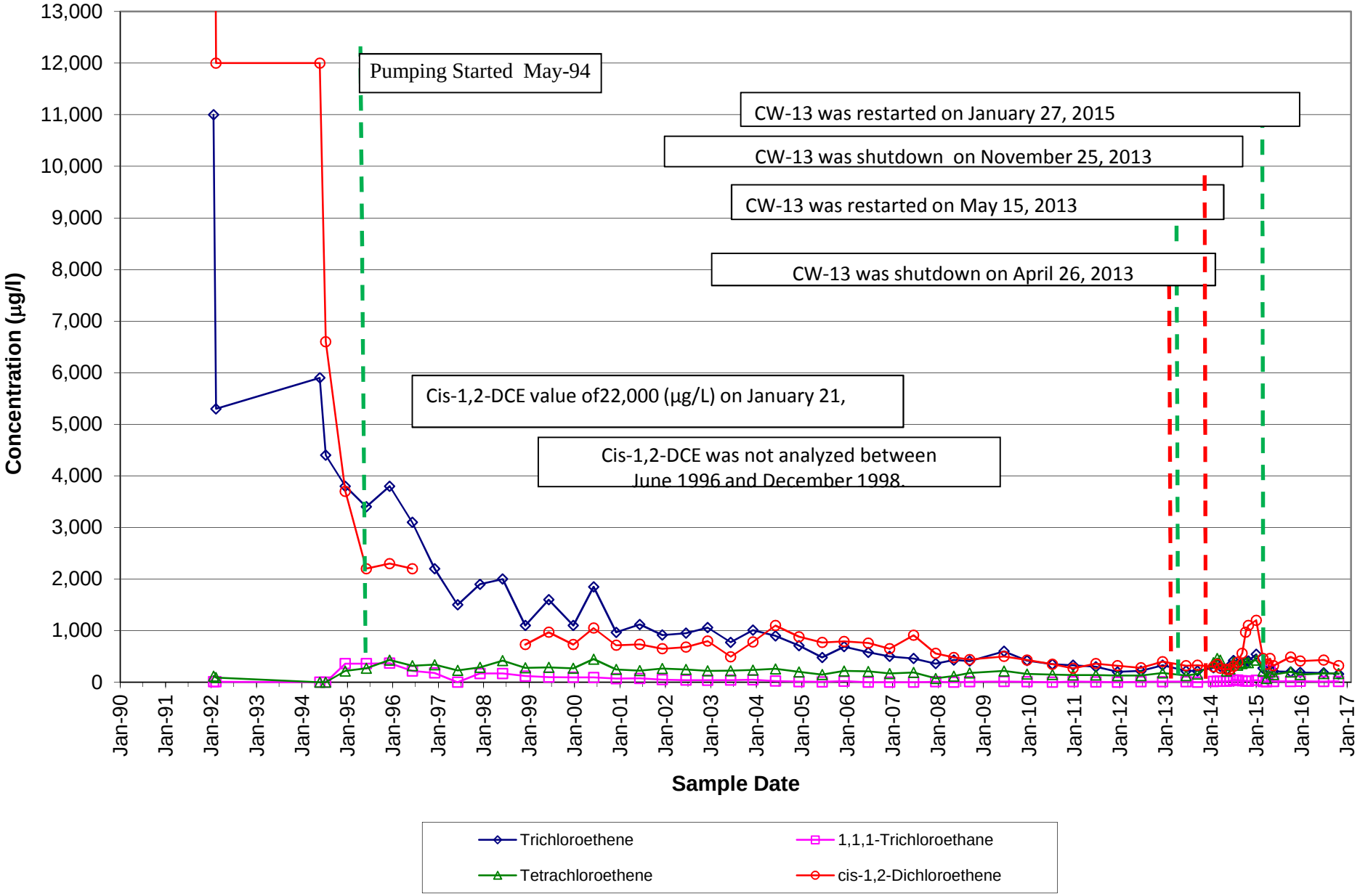


Figure 6-4
Predominant VOC Concentrations - Collection Well CW-15A
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

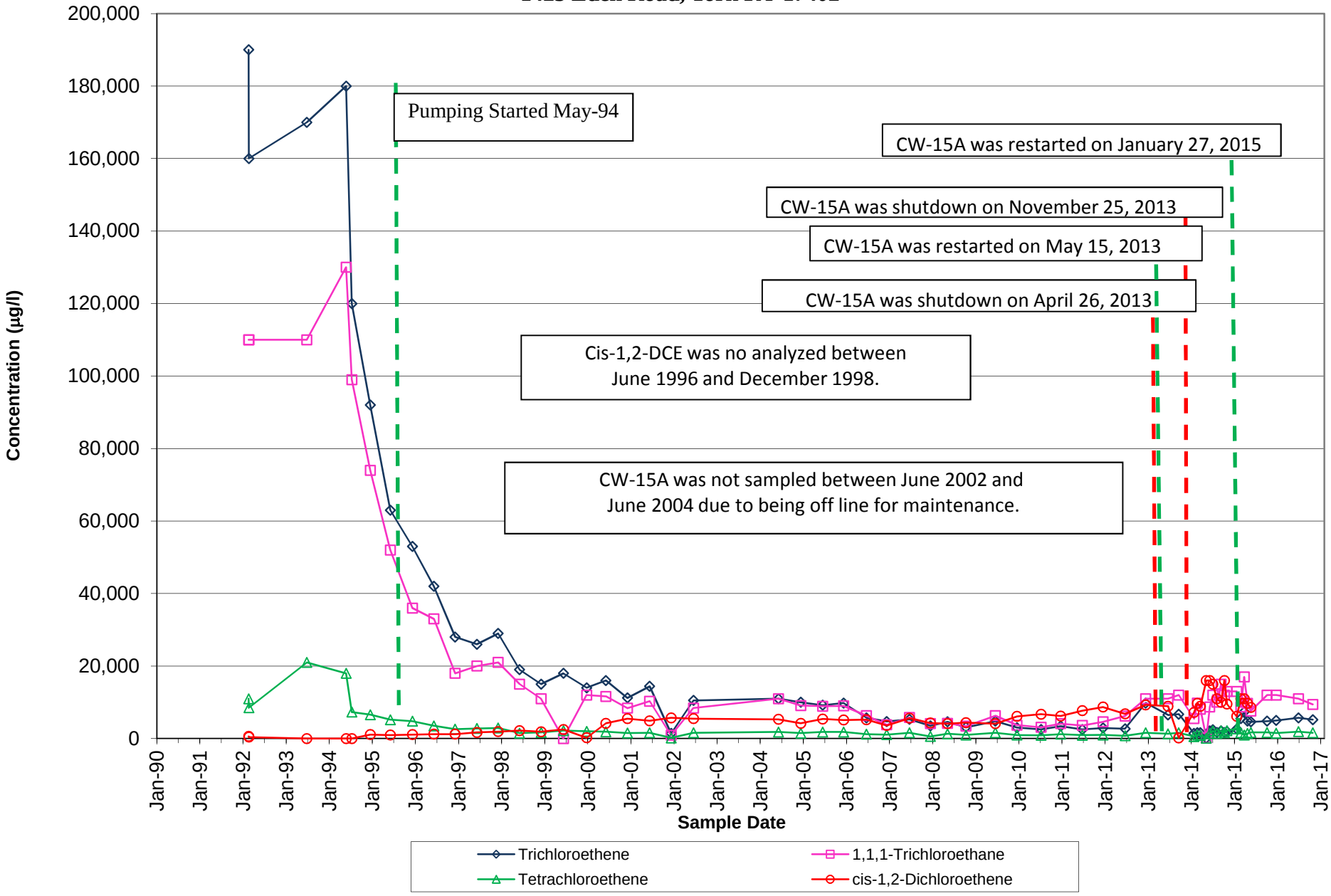


Figure 6-5
Predominant VOC Concentrations
Collection Well CW-17
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

