



TETRA TECH

2017-2018 ANNUAL GROUNDWATER MONITORING REPORT

(JULY 2017 - JUNE 2018)

**HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, HAVERTOWN TOWNSHIP,
DELAWARE COUNTY, PENNSYLVANIA**

Contract No. [REDACTED]

AUGUST 2018

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Contract No. [REDACTED]
Task Order [REDACTED]

JULY 2018

PRESENTED TO

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ACRONYMS

ARAR	Applicable, Relevant, or Appropriate Requirement
bgs	Below Ground Surface
BOL	Bureau of Laboratories
CCA	Chromium Copper Arsenate
COC	Contaminant of Concern
CTR	Collection Trench
CW	Cluster Well
CZA	Capture Zone Analyses
DEP	Pennsylvania Department of Environmental Protection
DO	Dissolved Oxygen
EPA	U.S. Environmental Protection Agency Region 3
ft	Feet
GES	Groundwater & Environmental Services, Inc.
gpm	Gallons per Minute
HAV	Havertown Well
IW	Injection Well
J	Estimated Data Qualifier Value
lb	Pound
LTRA	Long Term Response Action
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mV	Millivolts
MW	Monitoring Well
NA	Not Available
ND	Non-Detect
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NW	National Wood (Preservers) Well
NWP	National Wood Preservers
O&M	Operation and Maintenance
ORP	Oxidation Reduction Potential
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PCG	Philadelphia Chewing Gum Company
PCP	Pentachlorophenol
PCRR	Penn Central Railroad
PDU	Peroxide Destruction Unit

ACRONYMS (CONTINUED)

PE	Polyethylene
Pg/L	Picogram per Liter
PZ	Piezometer
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RG	Remediation Goal
ROD	Record of Decision
ROS	Recreation and Open Space
RR ROW	Railroad Right-of-Way
RW	Recovery Well
SAP	Sampling and Analysis Plan
SMCL	Secondary Maximum Contaminant Level
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethene
TEQ	Toxicity Equivalent Quotient
µg/L	Micrograms per Liter
U	Non-Detected Laboratory Value
USACE	U.S. Army Corps of Engineers
VOC	Volatile Organic Compound
YMCA	Young Men's Christian Association

1.0 INTRODUCTIONS

Tetra Tech, Inc. (Tetra Tech) was tasked by the Pennsylvania Department of Environmental Protection (DEP), under Contract Number [REDACTED], to perform operation and maintenance (O&M) services under Operable Unit 2 (OU-2) and OU-3 for the groundwater treatment facility at the Havertown PCP Superfund Site located in Haverford Township, Pennsylvania.

Activities performed for OU-2 O&M are to operate and maintain the groundwater treatment facility, optimize the facility's performance, perform all required monitoring (groundwater and surface water discharge) associated with this facility, and maintain the cap in accordance with the selected remedy and Remedial Action Objectives (RAOs). Activities conducted for OU-3 O&M are to contain the contaminated deep groundwater plume that is migrating from the site in conjunction with the OU-2 remedy, operate and maintain the OU-3 extraction and monitoring wells in the Recreation and Open Space (ROS) Area, maintain the ROS pumping system through the Railroad Right-of-Way (RR ROW), and operate the in-situ flushing system in conjunction with the OU-2 groundwater treatment system.

This report covers the groundwater monitoring period from July 2017 to June 2018, which includes long-term performance monitoring for the OU-2 and OU-3 remedies. Analytical data collected during monitoring period were used to evaluate efficacy and capacity of the groundwater collection system; update the site-wide historical database; and present conclusions and recommendations regarding future groundwater sampling. The treatment system's operational performance (including plant discharge monitoring results) is presented in a separate report.

1.1 SITE BACKGROUND

The Havertown PCP Superfund Site (the Site) is located in southeastern Pennsylvania approximately 10 miles west of Philadelphia (**Figure 1**). Commercial establishments, industries, parks, schools, and residential homes surround the Site.

The Site covers approximately 12 to 15 acres and is defined by the extent of contamination attributable to the site. It is roughly delineated by Lawrence Road and Rittenhouse Circle to the south, the former Penn Central Railroad (PCRR) tracks to the north, and the fence on the Continental Motors property to the west, and Naylor's Run to the east.

The Havertown PCP site is located in the Piedmont Uplands section of the Piedmont Physiographic Province. Consolidated rock in the vicinity of the site consists of metamorphic schist and gneiss of the Wissahickon Formation. Regionally the unconsolidated deposits that overlay the bedrock consist of saprolite (in-situ weathered bedrock), and occasional sand and gravel terrace deposits, and artificial fill. In the vicinity of the bed of Naylor's Run, thicker unconsolidated gravel deposits have been identified above Wissahickon Schist. Groundwater at the Havertown site flows in a southeasterly direction and occurs in two major zones. The upper zone consists of surficial soils and saprolite (heavily weathered rock). The movement of water in the saprolite zone is influenced by the degree of saprolite weathering, relict bedrock structures, compositional variations, and the thickness of the weathered zone. The lower zone consists of fractured schist bedrock, with water movement occurring along interconnected fractures. Vertical hydraulic gradients are small, suggesting that the aquifer at the site is well connected by porous/fracture flow.