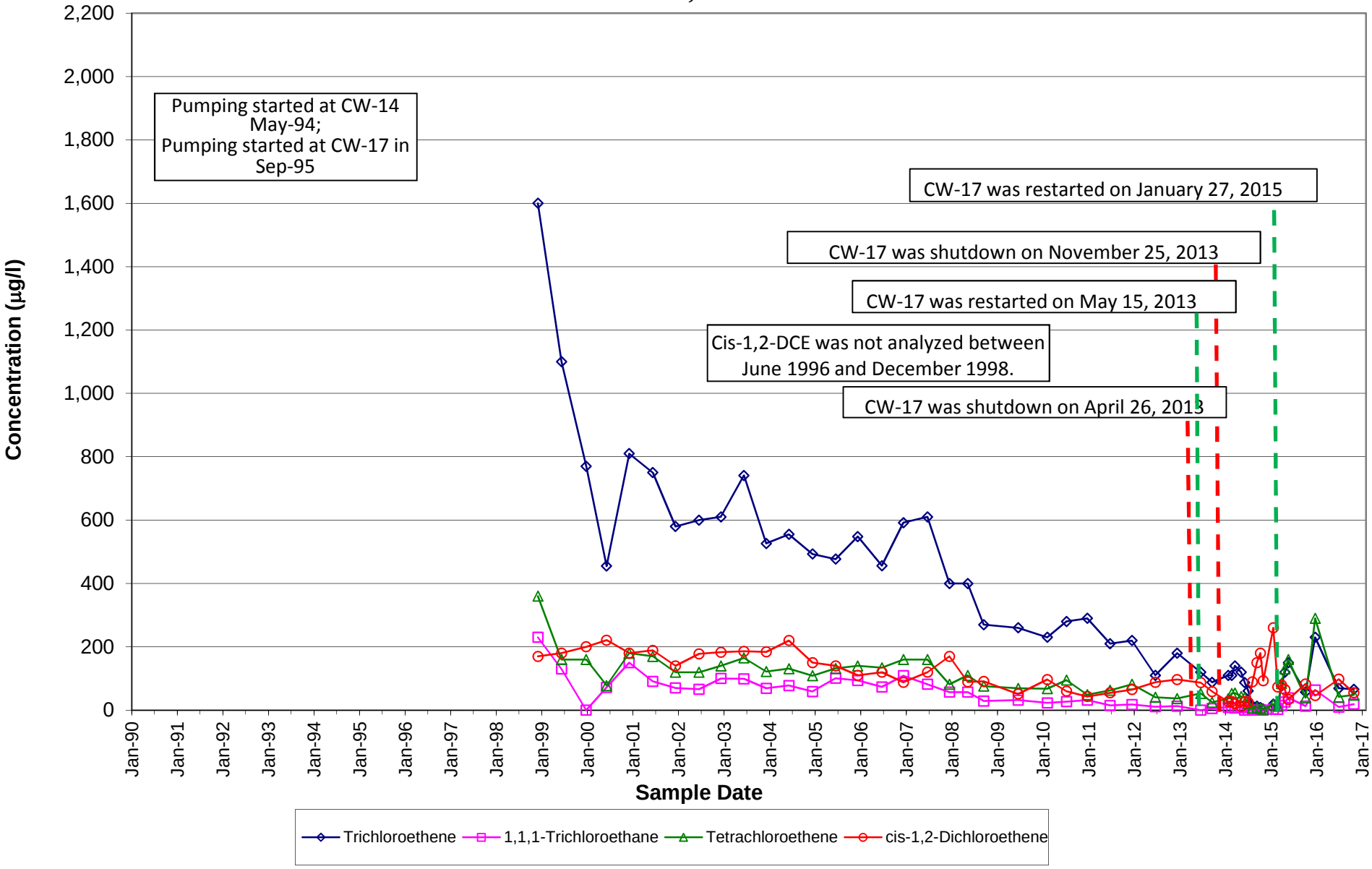
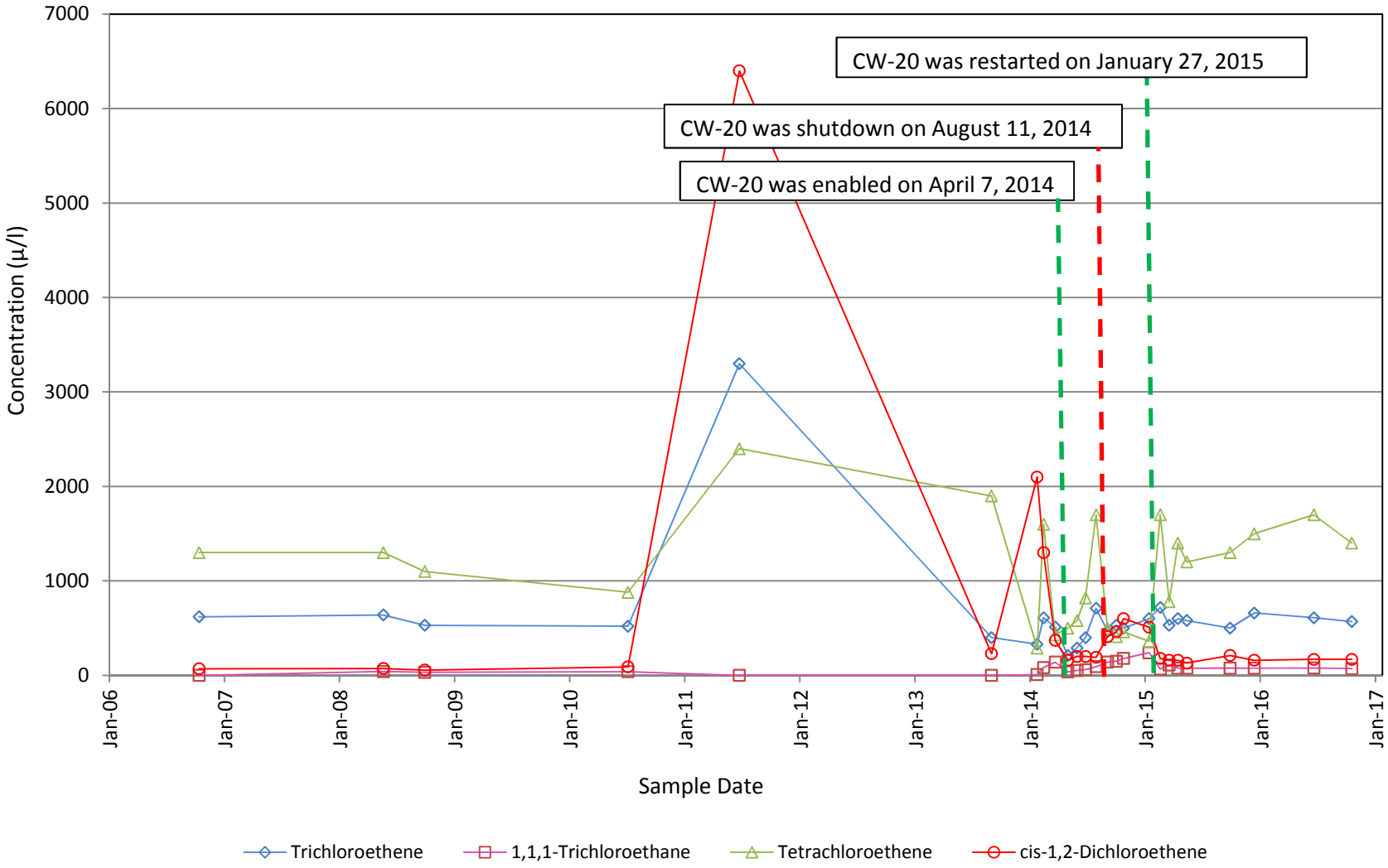


Figure 6-6
Predominate VOC Concentrations
Collection Well CW-20
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402



TABLES

TABLE 4-1
VOCs REMOVED FROM COLLECTED GROUNDWATER
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

JANUARY 1, 2016 - DECEMBER 31, 2016				
DATE	MONTHLY GROUNDWATER WITHDRAWAL (AST Totalizer, gallons)	AVERAGE MONTHLY TOTAL VOCs (ppb)		ESTIMATED MONTHLY VOC REMOVAL (pounds)
Jan-16	7,592,324	1135		72
Feb-16	8,981,539	1135	*	85
Mar-16	8,795,716	1135	*	83
Apr-16	9,292,731	1004		78
May-16	11,253,965	1004	*	94
Jun-16	10,146,979	1004	*	85
Jul-16	11,723,540	1237		121
Aug-16	11,415,376	1237	*	118
Sep-16	6,608,180	1237	*	68
Oct-16	11,410,066	1074		102
Nov-16	8,803,058	1074	*	79
Dec-16	7,950,548	1074	*	71
TOTAL	**113,974,022**	**NA**		**1,058**

NOTES:

1. * - No sample collected this month; concentration is the most recent
2. NA - Not Applicable

ANNUAL TOTALS		
YEAR	GROUNDWATER WITHDRAWAL (gallons)	ESTIMATED VOC REMOVAL (pounds)
1990 (NOV & DEC)	12,954,886	92
1991	62,458,393	357
1992	66,081,120	322
1993	72,198,940	421
1994	88,387,251	3,905
1995	141,357,856	5,572
1996	152,168,899	3,631
1997	150,246,400	2,675
1998	157,461,800	2,795
1999	133,687,100	1,464
2000	152,839,477	1,785
2001	134,557,249	1,659
2002	121,290,897	1269
2003	153,097,508	1,599
2004	140,725,167	1,786
2005	134,503,508	1,550
2006	125,192,364	1,295
2007	149,331,940	1,734
2008	155,341,655	1,560
2009	161,171,721	1,584
2010	159,042,802	1,388
2011	154,368,351	1,196
2012	153,624,656	1,519
2013	145,516,783	1,321
2014	17,300,548	262
2015	105,746,121	1,501
2016	113,974,022	1,058
Total	**3,200,653,392**	**45,301**

TABLE 5-1
RECORD OF GROUNDWATER WITHDRAWALS
JANUARY 1, 2016 - DECEMBER 31, 2016
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