Upward flow occurs within the saturated saprolite and presumably provides observed seepage/base flow to Naylor's Run southeast of Rittenhouse Circle. The depth to groundwater below the site ranges from approximately 23 feet below ground surface in the vicinity of former Young's Produce Store to seepage as springs at ground surface in the ROS Area southeast of Rittenhouse Circle. These permeable zones are closely interconnected, and typically represent one aquifer. Semi-confining layers may locally reduce aquifer interconnection — but are not widespread.

Historically, the Site consisted of a number of distinct properties, including a former wood treatment facility owned by National Wood Preservers (NWP), a bubble gum manufacturing plant owned by the Philadelphia Chewing Gum Company (PCG), and neighboring residential and commercial areas. Former structures on the NWP property (lying north of the intersection of Eagle Road and Lawrence Road) consisted of a sheet metal building with multiple aboveground chemical storage tanks. The two-acre NWP property has since been capped and enclosed within a chain-link fence. The PCG facility consisted of a single, large former gum production building located due east of NWP (northeast of the intersection of Eagle Road and Lawrence Road). Residential areas bordering Rittenhouse Circle and Naylor's Run comprise the remainder of the study area (**Figure 2**).

From approximately 1947 to 1963, the NWP property was used to treat wood products using pentachlorophenol (PCP) dissolved in diesel fuel. NWP allegedly disposed of waste materials into a well reportedly located in the vicinity of the former Young's Produce Market, at the corner of Lawrence and Eagle Road. However, the exact location of the well was not identified. In 1977, the NWP facility discontinued the use of PCP and oil to treat wood products and began treating wood using metal salts.

The metal salts consisted of chromium copper arsenate (CCA) in a 0.4% or 0.6% water solution. Other metals used included chromated zinc chloride (a fire retardant) and tributyl tin oxide (an anti-fouling compound). All three water-soluble chemicals were used in pressure treatment of wood products.

The Site was placed on the National Priorities List (NPL) in 1982. The Site was divided into three OUs. OU-1 addressed the discharge to Naylor's Run and the on-site wastes at the NWP facility. OU-2 addressed shallow groundwater, and OU-3 addressed deep groundwater in the source area and the groundwater and soil contamination in the ROS Area.

Major contaminants attributable to the Site include volatile organic compounds (VOCs), PCP, polynuclear aromatic hydrocarbons (PAHs), and dioxins/furans.

EPA issued the first Record of Decision (ROD) for the Site in September 1989. The 1989 ROD for OU-1 included provisions for an interim remedial action. It called for the installation of an oil-water separator to address the continued release of contaminants from the Site into the surface water of Naylor's Run. In addition, this ROD called for the removal and disposal of the on-site waste.

During a soil investigation, EPA learned that the contamination on the NWP facility was more extensive than originally anticipated. The soil contamination was addressed in a 1996-1997 Superfund Removal Action, during which a synthetic geo-membrane cap was installed over three acres of the Site. The installation of the cap removed the potential for exposure to soils contaminated with arsenic and dioxins/furans by providing an impermeable synthetic barrier and 18 inches of soil cover over the areas of contamination. In the fall of 1997, EPA covered the capped area with an additional 4 feet of fill and planted the fill with a mixture of seed mulch and fertilizer.

EPA issued the ROD for OU-2 on September 30, 1991, which defined the interim remedy. The RAOs of the OU-2 remedy were as follows:

- Design and implement an interim remedial action to protect human health and the environment by removing free product and contaminated groundwater from the shallow groundwater aquifer.
- Collect data on the aquifer and contaminant response to remedial measures.

The primary purpose of the OU-2 ROD is to contain the entire contaminated shallow groundwater plume migrating from the Site under Eagle Road and to treat and discharge it into Naylor's Run. The extraction/recovery wells are intended to reduce the size of the oil plume floating on the water table.

Tetra Tech completed the conceptual design for OU-2 (shallow groundwater) in 1994. The Remedial Design (RD) for OU-2 was completed during the period 1997-2000 by several contractors under direction from the U.S. Army Corps of Engineers (USACE). Treatment plant construction was completed in 2001, and the plant became fully operational in August 2001, with treated water being discharged to Naylor's Run in accordance with National Pollutant Discharge Elimination System (NPDES) permit limits. Groundwater & Environmental Services, Inc. (GES) operated the plant on behalf of USACE until August 15, 2002. Between 2002 and 2013, Tetra Tech performed O&M activities at the plant on behalf of EPA.

EPA issued the ROD for OU-3 in April 2008. OU-3 was further divided into OU-3A and OU-3B. OU-3A addressed contamination related to deep groundwater in the source area, whereas OU-3B addressed contamination in Haverford Township's ROS Area, located below Rittenhouse Circle and adjacent to Washington Avenue in Havertown. The RAOs for the OU-3 remedy were as follows:

Groundwater

- Mitigate contamination to Applicable, Relevant or Appropriate Requirements (ARARs) and/or risk-based cleanup levels to protect human health and the environment.
- Discharge treated groundwater to surface water (Naylor's Run) in concentrations that meet NPDES regulations.
- Prevent exposure to contaminated groundwater in the future.
- Prevent discharge of groundwater to surface water at concentrations of contaminants that would result in exceedances of water quality criteria.
- Contain the contamination plume in the source area and the ROS Area to prevent further off-site migration and to ensure that downgradient groundwater is not impacted.
- Restore groundwater quality at the Site.

Soils of ROS Area

- Eliminate current exposure of human and ecological receptors to contaminated soils.
- Prevent further migration of contaminants in soil to groundwater.
- Prevent transport of contaminants in surface soils via surface water runoff.
- Prevent potential future exposure to contaminants through ingestion and dermal contact by human and ecological receptors.

The purposes of the OU-3 remedy are to contain the contaminated deep groundwater plume migrating from the site in conjunction with the OU-2 remedy, operate and maintain the OU-3 shallow extraction and

monitoring wells in the ROS, maintain the ROS pumping system through the RR ROW, and operate the in-situ flushing system in conjunction with the OU-2 groundwater treatment system. The OU-2 remedy was incorporated into the OU-3 as a final groundwater remedy. The OU-3 remedy consisted of the following elements:

- Installation of an additional groundwater recovery well and associated piping in the Source area of the site.
- Operate and maintain the existing groundwater treatment facility. Upgrade or retrofit the existing groundwater treatment facility to increase the capacity of the facility to process 60 to 70 gallons per minute (gpm) of contaminated water.
- Treat collected groundwater as necessary to meet discharge requirements.
- In-situ flushing in the Source area of the Site, with treated water from the groundwater treatment facility.
- Excavation of an area approximately 50 ft. by 50 ft. around wells SW-8 and SW-9 in the ROS Area, and a narrow zone along the abandoned sewer line about 200 ft. long and 20 ft. wide. The portion of the abandoned sewer line that has not been sealed will be removed. All excavated material will be properly disposed of off-site.
- Backfilling of the excavated area with clean fill, restoration of sidewalks, curbs, utilities, etc. and planting of appropriate vegetation.
- Installation of three groundwater recovery wells and associated piping in the ROS Area to extract groundwater and transport it to the site's groundwater treatment facility for remediation.
- Demonstrate recovery of benthic macroinvertebrate and fish communities, to examine the efficacy of the ROS Area excavation and groundwater treatment to reduce or eliminate the contaminant releases that are the major source of risk to aquatic organisms in Naylors Run.
- Perform groundwater monitoring.
- Implement institutional controls to protect the integrity of the remedy and to prevent the installation of groundwater wells, through groundwater use restrictions and notices for the site and surrounding area, as appropriate.

In November 2008, EPA began work to increase the capacity and optimize the existing groundwater treatment facility and to meet the 2008 OU-3 ROD requirements. EPA redesigned the pretreatment portion of the facility to increase the amount of water being treated. This portion of the Remedial Action (RA) was completed in February 2009 as part of the OU-2 long-term response action (LTRA). The facility currently treats 70 gpm of contaminated groundwater. From March through August 2010, the OU-3 remedy was implemented. Construction involved converting an existing monitoring well (CW-31D) to a deep recovery well (RW-7), adding three new shallow recovery wells (RW-8, RW-9, and RW-10) and three new monitoring wells (CW-32, CW-33, and CW-34) in the ROS Area, and converting three existing shallow recovery wells (RW-1, RW-2, and RW-4) into injection wells (IW-1, IW-2, and IW-3) with an associated pumping system as part of the in-situ flushing system. The treatment plant remained operational during construction.

The groundwater extraction and treatment system consists of six recovery wells, one collection trench (CTR), and an on-site treatment system. The CTR has been online since 2001; RW-5 and RW-6 have been online since February 2006; RW-7 was fully online in October 2010; and RW-8, RW-9, and RW-10 were online in August 2010. Four original recovery wells (RW-1, RW-2, RW-3, and RW-4) have been

offline since February 2006. In 2010, the former RW-1, RW-2, and RW-4 were converted into injection wells (IW-1, IW-2, and IW-3) and placed into service in August 2010. Since IW-1, IW-2, and IW-3 started plugging, two additional wells, IW-4 (formerly CW-29D) and IW-5 (formerly CW-30D), were placed online in July and October 2011, respectively.

To restore contaminated groundwater to beneficial use, remediation implemented under the remedies will operate until remediation goals (RGs) or groundwater clean-up goals are achieved. The RGs for groundwater OU-2 and OU-3 are presented in Table 1.

1.2 GROUNDWATER WELL NETWORK DESCRIPTION

The groundwater well network consists of recovery wells, injection wells, monitoring wells, and the CTR. Well construction data is provided in **Table 2**. These wells are also located on **Figure 2**.

There are six active recovery wells currently including RW-5, RW-6, RW-7, RW-8, RW-9, and RW-10. Four original recovery wells RW-1, RW-2, RW-3, and RW-4 have been offline since February 2006.

There are five injection wells (IW-1 through IW-5) in or near the source area. The injection wells IW-1, IW-2, and IW-3 were placed into service in August 2010. The former monitoring well CW-29D was converted into injection well IW-4 and placed online in July 2011, and the former monitoring well CW-30D was converted into injection well IW-5 and placed online in October 2011.

After IW well redevelopment in June 2013, three IW wells (IW-1, IW-2, and IW-3) were shut down. The injection system remains active with IW-4 and IW-5.