MONTH	NPBA WELLS (gallons)										WPL WELLS (gallons)						Building 3 De-Watering System	MONTHLY TOTAL
	CW-1	CW-1A	CW-2	CW-3	CW-4	CW-5	CW-6	CW-7	CW-7A	SUBTOTAL	CW-9	CW-13	CW-15A	CW-17	CW-20	SUBTOTAL		
Jan-16	0	0	0	0	0	0	0	0	0	0	1,385,363	2,806,626	90,003	2,222,862	653,071	7,157,925	0	7,157,925
Feb-16	0	0	0	0	0	0	0	0	0	0	1,533,328	2,986,909	112,188	3,298,858	766,508	8,697,791	0	8,697,791
Mar-16	0	0	0	0	0	0	0	0	0	0	1,614,059	3,192,360	99,774	2,993,411	785,565	8,685,169	0	8,685,169
Apr-16	0	0	0	0	0	0	0	0	0	0	1,461,741	3,040,424	82,216	2,121,708	2,455,703	9,161,792	0	9,161,792
May-16	0	0	0	0	0	0	0	0	0	0	1,511,633	3,159,290	88,975	2,431,310	3,870,714	11,061,922	0	11,061,922
Jun-16	0	0	0	0	0	0	0	0	0	0	1,305,194	2,337,274	74,180	2,743,904	3,473,583	9,934,135	0	9,934,135
Jul-16	0	0	0	0	0	0	0	0	0	0	1,490,505	2,959,715	80,491	3,195,364	3,882,413	11,608,488	0	11,608,488
Aug-16	0	0	0	0	0	0	0	0	0	0	1,001,017	3,031,493	74,099	3,846,404	3,556,236	11,509,249	0	11,509,249
Sep-16	0	0	0	0	0	0	0	0	0	0	68,885	2,668,339	53,780	3,718,544	172,778	6,682,326	0	6,682,326
Oct-16	0	0	0	0	0	0	0	0	0	0	1,469,728	2,685,178	79,434	3,490,512	3,691,369	11,416,221	0	11,416,221
Nov-16	0	0	0	0	0	0	0	0	0	0	1,288,084	2,181,179	30,466	2,408,637	2,830,934	8,739,300	0	8,739,300
Dec-16	0	0	0	0	0	0	0	0	0	0	1,268,382	2,368,060	62,890	1,591,002	2,551,385	7,841,719	0	7,841,719
TOTALS	0	0	0	0	0	0	0	0	0	0	15,397,919	33,416,847	928,496	34,062,516	28,690,259	112,496,037	0	112,496,037

VALUES ARE IN GALLONS FOR EACH EXTRACTION WELL

Notes: Monthly groundwater withdrawal value from Table 4-1 differs slightly from the monthly total in the last column above. The value in Table 4-1 is taken directly from the PTA totalizer, while the value in the last column of this table is the sum of the individual well tot

--NPBA wells were temporarily disabled on June 19, 2013 for the FSP Addendum No. 6 study.

--Building 3 De-Watering System as temporarily disabled on June 19, 2013 for the FSP Addendum No. 7 study.

--CW-8 pumping was discontinued in November 2013. The extraction well was abandoned in early 2016.

APPENDIX A

Data Tables

Table A-1.
Groundwater Data Summary - CW_2016
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	PA MSC UA R (ug/L)	PA MSC UA NR (ug/L)	Federal MCL (ug/L)	EPA RSL (ug/L)	CW-9 6/27/16	CW-9 10/26/16	CW-13 6/27/16	CW-13 10/25/16	CW-15A 6/27/16	CW-15A 10/26/16	CW-17 6/27/16	CW-17 10/26/16	CW-17 Dup 10/26/16	CW-20 6/27/16	CW-20 10/26/16
1,4 Dioxane															
1,4-Dioxane	6.4	32		0.78						120					
TOTAL VOC															
TOTAL VOC					572.8	594.2	809	681.8	31130	26770	238.7	123.1	112.3	2574	2238
Volatile Organic Compound															
1,1,1,2-Tetrachloroethane	70	70		0.57	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,1,1-Trichloroethane	200	200	200	8000	20 J	23	15	17 J	11000	9400	8.4	4.9	4.2	79	71
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,1,2-Trichloroethane	5	5	5	0.28	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,1-Dichloroethane	31	160		2.7	25 U	4.3 J	5.3 J	5.5 J	150 J	170 J	4.3 J	2.5	2.2	50 U	13 J
1,1-Dichloroethene	7	7	7	280	8.2 J	5.9 J	8.7 J	9.3 J	2500	1800	7	3.7	2.9	15 J	14 J
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,2-Dichloroethane	5	5	5	0.17	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,2-Dichloropropane	5	5	5	0.44	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
1,4-Dioxane	6.4	32		0.78	R	2500 U ^c	R	4000 U ^c	R	100000 U ^c	R	400 U ^c	400 U	R	10000 U ^c
2-Butanone	4000	4000		5600	130 U	63 U	50 U	100 U	2500 U	2500 U	25 U	10 U	10 U	250 U	250 U
2-Hexanone	63	260		38	130 U	63 U	50 U	100 U	2500 U	2500 U	25 U	10 U	10 U	250 U	250 U
4-Methyl-2-Pentanone	3300	9300		1200	130 U	63 U	50 U	100 U	2500 U	2500 U	25 U	10 U	10 U	250 U	250 U
Acetone	38000	110000		14000	130 U	63 U	50 U	100 U	2500 U	2500 U	25 U	10 U	10 U	250 U	250 U
Acrylonitrile	0.72	3.7		0.052	250 U	250 U	100 U	400 U	5000 U	10000 U	50 U	40 U	40 U	500 U	1000 U
Benzene	5	5	5	0.45	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Bromochloromethane	90	90		83	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Bromodichloromethane	80	80		0.13	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Bromoform	80	80		9.2	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U ^c	50 U	50 U
Bromomethane	10	10		7.5	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Carbon Disulfide	1500	6200		810	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U ^c	50 U	50 U
Carbon Tetrachloride	5	5	5	0.45	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Chlorobenzene	100	100	100	78	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Chlorodibromomethane	80	80		0.17	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Chloroethane	250	1200		21000	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Chloroform	80	80		0.22	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Chloromethane	30	30		190	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
cis-1,2-Dichloroethene	70	70	70	36	96	91	430	320	9700	8600	98	55 F1	51	170	170
cis-1,3-Dichloropropene	7.3	34		0.47	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Ethylbenzene	700	700	700	1.5	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Methyl tert-butyl ether	20	20		14	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Methylene chloride	5	5		11	9.6 J	13 U	10 U	20 U	180 J	500 U	5.0 U	2 U	2 U	50 U	50 U
Styrene	100	100	100	1200	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Tetrachloroethene	5	5	5	11	350	360	170	170	1900	1600	49	20	19	1700	1400
Toluene	1000	1000	1000	1100	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
trans-1,2-Dichloroethene	100	100	100	360	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
trans-1,3-Dichloropropene	7.3	34		0.47	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Trichloroethene	5	5	5	0.49	89	110	180	160	5700	5200	72	37 F1	33	610	570
Vinyl Chloride	2	2	2	0.019	25 U	13 U	10 U	20 U	500 U	500 U	5.0 U	2 U	2 U	50 U	50 U
Xylenes (Total)	10000	10000	10000	190	50 U	25 U	20 U	40 U	1000 U	1000 U	10 U	4 U	4 U	100 U	100 U

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference.

TABLE A-2
WATER QUALITY ANALYSES
PACKED TOWER AERATOR SAMPLES (January 1, 2016 - December 31, 2016)
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

Sample ID Lab ID Sample Date Parameter	Units	Outfall #003 GWTS WW 8207798 1/14/2016 Result	Outfall #003 GWTS WW 8317358 4/4/2016 Result	Outfall #003 GWTS WW 8486360 7/21/2016 Result	Outfall #003 GWTS WW 8664484 10/26/2016 Result
1,1-DICHLOROETHENE	µg/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TETRACHLOROETHENE	µg/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TRICHLOROETHENE	µg/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
METHYLENE CHLORIDE	µg/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
VINYL CHLORIDE	µg/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TOTAL VOCs	µg/l	0	0	0	0

Sample ID Lab ID Sample Date Parameter	Units	Influent to #003 GWTS WW 8207797 1/14/2016 Result	Influent to #003 GWTS WW 8317357 4/4/2016 Result	Influent to #003 GWTS WW 8486359 7/21/2016 Result	Influent to #003 GWTS WW 8664483 10/26/2016 Result
1,1,1-TRICHLOROETHANE	µg/l	180	150	93	91
1,1-DICHLOROETHANE	µg/l	6.8	7.2	8.3	6.3
1,1-DICHLOROETHENE	µg/l	36	34	23	17
1,2-DICHLOROETHANE	µg/l	N.D.@1	N.D.@1	0.1	N.D.@1
CHLOROBENZENE	µg/l	N.D.@1	N.D.@1	N.D.@1	N.D.@1
CHLOROFORM	µg/l	N.D.@1	N.D.@1	0.4	N.D.@1
METHYLENE CHLORIDE	µg/l	N.D.@2	N.D.@2	N.D.@2	N.D.@2
TETRACHLOROETHENE	µg/l	320	190	580	520
TRICHLOROETHENE	µg/l	240	210	290	260
VINYL CHLORIDE	µg/l	1.1	1.7	0.9	N.D.@1
CIS 1,2-DICHLOROETHENE	µg/l	350	410	240	180
TRANS 1,2-DICHLOROETHENE	µg/l	1.3	1.2	0.8	N.D.@1
TOTAL VOCs	µg/l	1135	1004	1237	1074

All Analysis Performed by Eurofins Lancaster Laboratories Environmental (ELLE) - Lancaster, PA
µg/l - micrograms per liter
N.D.@1 - not detected at indicated concentration
PTA Infl. - Official sample name is "influent to #003 GWTS"
PTA Effl. - Official sample name is "outfall #003 GWTS"

APPENDIX B

2016 Access® Database Summary
Groundwater Treatment Plant Operations

Leidos Inc.

6310 Allentown Boulevard, Suite 110 / Harrisburg, PA 17112 / 717.901.8100 leidos.com

Harley-Davidson Motor Company

Groundwater Treatment Plant Operations

From: 1/1/2016
To: 12/31/2016

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
1/1/2016	1	23.90	1	23.90	287938	6	11.80	3	12.00	1534	6.9	0
1/2/2016	1	23.90	1	23.90	287872	7	11.70	3	12.00	1617	6.8	0
1/3/2016	1	23.90	1	23.90	287792	7	11.90	3	11.70	1547	6.9	0
1/4/2016	1	23.90	1	23.90	287002	11	12.00	4	11.30	1758	7.0	0
1/5/2016	1	23.90	1	23.90	283738	16	12.00	5	10.80	1816	7.0	0
1/6/2016	1	23.90	1	23.90	281194	17	12.00	4	10.90	1737	7.0	0
1/7/2016	1	23.90	1	23.90	277932	16	11.60	7	10.90	1614	7.0	0
1/8/2016	1	23.90	1	23.90	274727	19	10.40	8	12.00	1504	7.0	0
1/9/2016	1	23.90	1	23.90	274363	18	10.60	7	12.00	1435	6.9	0
1/10/2016	1	23.90	1	23.90	273965	15	11.20	6	11.60	1428	6.9	0
1/11/2016	1	23.90	1	23.90	275164	14	12.00	7	10.90	1747	6.9	0
1/12/2016	1	23.90	1	23.90	275280	14	12.00	5	11.10	1776	7.0	0
1/13/2016	1	23.90	1	23.90	274123	15	12.00	5	11.00	1807	7.0	0
1/14/2016	1	23.90	1	23.90	273810	12	12.00	5	11.20	1629	7.0	0
1/15/2016	1	23.90	1	23.90	275104	10	11.50	3	11.80	1559	7.0	0
1/16/2016	1	23.90	1	23.90	277615	10	11.50	3	12.00	1451	7.0	0
1/17/2016	1	23.90	1	23.90	277152	13	11.20	4	12.00	1730	7.0	0
1/18/2016	1	23.90	1	23.90	277997	15	11.10	3	12.00	1830	7.0	0
1/19/2016	1	23.90	1	23.90	277790	17	11.00	3	12.00	1818	7.0	0
1/20/2016	1	23.90	1	23.90	277737	17	11.20	3	11.60	1756	7.0	0
1/21/2016	1	23.90	1	23.90	277494	17	12.00	5	10.80	1765	7.0	0
1/22/2016	1	23.90	1	23.90	277295	18	12.00	6	10.70	1800	7.0	0
1/23/2016	1	11.40	1	11.40	131425	7	4.20	4	6.60	1156	5.8	0
1/24/2016	0	0.00	0	0.00	0	0	0.00	0	0.00	530	4.5	0
1/25/2016	0	0.00	0	0.00	0	0	0.00	0	0.00	470	3.7	0
1/26/2016	0	0.00	0	0.00	0	0	0.00	0	0.00	364	3.1	0
1/27/2016	1	17.10	1	17.10	193840	4	8.90	2	8.00	1241	7.0	0
1/28/2016	1	23.90	1	23.90	273191	9	11.60	3	12.00	1662	6.9	0
1/29/2016	1	23.90	1	23.90	285452	5	11.90	3	12.00	1709	6.9	0
1/30/2016	1	23.90	1	23.90	288691	6	11.80	3	12.00	1672	6.9	0
1/31/2016	1	23.90	1	23.90	286641	7	11.70	3	12.00	1535	6.9	0
2/1/2016	1	23.90	1	23.90	286472	7	11.70	3	12.00	1565	6.9	0
2/2/2016	1	23.90	1	23.90	287127	9	11.80	3	11.60	1544	6.8	0
2/3/2016	1	23.90	1	23.90	288097	7	12.00	4	11.60	1432	6.9	0
2/4/2016	1	23.90	1	23.90	297572	6	12.00	4	11.70	1413	6.8	0
2/5/2016	1	23.90	1	23.90	300837	8	12.00	4	11.50	1556	6.8	0
2/6/2016	1	23.90	1	23.90	306207	5	12.00	4	11.80	1620	6.8	0
2/7/2016	1	23.90	1	23.90	308747	5	12.00	4	11.80	1600	6.8	0
2/8/2016	1	23.90	1	23.90	310212	5	12.00	4	11.80	1581	6.8	0
2/9/2016	1	23.90	1	23.90	312194	5	12.00	4	11.80	1705	6.8	0
2/10/2016	1	23.90	1	23.90	314728	3	12.00	4	11.90	1791	6.9	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
2/11/2016	1	23.90	1	23.90	315760	3	12.00	4	11.90	1851	6.9	0
2/12/2016	1	23.90	1	23.90	315099	7	12.00	4	11.50	1859	6.9	0
2/13/2016	1	23.90	1	23.90	315099	7	12.00	4	11.50	1859	6.9	0
2/14/2016	1	23.90	1	23.90	315099	7	12.00	4	11.50	1859	6.9	0
2/15/2016	1	23.90	1	95.90	315099	7	12.00	4	11.50	1859	6.9	0
2/16/2016	1	23.90	1	23.90	310491	5	11.80	3	11.90	1614	6.9	0
2/17/2016	1	23.90	1	23.90	313565	5	11.80	3	12.00	1662	6.9	0
2/18/2016	1	23.90	1	23.90	314665	4	11.90	3	12.00	1791	6.9	0
2/19/2016	1	23.90	1	23.90	314403	4	11.90	3	12.00	1815	6.9	0
2/20/2016	1	23.90	1	23.90	314209	4	11.90	3	12.00	1528	6.8	0
2/21/2016	1	23.90	1	23.90	314539	4	11.90	3	12.00	1490	6.8	0
2/22/2016	1	23.90	1	23.90	314489	4	11.90	3	12.00	1572	6.8	0
2/23/2016	1	23.90	1	23.90	314229	4	11.90	3	12.00	1737	6.8	0
2/24/2016	1	23.90	1	23.90	314475	4	11.90	3	12.00	1568	6.9	0
2/25/2016	1	23.90	1	23.90	316750	4	11.90	3	12.00	1490	6.9	0
2/26/2016	1	23.90	1	23.90	317507	4	11.90	3	12.00	1765	6.9	0
2/27/2016	1	23.90	1	23.90	317768	4	11.90	3	12.00	1624	6.9	0
2/28/2016	1	23.90	1	23.90	317741	4	11.90	3	12.00	1520	6.9	0
2/29/2016	3	22.50	3	22.40	298359	5	10.20	3	12.00	1353	6.9	0
3/1/2016	1	23.90	1	23.90	320193	4	11.90	3	12.00	1458	6.9	0
3/2/2016	1	23.90	1	23.90	320644	4	11.90	3	12.00	1590	6.8	0
3/3/2016	1	23.90	1	23.90	320809	4	11.90	3	12.00	1681	6.8	0
3/4/2016	1	23.90	1	23.90	320753	4	11.90	3	12.00	1739	6.8	0
3/5/2016	1	23.90	1	23.90	320784	4	11.90	3	12.00	1609	6.8	0
3/6/2016	1	23.90	1	23.90	316228	8	11.50	3	12.00	1576	6.8	0
3/7/2016	1	23.90	1	23.90	310166	10	11.40	3	12.00	1504	6.8	0
3/8/2016	1	23.90	1	23.90	307466	7	11.60	3	12.00	1365	6.8	0
3/9/2016	1	23.90	1	23.90	303965	8	11.40	3	12.00	1348	6.9	0
3/10/2016	1	23.90	1	23.90	301702	6	11.80	5	11.50	1326	6.9	0
3/11/2016	1	23.90	1	23.90	298109	8	12.00	7	11.20	1334	6.9	0
3/12/2016	1	23.90	1	23.90	296842	11	12.00	5	11.20	1375	6.8	0
3/13/2016	1	23.90	1	23.90	281640	8	12.00	8	12.00	1392	6.9	0
3/14/2016	1	23.90	1	23.90	282240	11	12.00	11	12.00	1368	6.9	0
3/15/2016	1	23.90	1	23.90	281040	12	12.00	12	12.00	1416	6.9	0
3/16/2016	1	23.90	1	23.90	288284	21	11.30	6	10.80	1353	6.8	0
3/17/2016	1	23.90	1	23.90	289406	20	12.00	7	10.20	1378	6.9	0
3/18/2016	1	23.90	1	23.90	288736	20	11.30	7	10.80	1391	6.9	0
3/19/2016	1	23.90	1	23.90	287873	20	10.10	8	12.00	1503	6.9	0
3/20/2016	1	23.90	1	23.90	288032	18	10.30	8	11.80	1526	6.8	0
3/21/2016	1	23.90	1	23.90	287770	23	12.00	7	10.00	1554	6.9	0
3/22/2016	1	23.90	1	23.90	272760	30	10.10	13	10.00	1502	6.9	0
3/23/2016	1	23.90	1	23.90	272459	20	9.80	13	11.70	1358	6.9	0
3/24/2016	1	23.90	1	23.90	271824	25	12.00	9	9.70	1333	6.9	0
3/25/2016	1	23.90	1	23.90	248134	26	8.00	29	11.40	1231	6.9	0
3/26/2016	1	23.90	1	23.90	236246	30	8.40	29	10.90	1271	6.9	0
3/27/2016	1	23.90	1	23.90	236233	33	11.50	11	9.40	1214	6.9	0
3/28/2016	1	23.90	1	23.90	236357	26	11.30	8	10.40	1204	6.8	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