Four piezometers (PZ-1 through PZ-4) are used to monitor water levels in the CTR.

1.3 MONITORING PROGRAM

Presently, there are 60 wells included in the O&M groundwater monitoring program. These wells can be classified as shallow wells above bedrock [about 5 ft. to 30 ft. below ground surface (bgs)] and deep wells in the bedrock (up to 120 ft. deep). In 2010 and 2011, six wells were deleted from the program but remain available. In mid-2012, due to construction of the Young Men's Christian Association (YMCA) building, four monitoring wells (HAV-02, CW-6S, CW-6I, and CW-6D) were abandoned.

The purpose of this sampling is to monitor treatment system performance and migration of the PCP plume. Sampling is performed per the revised Sampling and Analysis Plan (SAP) (Tetra Tech, 2016b). Groundwater samples are collected on periodic as follows:

- Quarterly sampling to determine recovery system water quality and extraction system's effectiveness.
- Semi-annual sampling to determine recovery well water quality and effectiveness.
- Bi-annual sampling to monitor the edge of the shallow contaminant capture zone.
- Annual sampling to update the historical database.

Groundwater samples are analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides (low-level pentachlorophenol), metals, pesticides (dieldrin) and dioxin/furans. During well sampling, other parameters are also collected [e.g., pH, temperature, dissolved oxygen (DO), specific conductivity and oxidation-reduction potential (ORP)].

During the July 2017 to March 2018 period, all samples were sent to the DEP-designated laboratory for analysis. Samples collected during the June 2018 sampling event were sent to the laboratory procured by Tetra Tech (ALS Middletown).

2.0 GROUNDWATER MONITORING ACTIVITIES

2.1 SAMPLING METHODS

Groundwater samples were collected from the monitoring wells and injection wells through polyethylene (PE) tubing that was attached to a peristaltic pump with medical-grade flexible silicon tubing. The PE tubing was inserted down the well and set at the approximate midpoint of the screen. Geochemical parameters (DO, specific conductivity, pH, temperature, and ORP) were measured during purging using an YSI 556 water quality meter equipped with an in-line flow through cell. Turbidity was measured using a LaMotte 2020e turbidimeter during purging. The purging rate was set at between 0.1 to 0.4 liter/minute, and water levels were monitored to assure that the static water level was not drawn down into the well screen.

Purged water was monitored for pH, specific conductivity, temperature, turbidity, ORP, and dissolved oxygen (DO) every five minutes. When levels of these parameters stabilized, and a minimum of two saturated screen volumes had been removed from the well, the purging was considered complete and the groundwater samples were obtained. Parameter stabilization was defined as three successive readings (taken at least 5 minutes apart) within 0.1 unit for pH, 3% for specific conductivity, 10% for turbidity and DO, and 10 mV for ORP. All monitored parameter measurements (including time, water level, purge rate, temperature, pH, specific conductance, turbidity, DO, and ORP) were recorded on low-flow purge data sheets. Groundwater samples were collected in laboratory-supplied containers after three consistent readings of pH, specific conductivity, temperature, and turbidity ($\pm 10\%$), immediately placed on ice, and delivered under proper chain-of-custody protocol to the DEP-designated laboratory and ALS Environmental (June 2018 sampling event).

Groundwater samples of the recovery wells were collected from sampling ports located in the well vaults. After purging 5 gallons of the groundwater from sampling port, the groundwater sample was obtained. Temperature, pH, specific conductance, turbidity, DO and ORP, were measured and recorded on sampling logs.

2.2 GROUNDWATER SAMPLING EVENTS

2.2.1 September 2017 Sampling Event

A quarterly groundwater sampling event was performed on September 11-13, 2017. A total of 18 locations were sampled and analyzed as follows. The analytical results are provided in **Appendix A-1. Table 4A** summarizes the contaminants of concern (COCs) detected in well samples during the September 2017 sampling event and compares them to groundwater remediation goals (RGs) (**Table 1**).

- Seven groundwater extraction wells (RW-5 thru 10 and collection trench (CTR)), eight downgradient monitoring wells (HAV-04, HAV-05, CW-12D, CW-13D, CW-22S & 22D, MW-1, and MW-2) and three Recreation and Open Space (ROS) area monitoring wells (CW-32, CW-33,

and CW-34) were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

- Six ROS area wells (CW-32, CW-33, CW-34, RW-8, RW-9, and RW-10) were additionally analyzed for low pentachlorophenol (PCP) detection limit and dieldrin.

2.2.2 December 2017 Sampling Event

A quarterly groundwater sampling event was conducted on December 12 and 13, 2017. A total of 11 locations were sampled and analyzed as follows. The analytical results are provided in **Appendix A-2. Table 4B** summarizes the contaminants of concern (COCs) detected in well samples during the December 2017 sampling event and compares them to groundwater remediation goals (RGs) (**Table 1**).

- Three ROS area extraction wells (RW-8, RW-9, and RW-10) were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), low pentachlorophenol (PCP) detection limit and dieldrin.
- Eight downgradient monitoring wells (HAV-04, HAV-05, CW-12D, CW-13D, CW-22S & 22D, MW-1, and MW-2) were analyzed for VOCs and SVOCs.

2.2.3 March 2018 Sampling Event

The annual groundwater sampling event was performed from March 19 through March 28, 2018. A total of 50 wells were sampled and analyzed for TCL VOCs and SVOCs. A total of 16 wells were sampled and analyzed for TAL metals. A total of 5 wells were sampled and analyzed for dioxins/furans. Six ROS area wells were also analyzed for low pentachlorophenol (PCP) detection limit and three ROS recovery wells (RW-8, RW-9, and RW-10) were analyzed for dieldrin. Injection well IW-3 was dry and was not sampled. **Figure 2** presents sample locations. The analytical results are provided in **Appendix A-3. Table 4C** summarizes the contaminants of concern (COCs) detected in well samples during the March 2018 sampling event and compares them to groundwater remediation goals (RGs) (**Table 1**).

2.2.4 June 2018 Sampling Event

A quarterly groundwater sampling event was conducted on June 12 and 13, 2018. A total of 7 locations were sampled and analyzed as follows. The analytical results are provided in **Appendix A-4. Table 4D** summarizes the contaminants of concern (COCs) detected in well samples during the June 2018 sampling event and compares them to groundwater remediation goals (RGs) (**Table 1**).

- Six downgradient monitoring wells (CW-12D, CW-13D, CW-22S & 22D, MW-1 and MW-2) were analyzed for VOCs and SVOCs.
- Source area well R-2 was analyzed for VOCs, SVOCs and Dioxin.
- Quarterly sampling of ROS area wells was discontinued as per DEP.

2.3 WATER-LEVEL MEASUREMENTS

Water-level measurements were collected from 69 wells and a collection trench sump on June 12, 2018. Elevation measurements were obtained during a day of no precipitation, and at least 48 hours after the conclusion of any precipitation event. Static water levels were measured in all available wells using an electronic water-level indicator and were recorded to the nearest 0.01 foot. Groundwater level data are provided in **Table 3**.

Figure 3 shows groundwater contours for the shallow zone/overburden while the system was operational. **Figure 4** displays groundwater contours for the deep zone/bedrock while the system was operational.

3.0 DATA EVALUATION

3.1 GROUNDWATER LEVELS

Table 3 presents water-level data. **Figures 3** and **4** indicate a measurable drawdown near the RW wells and CTR. Pumping at recovery well RW-5 screened at 36 to 46 ft bgs continued to draw down water levels in surrounding deep wells CW-24, CW-26 and CW-16 S/I/D, and to impact the water level in downgradient wells CW 27D, and CW-4S/I/D. Pumping at RW-7 (screened from 90 to 120 ft bgs) draws down the water tables in surrounding wells CW-28, NW-1, CW-4S/I/D, and CW-17D, and impacts water levels in downgradient wells CW-3S/I/D, CW-5S/I/D, CW-18D, and CW-19D.

The pumping systems at the CTR (8 to 18 ft bgs) and RW-6 (screened from 25 to 35 ft bgs) continued to draw down water levels in nearby monitoring wells MW-1, MW-2, CW-9S/D, and downgradient wells HAV-07 and CW-21S/D. These two pumping systems also influenced water levels in upgradient wells HAV-04, HAV-05, and MW-3.

3.2 GROUNDWATER CONTAMINANT CONCENTRATIONS AND TRENDS

The shallow aquifer source area encompasses groundwater contamination associated with wells CW-2S, R-2, CW-4S, CW-5S, HAV-02 (now B-1), and HAV-04 (Tetra Tech, 1991). The OU-3 ROD (EPA, 2008) further defined the deep aquifer source area as encompassing wells CW-17D, CW-25D (now RW-5) CW-21, CW-2D, and CW-31D (now RW-7) by establishing the plume of deep free-product oil containing PCP. This area is considered to represent principal threat waste since it is a continuous source of groundwater contamination. The OU-3 ROD also considered well CW-16S to be representative of the shallow aquifer source area.

The complete sets of analytical data generated during the reporting period are included in **Appendix A**. **Tables 4A** through **4D** summarize the contaminants of concern (COCs) detected in well sampled during the 2017-2018 reporting period and compares them to groundwater remediation goals (RGs) (**Table 1**). **Figures 5** and **6** present the PCP concentrations detected during 2018 annual sampling event as iso-concentration contour maps for shallow overburden and deep bedrock wells, respectively.

Historical trends were evaluated by comparing current PCP concentrations with those detected during previous sampling events. The historical PCP and dioxin concentrations are presented in **Table 5** from March 2011 to June 2018. **Appendix B** graphically represent the historical trends of PCP concentrations during the period February 2008 through June 2018 in the source area wells (recovery wells, injection wells and surrounding wells); recovery trench area wells; plume perimeter wells; and ROS Area recovery wells and surrounding wells.

3.2.1 Recovery Well and Collection Trench PCP Concentrations and Trends

Generally, PCP concentrations in the recovery wells (RW) fluctuated as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
RW-5	2,860 µg/L	3,820 µg/L	3,500 µg/L	650 µg/L	800 µg/L
RW-6	306 µg/L	498 µg/L	418 µg/L	110 µg/L	200 µg/L
RW-7	2,580 µg/L	2,110 µg/L	3,050 µg/L	320 µg/L	960 µg/L

µg/L = Micrograms per liter

Based on the 2017-2018 data, PCP concentrations of RW-8, RW-9 and RW-10 have continued to be non-detect (ND) or below the groundwater RG of 1 µg/L since December 2012.