3/29/2016	1	23.90	1	23.90	236533	24	9.70	12	12.00	1208	6.8	0
3/30/2016	1	23.90	1	23.90	236211	27	10.80	8	10.90	1307	6.9	0
3/31/2016	1	23.90	1	23.90	236277	26	12.00	7	10.00	1176	6.9	0
4/1/2016	1	23.90	1	23.90	235931	26	10.80	8	10.90	1137	6.9	0
4/2/2016	1	23.90	1	23.90	235898	24	9.90	10	12.00	1167	6.9	0
4/3/2016	1	23.90	1	23.90	236394	29	11.10	9	10.40	1344	6.8	0
4/4/2016	1	23.90	1	23.90	236019	28	12.00	9	9.70	1366	6.9	0
4/5/2016	1	23.90	1	23.90	234241	26	9.70	12	11.80	1487	6.9	0
4/6/2016	1	23.90	1	23.90	232933	25	10.20	7	11.70	1380	6.9	0
4/7/2016	2	20.40	2	20.40	233112	10	11.40	5	8.20	1172	7.0	0
4/8/2016	1	23.90	1	23.90	301565	9	11.50	3	12.00	1439	7.0	0
4/9/2016	1	23.90	1	23.90	301521	10	11.40	3	12.00	1696	7.0	0
4/10/2016	1	23.90	1	23.90	301486	10	11.40	3	12.00	1547	7.0	0
4/11/2016	1	23.90	1	23.90	302396	8	11.60	3	12.00	1404	7.0	0
4/12/2016	1	23.90	1	23.90	303901	6	11.80	3	12.00	1376	7.0	0
4/13/2016	1	23.90	1	23.90	302588	7	11.70	3	12.00	1459	7.0	0
4/14/2016	1	23.90	1	23.90	302646	8	11.60	3	12.00	1449	7.0	0
4/15/2016	1	23.90	1	23.90	344369	5	11.80	3	12.00	1430	7.0	0
4/16/2016	1	23.90	1	23.90	350269	4	11.90	3	12.00	1421	7.0	0
4/17/2016	1	23.90	1	23.90	346061	6	11.70	3	12.00	1396	7.0	0
4/18/2016	1	23.90	1	23.90	357202	5	11.80	3	12.00	1391	7.0	0
4/19/2016	1	23.90	1	23.90	361372	4	11.90	3	12.00	1388	7.0	0
4/20/2016	1	23.90	1	23.90	358727	5	11.80	3	12.00	1402	7.0	0
4/21/2016	2	14.70	2	14.70	220040	2	7.40	3	7.10	922	7.0	0
4/22/2016	1	23.90	1	23.90	364492	3	12.00	4	11.90	1393	7.0	0
4/23/2016	1	23.90	1	23.90	357394	3	12.00	4	11.90	1397	7.0	0
4/24/2016	1	23.90	1	23.90	357068	3	12.00	4	11.90	1416	7.0	0
4/25/2016	1	23.90	1	23.90	356477	3	12.00	4	11.90	1400	7.0	0
4/26/2016	1	23.90	1	23.90	354150	5	12.00	4	11.60	1366	7.0	0
4/27/2016	1	23.90	1	23.90	351724	6	12.00	4	11.50	1413	7.0	0
4/28/2016	1	23.90	1	23.90	351025	8	12.00	4	11.30	1458	7.0	0
4/29/2016	1	23.90	1	23.90	351123	8	12.00	4	11.40	1482	7.0	0
4/30/2016	1	23.90	1	23.90	350607	6	12.00	4	11.50	1447	7.0	0
5/1/2016	1	23.90	1	23.90	351070	6	12.00	4	11.60	1456	6.9	0
5/2/2016	1	23.90	1	23.90	350178	4	12.00	4	11.80	1397	7.0	0
5/3/2016	1	23.90	1	23.90	352339	3	12.00	4	11.90	1397	7.0	0
5/4/2016	1	23.90	1	23.90	358771	3	12.00	4	11.90	1419	7.0	0
5/5/2016	1	23.90	1	23.90	358771	3	12.00	4	11.90	1420	6.9	0
5/6/2016	1	23.90	1	23.90	364876	3	12.00	4	11.90	1432	6.9	0
5/7/2016	1	23.90	1	23.90	375523	3	12.00	4	11.90	1437	7.0	0
5/8/2016	1	23.90	1	23.90	382492	3	12.00	4	11.90	1427	7.0	0
5/9/2016	1	23.90	1	23.90	380416	3	12.00	4	11.90	1435	6.9	0
5/10/2016	1	23.90	1	23.90	382426	3	12.00	4	11.90	1446	6.9	0
5/11/2016	1	23.90	1	23.90	380981	3	12.00	4	11.90	1440	6.9	0
5/12/2016	1	23.90	1	23.90	380296	3	12.00	4	11.90	1420	6.9	0
5/13/2016	1	23.90	1	23.90	379438	3	12.00	4	11.90	1396	7.0	0
5/14/2016	1	23.90	1	23.90	376307	3	12.00	4	11.90	1409	6.9	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
5/15/2016	1	23.90	1	23.90	373469	3	12.00	4	11.90	1438	6.9	0
5/16/2016	1	23.90	1	23.90	370048	3	12.00	4	11.90	1430	6.9	0
5/17/2016	1	23.90	1	23.90	367980	3	12.00	4	11.90	1399	6.9	0
5/18/2016	1	23.90	1	23.90	365436	3	12.00	4	11.90	1418	6.9	0
5/19/2016	1	23.90	1	23.90	362456	3	12.00	4	11.90	1395	6.9	0
5/20/2016	1	23.90	1	23.90	360140	3	12.00	4	11.90	1384	7.0	0
5/21/2016	1	23.90	1	23.90	358761	3	12.00	3	11.90	1394	7.0	0
5/22/2016	1	23.90	1	23.90	358761	3	12.00	3	11.90	1394	7.0	0
5/23/2016	1	23.90	1	23.90	358761	3	12.00	3	11.90	1394	7.0	0
5/24/2016	1	23.90	1	23.90	358732	3	12.00	4	11.90	1373	7.0	0
5/25/2016	1	23.90	1	23.90	358648	3	12.00	4	11.90	1372	7.0	0
5/26/2016	1	23.90	1	23.90	358404	3	12.00	4	11.90	1380	7.1	0
5/27/2016	1	23.90	1	23.90	358465	3	12.00	4	11.90	1376	7.1	0
5/28/2016	1	23.90	1	23.90	358344	3	12.00	4	11.90	1380	7.1	0
5/29/2016	1	23.90	1	23.90	358239	3	12.00	4	11.90	1379	7.1	0
5/30/2016	1	23.90	1	23.90	358152	3	12.00	4	11.90	1374	7.1	0
5/31/2016	4	19.70	5	19.50	295285	6	8.00	3	11.40	1154	7.1	0
6/1/2016	1	23.90	1	23.90	360482	3	12.00	4	11.90	1383	7.1	0
6/2/2016	1	23.90	1	23.90	360065	3	12.00	4	11.90	1387	7.1	0
6/3/2016	1	23.90	1	23.90	359883	3	12.00	4	11.90	1367	7.0	0
6/4/2016	1	23.90	1	23.90	360142	3	12.00	4	11.90	1369	7.1	0
6/5/2016	1	23.90	1	23.90	315138	2	8.00	12	6.60	1291	7.1	0
6/6/2016	1	23.90	1	23.90	266906	25	8.00	25	7.90	1194	7.1	0
6/7/2016	1	23.90	1	23.90	279908	3	12.00	4	11.90	1204	7.1	0
6/8/2016	1	23.90	1	23.90	285273	3	12.00	4	11.90	1209	7.0	0
6/9/2016	1	23.90	1	23.90	289822	3	12.00	4	11.90	1219	7.0	0
6/10/2016	1	23.90	1	23.90	358981	3	12.00	4	11.90	1353	7.0	0
6/11/2016	1	23.90	1	23.90	390570	3	12.00	4	11.90	1395	7.1	0
6/12/2016	1	23.90	1	23.90	390191	3	12.00	4	11.90	1393	7.1	0
6/13/2016	1	23.90	1	23.90	389984	3	12.00	4	11.90	1407	7.0	0
6/14/2016	1	23.90	1	23.90	389296	3	12.00	4	11.90	1411	7.0	0
6/15/2016	1	23.90	1	23.90	388925	3	12.00	4	11.90	1402	7.0	0
6/16/2016	1	23.90	1	23.90	388544	3	12.00	4	11.90	1389	7.0	0
6/17/2016	1	23.90	1	23.90	391459	3	12.00	4	11.90	1404	7.0	0
6/18/2016	1	23.90	1	23.90	386595	3	12.00	5	11.80	1413	7.1	0
6/19/2016	1	23.90	1	23.90	384427	3	12.00	4	11.90	1413	7.1	0
6/20/2016	1	23.90	1	23.90	383179	3	12.00	4	11.90	1415	7.1	0
6/21/2016	1	23.90	1	23.90	382541	3	12.00	4	11.90	1388	7.1	0
6/22/2016	1	23.90	1	23.90	380225	3	12.00	4	11.90	1401	7.1	0
6/23/2016	1	23.90	1	23.90	379411	3	12.00	4	11.90	1406	7.1	0
6/24/2016	1	23.90	1	23.90	379340	3	12.00	4	11.90	1405	7.1	0
6/25/2016	1	23.90	1	23.90	379303	3	12.00	4	11.90	1405	7.1	0
6/26/2016	1	23.90	1	23.90	379202	3	12.00	4	11.90	1408	7.1	0
6/27/2016	1	23.90	1	23.90	378896	3	12.00	4	11.90	1410	7.0	0
6/28/2016	1	8.30	1	8.30	122762	4	3.00	3	2.00	477	7.0	
6/29/2016	0	0.00	0	0.00	0	0	0.00	0	0.00	0	0.0	0
6/30/2016	1	16.60	1	16.60	245529	9	5.00	6	5.00	955	7.0	