For CTR samples, PCP concentrations varied from 500 µg/L (March 2013) to 415 µg/L (April 2014) to 255 µg/L (April 2015) to 430 µg/L (March 2016) to 43 µg/L (March 2017) to 130 µg/L (March 2018). More detailed information may be found in **Table 5**.

3.2.2 Monitoring Well PCP Concentrations and Trends

Operation of deep recovery well RW-5 continued to decrease PCP concentrations in the source area deep groundwater (see **Figures 7 and 8**). During the period of 2013 to 2018, PCP concentrations in two deep wells have been ND while it reduced significantly in an additional deep well as below:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-16D	29.55 µg/L	3.7 µg/L	7.3 µg/L	ND	ND
CW-26D	3,560 µg/L	4.1 µg/L	3.6 µg/L	ND	ND
CW-27D	1,810 µg/L	1,950 µg/L	1,310 µg/L	490 µg/L	5 J µg/L

PCP concentrations in other adjacent wells near RW-5 fluctuated as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-24D	2,230 µg/L	1,920 µg/L	1,180 µg/L	620 µg/L	890 µg/L
CW-28D	6,830 µg/L	3,230 µg/L	219 µg/L	490 µg/L	390 µg/L

Operation of deep extraction well RW-7 continued to affect PCP concentrations in deep wells near RW-7 (**Figures 7, 8, 9, and 10**). During the period of 2013 to 2018, PCP concentrations in adjacent wells near RW-7 fluctuated as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-3D	552 µg/L	209 µg/L	215 µg/L	59 µg/L	170 µg/L
CW-4D	1,180 µg/L	1,260 µg/L	2,030 µg/L	320 µg/L	54 µg/L

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-5D	ND	6 µg/L	ND	ND	ND
CW-17D	3,780 µg/L	1,300 µg/L	2,800 µg/L	410 µg/L	1,300 µg/L
CW-18D	52.6 µg/L	59.8 µg/L	ND	ND	ND
CW-19D	1,030 µg/L	554 µg/L	1,040 µg/L	390 µg/L	450 µg/L

After the YMCA building addition, wells HAV-02, CW-6D, CW-6I, and CW-6S were abandoned in mid-2012 and are no longer part of the groundwater monitoring program.

Operation of deep extraction well RW-6 and CTR continued to decrease in PCP concentrations in groundwater around the CTR area and downgradient wells (see **Figure 9**). Specifically:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-21S	833 µg/L	892 µg/L	523 µg/L	450 µg/L	260 µg/L
CW-21D	830 µg/L	1,030 µg/L	827 µg/L	530 µg/L	430 µg/L
MW-1	ND	ND	ND	ND	ND
MW-2	4.3 µg/L	2.8 µg/L	3 µg/L	ND	ND

PCP concentrations for wells HAV-04, HAV-05, and MW-3 were as follows:

Well	April 2014	April 2015	March 2016	March 2017	June 2017	March 2018
HAV-04	3,290 µg/L	4,180 µg/L	5,910 µg/L	1,300 µg/L	1,700 µg/L	990 µg/L
HAV-05	2,020 µg/L	3,490 µg/L	502 µg/L	190 µg/L	94 µg/L	200 µg/L
MW-3	1,040 µg/L	599 µg/L	773 µg/L	49 µg/L	-	510 µg/L

HAV-4 and HAV-5 were also sampled in September 2017, and PCP concentration were 1,200 µg/L and 270 µg/L respectively. HAV-5 was also sampled in December 2017, PCP concentration was 190 µg/L. From downgradient of HAV-4 and HAV-5 wells and upgradient of ROS Area, PCP in four deep wells (CW-9D, CW-11D, CW-12D and CW-13D) located southeast of the main groundwater contaminant plume has been non-detect since April 2015 sampling. PCP in another deep well CW-10D, just north of CW-13D, was non-detect in 2014 and 2015 sampling, 6.2 µg/L in March 2016, and non-detect in March 2017 and March 2018 sampling. The PCP concentrations reported for these wells since 2012 are as follows:

Well	Sept 2012	April 2014	April 2015	March 2016	March 2017	March 2018
CW-9D	0.31 µg/L	ND	ND	ND	ND	-
CW-10D	6.7 µg/L	ND	ND	6.2 µg/L	ND	ND
CW-11D	1.2 µg/L	ND	ND	ND	ND	-
CW-12D	0.86 µg/L	4 µg/L	ND	ND	ND	ND
CW-13D	63 µg/L	115 µg/L	ND	ND	ND	ND

Figure 10 presents the historical trends of PCP concentrations detected in the downgradient plume perimeter wells.

3.2.3 In-Situ Flushing System PCP Concentrations and Trends

Operation of the in-situ flushing system continued to influence PCP concentrations in injection wells and deep wells near the injection system. IW-4 and IW-5 were both operational during the monitoring period from March 2013 to June 2018. IW-1, IW-2, and IW-3 were non-operational since June 2013. **Figure 11** presents historical trends of PCP concentrations in the injection wells.

For injection wells IW-4 and IW-5, PCP concentrations were as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
IW-4	11 µg/L	97.1 µg/L	47.8 µg/L	50 µg/L	ND
IW-5	33.2 µg/L	37.5 µg/L	172 µg/L	3 J µg/L	ND

PCP concentrations for non-operational wells IW-1, IW-2, and IW-3 fluctuated as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
IW-1	358 µg/L	981 µg/L	1,060 µg/L	360 µg/L	ND
IW-2	4,750 µg/L	4,750 µg/L	11 µg/L	2,600 µg/L	2,500 µg/L

Well	March 2012	June 2012	April 2014
IW-3	1,700 µg/L	3,100 µg/L	980 µg/L

Between 2011 and 2018, PCP concentrations for three deep wells were reported as follows:

Well	April 2014	April 2015	March 2016	March 2017	March 2018
CW-26D	3,560 µg/L	4.1 µg/L	3.7 µg/L	ND	ND
CW-27D	4,600 µg/L	1,950 µg/L	1,450 µg/L	490 µg/L	5 J µg/L
CW-28D	6,830 µg/L	3,230 µg/L	219 µg/L	490 µg/L	390 µg/L

These wells received the majority of injection flow throughout the year. To compensate for this, the injection pumping system was turned off prior to groundwater sampling events.

3.2.4 Other Groundwater Contaminants

Tables 4A through D provide a summary of the groundwater concentrations detected during the 2017-2018 reporting period. Trends for several other contaminants are discussed below.

Trichloroethene (TCE) and Vinyl Chloride: During the March 2018 annual sampling event, TCE was detected above the groundwater RG of 5 µg/L in wells CW-1S, CW-1D, and RW-5 at concentrations of 200 µg/L, 8 µg/L, and 6.6 µg/L, respectively. Additionally, TCE concentration exceeded its RG of 5 µg/L in wells CW-13D (5.1 µg/L) and RW-5 (10 µg/L) during the September 2017 sampling event.

TCE concentrations contained in well cluster CW-1 (upgradient of the site) were as follows:

Well	2014	2015	March 2016	March 2017	March 2018
CW-1S	160 µg/L	ND	401 µg/L	230 µg/L	200 µg/L
CW-1D	1.7 µg/L	3.6 µg/L	4.4 µg/L	14 µg/L	8 µg/L

TCE was also contained in downgradient wells CW-10D, and HAV-04 and source area recovery wells RW-5 and RW-7 as reported below:

Well	2014	2015	March 2016	March 2017	March 2018
CW-10D	5.8 µg/L	2.9 µg/L	2 µg/L	1.5 µg/L	0.6 µg/L
HAV-04	3.9 µg/L	7.2 µg/L	2.9 µg/L	Dry	0.9 µg/L
RW-5	10.5 µg/L	7.6 µg/L	9.5 µg/L	8.7 µg/L	6.6 µg/L
RW-7	4.5 µg/L	3.8 µg/L	2.2 µg/L	2.2 µg/L	1.4 µg/L

Vinyl chloride was also detected above the groundwater RG of 5 µg/L in wells CW-1D and CW-1S at concentrations of 24 µg/L and 22 µg/L, respectively.

Benzene was detected in wells CW-4I, CW-24D, HAV-05, and RW-5 at concentrations exceeding its RG of 5 µg/L. Benzene concentrations ranged from 6.4 µg/L contained in well HAV-05 (September 2018) to 21 µg/L in well CW-24D.

2-Methylnaphthalene was detected above the groundwater RG of 2 µg/L in wells HAV-04, CW-24D, RW-3, RW-5, and R-2 at concentrations of 78 µg/L (September 2017); 41 µg/L (March 2018); 4 µg/L (March 2018); 2 µg/L and 4 µg/L (September 2017 and March 2018); and 213 µg/L (June 2018), respectively.

Benzo(a)pyrene was detected above the groundwater RG of 0.2 µg/L in wells CW-16D and CW-16S at concentrations of 0.2 J µg/L and 1 µg/L, respectively.

Dibenzofuran was detected above the groundwater RG of 4 µg/L in wells RW-5, CW-24D, and R-2 at concentrations of 4 µg/L and 4 µg/L (September 2017 and March 2018); 6 µg/L (March 2018); and 4.6 µg/L (June 2018), respectively.

Naphthalene was detected above the groundwater RG of 3 µg/L in 10 wells during the reporting period. Concentrations were ranging from 3 µg/L in wells HAV-05 (March 2018) and MW-1 (September 2017) to 1,200 µg/L in well HAV-04 (September 2017).