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
7/1/2016	1	23.90	1	23.90	377282	3	9.90	8	10.60	1399	7.1	0
7/2/2016	1	23.90	1	23.90	384632	4	11.90	3	12.00	1408	7.0	0
7/3/2016	1	23.90	1	23.90	383886	4	11.90	3	12.00	1408	7.0	0
7/4/2016	1	23.90	1	23.90	383694	4	11.90	3	12.00	1401	7.0	0
7/5/2016	1	23.90	1	23.90	383225	4	11.90	3	12.00	1403	7.1	0
7/6/2016	1	23.90	1	23.90	382774	4	11.90	3	12.00	1403	7.1	0
7/7/2016	1	23.90	1	23.90	382390	4	11.90	3	12.00	1409	7.1	0
7/8/2016	1	23.90	1	23.90	382232	4	11.90	3	12.00	1415	7.1	0
7/9/2016	1	23.90	1	23.90	381971	4	11.90	3	12.00	1409	7.1	0
7/10/2016	1	23.90	1	23.90	381874	4	11.90	3	12.00	1409	7.1	0
7/11/2016	1	23.90	1	23.90	381358	4	11.90	3	12.00	1404	7.1	0
7/12/2016	1	23.90	1	23.90	381050	4	11.90	3	12.00	1400	7.1	0
7/13/2016	1	23.90	1	23.90	380746	4	11.90	3	12.00	1413	7.1	0
7/14/2016	1	23.90	1	23.90	380646	4	11.90	3	12.00	1411	7.2	0
7/15/2016	1	23.90	1	23.90	380709	4	11.90	3	12.00	1417	7.1	0
7/16/2016	1	23.90	1	23.90	380669	4	11.90	3	12.00	1423	7.1	0
7/17/2016	1	23.90	1	23.90	380620	4	11.90	3	12.00	1420	7.1	0
7/18/2016	1	23.90	1	23.90	379349	4	11.90	3	12.00	1412	7.1	0
7/19/2016	1	23.90	1	23.90	379365	4	11.90	3	12.00	1403	7.1	0
7/20/2016	1	23.90	1	23.90	378769	4	11.90	3	12.00	1405	7.1	0
7/21/2016	1	23.90	1	23.90	378298	4	11.90	3	12.00	1411	7.1	0
7/22/2016	1	23.90	1	23.90	378334	4	11.90	3	12.00	1398	7.1	0
7/23/2016	1	23.90	1	23.90	378970	4	11.90	3	12.00	1397	7.1	0
7/24/2016	1	23.90	1	23.90	379462	4	11.90	3	12.00	1399	7.2	0
7/25/2016	1	23.90	1	23.90	378344	4	11.90	3	12.00	1397	7.1	0
7/26/2016	1	23.90	1	23.90	378444	4	11.90	3	12.00	1395	7.2	0
7/27/2016	1	23.90	1	23.90	379164	4	11.90	3	12.00	1395	7.2	0
7/28/2016	2	17.20	2	17.20	274016	4	8.90	3	8.00	1012	7.1	0
7/29/2016	1	23.90	1	23.90	385636	4	11.90	3	12.00	1407	7.1	0
7/30/2016	1	23.90	1	23.90	390799	4	11.90	3	12.00	1408	7.1	0
7/31/2016	1	23.90	1	23.90	394832	4	11.90	3	12.00	1417	7.1	0
8/1/2016	1	23.90	1	23.90	398916	4	11.90	3	12.00	1405	7.1	0
8/2/2016	1	23.90	1	23.90	396966	4	11.90	3	12.00	1409	7.1	0
8/3/2016	1	23.90	1	23.90	391999	4	11.90	3	12.00	1413	7.1	0
8/4/2016	1	23.90	1	23.90	389127	4	11.90	3	12.00	1400	7.1	0
8/5/2016	1	23.90	1	23.90	390415	4	11.90	3	12.00	1403	7.1	0
8/6/2016	1	23.90	1	23.90	389260	4	11.90	3	12.00	1402	7.1	0
8/7/2016	1	23.90	1	23.90	389522	4	11.90	3	12.00	1407	7.1	0
8/8/2016	1	23.90	1	23.90	390727	4	11.90	3	12.00	1394	7.1	0
8/9/2016	1	23.90	1	23.90	393758	4	11.90	3	12.00	1390	7.1	0
8/10/2016	1	23.90	1	23.90	399567	4	11.90	3	12.00	1419	7.1	0
8/11/2016	1	23.90	1	23.90	377497	4	11.90	3	12.00	1373	7.1	0
8/12/2016	1	23.90	1	23.90	362119	4	11.90	3	12.00	1343	7.1	0
8/13/2016	1	23.90	1	23.90	359109	4	11.90	3	12.00	1337	7.1	0
8/14/2016	1	23.90	1	23.90	352780	4	11.90	3	12.00	1337	7.1	0
8/15/2016	1	23.90	1	23.90	351959	4	11.90	3	12.00	1329	7.1	0
8/16/2016	1	23.90	1	23.90	350042	5	11.80	3	12.00	1335	7.1	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
8/17/2016	1	23.90	1	23.90	347648	6	11.50	4	12.00	1342	7.1	0
8/18/2016	1	23.90	1	23.90	346115	6	11.40	4	12.00	1347	7.1	0
8/19/2016	1	23.90	1	23.90	372108	4	11.90	3	12.00	1381	7.1	0
8/20/2016	1	23.90	1	23.90	386840	4	11.90	3	12.00	1400	7.1	0
8/21/2016	1	23.90	1	23.90	385353	4	11.90	3	12.00	1396	7.1	0
8/22/2016	1	23.90	1	23.90	382856	4	11.90	3	12.00	1396	7.1	0
8/23/2016	1	23.90	1	23.90	382713	4	11.90	3	12.00	1402	7.1	0
8/24/2016	1	23.90	1	23.90	379174	4	11.90	3	12.00	1378	7.1	0
8/25/2016	1	23.90	1	23.90	379350	5	11.80	3	12.00	1386	7.1	0
8/26/2016	1	23.80	1	23.80	375075	4	11.70	4	12.00	1387	7.1	0
8/27/2016	1	23.80	1	23.80	375075	4	11.70	4	12.00	1387	7.1	0
8/28/2016	1	23.80	1	23.80	375075	4	11.70	4	12.00	1387	7.1	0
8/29/2016	1	23.80	1	23.80	375075	4	11.70	4	12.00	1387	7.1	0
8/30/2016	1	23.90	1	23.90	256060	1	3.20	1	3.10	1160	7.1	0
8/31/2016	1	23.90	1	23.90	213096	5	0.40	7	0.80	1072	7.0	0
9/1/2016	1	23.90	1	23.90	212772	52	7.40	24	4.00	1074	7.1	0
9/2/2016	1	23.90	1	23.90	212989	36	7.40	40	8.00	1086	7.0	0
9/3/2016	1	23.90	1	23.90	213014	34	8.50	31	9.90	1085	7.0	0
9/4/2016	1	23.90	1	23.90	212951	32	9.70	24	9.90	1088	7.0	0
9/5/2016	1	23.90	1	23.90	212822	24	10.20	18	10.70	1094	7.0	0
9/6/2016	1	23.90	1	23.90	212763	22	12.00	12	9.80	1087	7.1	0
9/7/2016	1	23.90	1	23.90	212718	17	11.00	10	11.30	1091	7.1	0
9/8/2016	1	23.90	1	23.90	212702	16	11.00	4	12.00	1085	7.1	0
9/9/2016	1	23.90	1	23.90	212692	15	11.20	3	12.00	1091	7.1	0
9/10/2016	1	23.90	1	23.90	212642	15	11.20	3	12.00	1101	7.1	0
9/11/2016	1	23.90	1	23.90	212649	15	11.30	7	11.50	1112	7.0	0
9/12/2016	1	23.90	1	23.90	212580	21	12.00	11	10.10	1081	7.0	0
9/13/2016	1	23.90	1	23.90	212519	18	11.90	10	10.30	1067	7.0	0
9/14/2016	1	23.90	1	23.90	212497	16	10.50	9	11.90	1075	7.1	0
9/15/2016	1	23.90	1	23.90	212593	18	10.20	11	12.00	1078	7.0	0
9/16/2016	1	23.90	1	23.90	212588	19	11.10	8	11.20	1085	7.0	0
9/17/2016	1	23.90	1	23.90	212535	15	9.80	9	12.70	1081	7.0	0
9/18/2016	1	23.90	1	23.90	212463	17	11.00	3	12.00	1072	7.0	0
9/19/2016	1	23.90	1	23.90	212998	15	11.10	3	12.00	1084	7.0	0
9/20/2016	1	23.90	1	23.90	213435	14	11.90	3	11.20	1083	7.0	0
9/21/2016	1	23.90	1	23.90	213458	15	12.00	4	11.10	1085	7.0	0
9/22/2016	1	23.90	1	23.90	213018	14	12.00	7	10.90	1099	7.0	0
9/23/2016	1	23.90	1	23.90	210966	16	12.00	9	10.60	1082	7.0	0
9/24/2016	1	23.90	1	23.90	210150	16	10.40	12	11.90	1073	7.0	0
9/25/2016	1	23.90	1	23.90	210282	18	10.00	14	12.00	1100	7.0	0
9/26/2016	1	23.90	1	23.90	210184	18	11.40	12	10.70	1101	7.0	0
9/27/2016	1	23.90	1	23.90	210604	17	12.00	10	10.50	1095	7.0	0
9/28/2016	1	23.90	1	23.90	210672	18	11.40	12	10.70	1096	7.0	0
9/29/2016	1	23.90	1	23.90	276331	13	10.70	10	12.00	1209	7.0	0
9/30/2016	1	23.90	1	23.90	387593	4	11.90	3	12.00	1424	7.0	0
10/1/2016	1	23.90	1	23.90	386901	4	11.90	3	12.00	1423	7.0	0
10/2/2016	1	23.90	1	23.90	386093	4	11.90	3	12.00	1413	7.0	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
10/3/2016	1	23.90	1	23.90	316173	4	6.20	2	8.00	1284	7.0	0
10/4/2016	1	23.90	1	23.90	385153	4	11.90	3	12.00	1417	7.0	0
10/5/2016	1	23.90	1	23.90	384000	4	11.90	3	12.00	1411	7.0	0
10/6/2016	1	23.90	1	23.90	383207	4	11.90	3	12.00	1411	7.0	0
10/7/2016	1	23.90	1	23.90	390886	4	11.90	3	12.00	1433	7.0	0
10/8/2016	1	23.90	1	23.90	381885	4	11.90	3	12.00	1411	7.0	0
10/9/2016	1	23.90	1	23.90	381368	4	11.90	3	12.00	1415	7.0	0
10/10/2016	1	23.90	1	23.90	391094	4	11.90	3	12.00	1443	7.0	0
10/11/2016	1	23.90	1	23.90	380624	4	11.90	3	12.00	1403	7.0	0
10/12/2016	1	23.90	1	23.90	381103	4	11.90	3	12.00	1409	7.0	0
10/13/2016	1	23.90	1	23.90	380113	4	11.90	3	12.00	1412	7.0	0
10/14/2016	1	23.90	1	23.90	379555	4	11.90	3	12.00	1439	7.0	0
10/15/2016	1	23.90	1	23.90	378458	4	11.90	3	12.00	1445	7.0	0
10/16/2016	1	23.90	1	23.90	378201	4	11.90	3	12.00	1421	7.0	0
10/17/2016	1	23.90	1	23.90	376364	4	11.90	3	12.00	1387	7.1	0
10/18/2016	1	23.90	1	23.90	375010	4	11.90	3	12.00	1383	7.1	0
10/19/2016	1	23.90	1	23.90	374763	4	11.90	3	12.00	1391	7.1	0
10/20/2016	1	23.90	1	23.90	373776	4	11.90	3	12.00	1388	7.1	0
10/21/2016	1	23.90	1	23.90	372729	4	11.90	3	12.00	1393	7.1	0
10/22/2016	1	23.90	1	23.90	373417	4	11.90	3	12.00	1453	7.0	0
10/23/2016	1	23.90	1	23.90	370969	4	11.90	3	12.00	1445	7.0	0
10/24/2016	1	23.90	1	23.90	309380	2	7.40	4	4.30	1312	7.1	0
10/25/2016	1	23.90	1	23.90	254634	13	1.90	23	3.60	1277	7.0	0
10/26/2016	1	23.90	1	23.90	343949	15	10.00	3	10.60	1528	7.1	0
10/27/2016	1	23.90	1	23.90	366344	3	12.00	4	11.90	1453	7.1	0
10/28/2016	1	23.90	1	23.90	363797	3	12.00	4	11.90	1432	7.0	0
10/29/2016	1	23.90	1	23.90	363195	3	12.00	4	11.90	1415	7.0	0
10/30/2016	1	23.90	1	23.90	363111	3	12.00	4	11.90	1384	7.1	0
10/31/2016	1	23.90	1	23.90	363814	3	12.00	4	11.90	1410	7.0	0
11/1/2016	1	23.90	1	23.90	362458	3	12.00	4	11.90	1495	7.0	0
11/2/2016	1	23.90	1	23.90	359859	3	12.00	4	11.90	1370	7.0	0
11/3/2016	1	23.90	1	23.90	359031	3	12.00	4	11.90	1352	7.1	0
11/4/2016	1	23.90	1	23.90	359392	3	12.00	4	11.90	1385	7.0	0
11/5/2016	1	23.90	1	23.90	357542	3	12.00	4	11.90	1487	7.0	0
11/6/2016	1	23.90	1	23.90	358342	3	12.00	4	11.90	1410	7.0	0
11/7/2016	1	22.90	1	22.90	342574	3	12.00	4	10.90	1408	7.0	0
11/8/2016	1	22.90	1	22.90	338934	3	12.00	4	10.90	1439	7.1	0
11/9/2016	1	22.90	1	22.90	339059	3	12.00	4	10.90	1358	7.1	0
11/10/2016	2	22.80	2	22.70	335550	4	12.00	4	10.40	1384	7.0	0
11/11/2016	1	22.90	1	22.90	339607	3	12.00	4	10.90	1378	7.0	0
11/12/2016	1	22.90	1	22.90	339639	3	12.00	4	10.90	1546	6.9	0
11/13/2016	1	22.90	1	22.90	339254	3	12.00	4	10.90	1519	7.0	0
11/14/2016	2	21.50	2	21.50	280135	3	12.00	5	9.30	1355	7.0	0
11/15/2016	2	20.40	2	20.40	201748	4	9.70	4	10.50	1087	7.0	0
11/16/2016	2	19.80	2	19.80	228706	4	9.10	4	10.40	1213	6.9	0
11/17/2016	1	22.90	1	22.90	328166	3	12.00	4	10.90	1379	7.0	0
11/18/2016	1	8.00	1	8.00	113913	1	4.00	2	4.00	652	6.2	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
11/19/2016	0	0.00	0	0.00	0	0	0.00	0	0.00	211	5.1	0
11/20/2016	1	18.20	1	18.20	253155	4	9.50	3	8.40	1458	6.9	0
11/21/2016	1	22.90	1	22.90	225722	34	6.00	32	6.10	1476	6.9	0
11/22/2016	1	22.90	1	22.90	225089	39	8.00	31	7.40	1379	6.9	0
11/23/2016	1	22.90	1	22.90	274480	16	11.50	13	9.10	1449	6.9	0
11/24/2016	1	22.90	1	22.90	308034	3	11.50	3	11.30	1377	6.9	0
11/25/2016	1	22.90	1	22.90	309311	3	11.50	3	11.30	1365	6.9	0
11/26/2016	1	22.90	1	22.90	309429	3	11.50	3	11.30	1432	6.9	0
11/27/2016	1	22.90	1	22.90	306794	3	11.50	3	11.30	1516	6.9	0
11/28/2016	1	22.90	1	22.90	305066	4	11.40	3	11.40	1510	6.9	0
11/29/2016	1	22.90	1	22.90	304475	4	11.30	3	11.50	1356	7.0	0
11/30/2016	1	22.90	1	22.90	297594	4	11.20	3	11.60	1312	6.9	0
12/1/2016	1	22.90	1	22.90	291022	4	11.00	4	11.70	1312	6.9	0
12/2/2016	1	22.90	1	22.90	287062	4	10.90	3	11.90	1373	6.9	0
12/3/2016	1	22.90	1	22.90	285206	4	10.90	3	12.00	1368	6.9	0
12/4/2016	1	22.90	1	22.90	284141	4	10.90	3	12.00	1363	6.9	0
12/5/2016	1	22.90	1	22.90	274589	5	10.70	4	12.00	1445	6.9	0
12/6/2016	1	22.90	1	22.90	269361	5	10.70	5	12.00	1602	6.9	0
12/7/2016	1	22.90	1	22.90	270921	4	10.90	3	12.00	1489	7.0	0
12/8/2016	1	23.90	1	23.90	281857	4	11.90	3	12.00	1617	7.0	0
12/9/2016	1	23.90	1	23.90	280523	4	11.90	3	12.00	1770	7.0	0
12/10/2016	1	23.90	1	23.90	279782	4	11.90	3	12.00	1762	7.0	0
12/11/2016	1	23.90	1	23.90	279413	4	11.90	3	12.00	1746	7.0	0
12/12/2016	1	23.90	1	23.90	279361	4	11.90	3	12.00	1605	6.9	0
12/13/2016	1	23.90	1	23.90	278523	4	11.90	3	12.00	1624	6.9	0
12/14/2016	1	23.90	1	23.90	277166	4	11.90	3	12.00	1643	7.0	0
12/15/2016	1	23.90	1	23.90	226206	20	8.50	13	9.70	1807	7.0	0
12/16/2016	1	23.90	1	23.90	222572	2	8.00	29	9.70	1701	6.9	0
12/17/2016	1	23.90	1	23.90	277123	3	12.00	4	11.90	1726	6.9	0
12/18/2016	1	23.90	1	23.90	276857	3	12.00	4	11.90	1529	7.0	0
12/19/2016	1	23.90	1	23.90	279708	3	12.00	4	11.90	1731	7.0	0
12/20/2016	2	21.60	2	21.50	251595	4	12.00	4	9.30	1605	6.9	0
12/21/2016	1	23.90	1	23.90	279967	3	12.00	4	11.90	1646	7.0	0
12/22/2016	2	18.00	2	18.00	210098	3	8.00	3	9.80	1157	6.9	0
12/23/2016	1	23.90	1	23.90	280910	13	12.00	9	10.60	1572	6.9	0
12/24/2016	1	23.90	1	23.90	281331	14	11.90	8	10.60	1537	6.9	0
12/25/2016	1	23.90	1	23.90	281249	12	11.20	4	12.00	1458	6.9	0
12/26/2016	1	23.90	1	23.90	280808	5	11.80	3	12.00	1606	6.9	0
12/27/2016	1	23.90	1	23.90	280564	5	11.80	3	12.00	1354	6.9	0
12/28/2016	1	23.90	1	23.90	179692	21	4.90	29	7.40	1408	6.9	0
12/29/2016	2	18.20	2	18.10	107309	33	6.80	24	5.10	1123	6.4	0
12/30/2016	2	8.60	2	8.60	82674	6	4.00	6	4.70	908	6.9	0
12/31/2016	1	23.90	1	23.90	232958	0	0.00	1	23.90	1504	6.9	0

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow
Sum	377	8474.40	378	8545.80	113974022	2855	4059.30	1904	4088.10	510759		0
Max	4	23.90	5	95.90	399567	52	12.00	40	23.90	1859	7.2	0
Average	1	23.15	1	23.35	311404	8	11.09	5	11.17	1396	6.9	0

APPENDIX C

2016 Operation and Maintenance Data Summary

Leidos Inc.

6310 Allentown Boulevard, Suite 110 / Harrisburg, PA 17112 / 717.901.8100 leidos.com

Table C-1
2016 OPERATION AND MAINTENANCE DATA SUMMARY
former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

TECHNICIAN	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL
Date	1/6/2016	1/14/2016	2/4/2016	2/25/2016	3/1/2016	3/22/2016	4/4/2016	4/22/2016	5/5/2016	5/20/2016	6/9/2016	6/23/2016	7/1/2016	7/21/2016	8/11/2016	8/25/2016	9/7/2016	9/22/2016	10/7/2016	10/27/2016	11/9/2016	11/23/2016	12/7/2016	12/19/2016
PTA INFL. PUMP																								
Full Load = 17 AMPS	NM	NM	NM	9.6	NM	NM	NM	10.5	NM	NM	NM	NM	NM	10.80	NM	NM	NM	NM	NM	10.5	NM	NM	NM	NM
FLOW RATE gpm	207	208	219	245	229	201	170	250	241	272	227	270	270	275	270	266	146	164	290	251	250	232	192	189
PTA BLOWER																								
Full Load = 24 AMP READINGS	NM	NM	NM	21.95	NM	NM	NM	21.47	NM	NM	NM	NM	NM	20.8	NM	NM	NM	NM	NM	21.9	NM	NM	NM	NM
PRESSURE inches water	16.5	15.6	15.1	15	15.7	15.6	15.2	15	15.2	15.6	15.1	14.6	14.8	15.1	14.4	14.6	14.4	14.7	15.4	15.9	15.2	16	15.4	16.2
TOWER PANEL																								
VISUAL INSPECT	NA	NA	NA	OK	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA
WARWICK SECURE	NA	NA	NA	OK	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA
TOWER SAMPLING																								
AST EFFLUENT pH	7.81	NM	7.89	NM	7.89	NM	8.0	NM	7.83	NM	7.76	NM	7.8	NM	7.77	NM	7.8	NM	7.8	NM	7.7	NM	7.7	NM
AST INFLUENT pH	6.45	6.89	6.46	6.91	6.24	6.89	6.24	6.95	6.84	6.92	6.52	7.0	6.3	7.05	6.33	7.07	6.6	6.99	6.6	7.06	6.4	6.89	6.3	6.94
REDUX CHEMICAL INJECTION																								
LMI PUMP SPEED (%)	34	33	41	42	39	36	31	44	49	48	38	46	51	47	50	51	26	29	47	46	46	37	35	36
LMI INJECTION RATE (milis/min)	9.5	10.3	10.7	10.6	12.3	10.6	9.3	12.7	14.1	13.4	11.8	13.2	14.1	14.2	15.3	15.1	8.6	7.8	19.4	13.6	13.9	13.8	12.7	10.2
WPL WELLS																								
TOTAL FLOW RATE gpm	189	186	200	220	232	192	164	249	248	250	197	257.7	265	261	286	268	150	151	267	250	247	224	197	189
CW-9; Full Load = 5.5 AMPS	NM	NM	NM	3.43	NM	NM	NM	3.41	NM	NM	NM	NM	NM	3.25	NM	NM	NM	NM	NM	3.33	NM	NM	NM	NM
CW-9 FLOW RATE gpm	35	35.2	37.3	37.2	36.9	34.7	35.3	33.5	34.2	34.2	34.2	32.7	33.7	34.3	33.9	32.7	OL	OL	34.9	30.7	32.5	33.2	33.8	32.9
CW-9 PRESSURE psi	6	6	6	6	6	6	6	6	7	7	6	8	8	8	8	7	OL	OL	8	6	7	6	6	6
CW-9 CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	OL	OL	N	N	N	N	N	N
CW-9 HIGH LEVEL ALARM?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	OL	OL	Y	Y	Y	Y	Y	Y
CW-13; Full Load = 11.5 AMPS	NM	NM	NM	10.36	NM	NM	NM	10.14	NM	NM	NM	NM	NM	9.83	NM	NM	NM	NM	NM	16.58	NM	NM	NM	NM
CW-13 FLOW RATE gpm	71.2	72.0	72.6	71.8	72.2	71.9	72.2	72.1	71.8	71.3	OL	65.8	68.3	65.9	80.1	64.5	62.0	62.4	61.2	56.6	74.2	57.1	55.8	56.4
CW-13 PRESSURE psi	48	48	50	50	50	58	48	49	49	49	OL	54	55	54	40	53	56	56	56	78	58	62	61	62
CW-13 CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	OL	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-13 HIGH LEVEL ALARM?	N	N	N	N	N	N	N	N	N	N	OL	N	N	N	Y	N	N	N	N	N	N	N	N	N
CW-17; Full Load = 11.5 AMPS	NM	NM	NM	11.5	NM	NM	NM	9.77	NM	NM	NM	NM	NM	9.86	NM	NM	NM	NM	NM	9.86	NM	NM	NM	NM
CW-17 FLOW RATE gpm	60.8	55.6	66.5	87.1	98.2	60.4	54.2	47.2	48.3	55.9	73.2	71.6	71.2	72.7	86.8	86.1	86.8	87.5	2.2	83.1	83.9	63.8	34.7	35.1
CW-17 PRESSURE psi	60	63	55	42	44	56	65	67	67	55	50	50	54	47	45	45	45	42	45	45	45	48	71	72
CW-17 CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-17 HIGH LEVEL ALARM?	N	N	Y	Y	Y	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	Y
CW-15A; Full Load = 1.6 AMPS	NM	NM	NM	1.46	NM	NM	NM	1.43	NM	NM	NM	NM	NM	1.38	NM	NM	NM	NM	NM	1.43	NM	NM	NM	NM
CW-15A FLOW RATE gpm	2.5	2.4	2.7	3.2	2.6	2.1	2	1.9	2.1	1.9	1.9	1.7	1.7	1.7	2.0	OL	1.5	1.7	2.0	1.6	1.6	OL	1.5	2.1
CW-15A PRESSURE psi	82	78	75	78	79	55	49	44	34	30	30	55	64	51	40	OL	46	30	38	44	44	OL	90	880
CW-15A CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	OL	N	N	N	N	N	OL	N	N
CW-15A HIGH LEVEL ALARM?	N	N	Y	Y	N	N	N	N	Y	N	N	N	Y	N	N	OL	N	N	N	N	N	OL	Y	Y
CW-20 Full Load = 17.3 AMPS	NM	NM	NM	11.94	NM	NM	NM	11.75	NM	NM	NM	NM	NM	13.23	NM	NM	NM	NM	NM	12.84	NM	NM	NM	NM
CW-20 FLOW RATE gpm	21	21	21.7	21.2	22.2	22.3	OL	95	91.6	86.7	87.2	85.9	91.6	87.6	87	82.9	OL	OL	87	80	74.2	72.2	69.3	63.3
CW-20 PRESSURE psi	79	79	76	79	80	75	OL	19	19	25	25	25	19	19	20	20	OL	OL	20	22	35	39	40	46
CW-20 CLEAN "Y" STRAINER	N	N	N	N	N	N	OL	N	N	N	N	N	N	N	N	N	OL	OL	N	N	N	N	N	N
CW-20 HIGH LEVEL ALARM?	N	N	N	N	Y	N	OL	Y	Y	y	Y	Y	Y	N	N	N	OL	OL	Y	N	N	N	N	N
AST influent pressure inches of water	10.4	10.10	10.0	9.7	9.5	9.9	9.9	9.2	9.5	10.1	9.6	9.2	9.3	9.4	8.8	9.1	9.0	9.1	9.1	9.7	7.7	10.3	9.9	10.4
GAC influent pressure inches of water	9.1	8.8	8.6	8.5	8.5	8.6	8.6	8.3	8.5	8.7	8.5	8.0	8.1	8.2	7.7	7.9	7.9	8	8.1	8.6	8.3	8.8	8.5	9
AST pitot pressure inches of water	0.31	0.32	0.29	0.27	0.29	0.27	0.28	0.27	0.27	0.28	0.29	0.26	0.27	0.26	0.27	0.27	0.25	0.27	0.28	0.28	0.27	0.28	0.27	0.29

Notes:
Y - Yes NA - Not Applicable OL - Off Line
N - No NM - Not Measured

Table C-1
2016 OPERATION AND MAINTENANCE DATA SUMMARY
former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

TECHNICIAN		SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL
Date		1/6/2016	1/14/2016	2/4/2016	2/25/2016	3/1/2016	3/22/2016	4/4/2016	4/22/2016	5/5/2016	5/20/2016	6/9/2016	6/23/2016	7/1/2016	7/21/2016	8/11/2016	8/25/2016	9/7/2016	9/22/2016	10/7/2016	10/27/2016	11/9/2016	11/23/2016	12/7/2016	12/19/2016
NPBA WELLS																									
	VIS. INSP. CONTR. PANEL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	WARWICK SECURE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SUMP PUMP OPR. CHK.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	MANIFOLD PRESS. psi	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1A	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-2	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-3	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-4	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5; Full Load = 6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-5	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-6	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-7	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A; Full Load = 1.6	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-7A	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A	CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A	CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A	CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

Notes:

Y - Yes NA - Not Applicable OL - Off Line

N - No NM - Not Measured