In general, naphthalene concentrations continued to decline in most wells as follows:

Well	2014	2015	March 2016	March 2017	March 2018
HAV-04	ND	12.4 µg/L	216 µg/L	310 µg/L	1 µg/L
RW-5	175 µg/L	60.7 µg/L	62 µg/L	27 µg/L	21 µg/L
CW-2D	53 µg/L	ND	76.9 µg/L	48 µg/L	ND
CW-4I	2.7 µg/L	1.5 µg/L	9.7 µg/L	ND	ND
CW-4D	31.1 µg/L	3.4 µg/L	6.9 µg/L	ND	ND
CW-4S	ND	4.2 µg/L	ND	ND	ND
CW-17D	99.9 µg/L	ND	0.39 µg/L	0.2 J µg/L	ND
CW-26D	5.9 µg/L	ND	0.6 µg/L	23 µg/L	ND
CW-27D	4.2 µg/L	ND	2.5 µg/L	1 µg/L	ND
CW-28D	698 µg/L	127 µg/L	5.3 µg/L	21 µg/L	ND

However, naphthalene concentrations in 2018 increased in the following wells but still below 2016 level. Specifically:

Well	2014	2015	March 2016	March 2017	March 2018
RW-3	627 µg/L	1.7 µg/L	168 µg/L	1 µg/L	49 µg/L

Well	2014	2015	March 2016	March 2017	March 2018
RW-7	147 µg/L	78.6 µg/L	89.4 µg/L	4 µg/L	11 µg/L
CW-16S	9.9 µg/L	ND	ND	ND	1 µg/L
CW-24D	415 µg/L	193 µg/L	546 µg/L	180 µg/L	240 µg/L
HAV-05	123 µg/L	310 µg/L	3.4 µg/L	0.3 J µg/L	3 µg/L

4,6-Dinitro-2-methylphenol was detected above the groundwater RG of 1.7 µg/L in well HAV-04 at concentrations of 22 µg/L (September 2017).

Dioxins/Furans: Total 2,3,7,8-TCDD, reported as Dioxin Toxicity Equivalent Quotient (TEQ), was detected in wells HAV-05 and NW-1 at concentrations exceeding its RG of 30 pg/L. Specifically:

Well	2014	2015	March 2016	March 2017	March 2017
NW-1	25 pg/L	35 pg/L	101 pg/L	64.7 pg/L	44.9 pg/L
HAV-05				154 pg/L	35.6 pg/L

3.2.5 ROS Area Wells

Table 6 provides a comparison of groundwater remediation goals to sampling results of ROS wells during the 2012 to 2018 sampling events. Trends for COCs (PCP, TAL metals, and dieldrin) in regards to the ROS Area Shutdown Memo and subsequent EPA comments are as follows:

In March 2018, all six ROS area wells were tested for low PCP reporting detection limits (as herbicide). Based on these results, PCP concentration was non-detect (or below RDL) in four of the six ROS area wells. Trace concentrations of PCP were detected at RW-9 and CW-34, reported as 0.065 µg/L and 0.084 µg/L, respectively.

All six ROS area wells were tested for dieldrin (as pesticide) beginning with December 2016 sampling event. Based on the results obtained during the 2016 and 2017 calendar year that showed little fluctuation and upon further discussion with PADEP, it was decided to reduce sampling frequency of ROS area wells to once a year. Based on these results, dieldrin was detected in all six ROS area wells at concentrations exceeding its remediation goal of 0.038 µg/L during the reporting period.

Well	Dec 2016	March 2017	June 2017	Sept 2017	Dec 2017	March 2018
RW-8	0.24 µg/L	0.42 µg/L	0.29 µg/L	0.18 µg/L	0.24 µg/L	0.23 µg/L
RW-9	0.14 µg/L	0.27 µg/L	0.24 µg/L	0.15 µg/L	0.30 µg/L	0.087 µg/L
RW-10	0.18 µg/L	0.30 µg/L	0.29 µg/L	0.28 µg/L	0.26 µg/L	0.11 µg/L
CW-32	0.54 µg/L	0.74 µg/L	0.66 µg/L	0.39 µg/L	-	-

Well	Dec 2016	March 2017	June 2017	Sept 2017	Dec 2017	March 2018
CW-33	0.45 µg/L	0.66 µg/L	0.47 µg/L	0.41 µg/L	-	-
CW-34	0.30 µg/L	0.32 µg/L	0.25 µg/L	0.24 µg/L	-	-

Furthermore, all six ROS are wells were sampled for TAL metals. **Aluminum** was detected above the groundwater RG of 200 µg/L in wells CW-32 and CW-34 at concentrations of 1,100 µg/L and 2,130 µg/L, respectively.

Iron was detected above the groundwater RG of 300 µg/L in wells except CW-33 with concentrations ranging from 1,050 µg/L in RW-9 to 2,520 µg/L in CW-34.

Manganese was detected above the groundwater RG of 50 µg/L in wells RW-9, RW-10, CW-32, and CW-34 at concentrations of 626 µg/L, 1,240 µg/L, 84.6 µg/L, and 885 µg/L, respectively.

3.2.6 Conceptual Site Model (CSM)

Per the EPAs request, the Conceptual Site Model (CSM) for the site was updated to include the data from the 2018 sampling events. The purpose of this updated CSM is to depict current site conditions and compare them with historical conditions. The current CSM is based on the original CSM generated in 2006 and modified in 2014, and updated in 2017.

This updated CSM was generated using ArcGIS technology along with the most recent available aerial photograph as a background. It should be noted that site conditions have changed since this aerial was taken in 2010, and the former Gum Factory has been replaced with a new YMCA. Aerial photographs depicting the new YMCA were not available at the time this CSM update was performed.

New data was added to the map using the ESRI shapefile format for the groundwater levels, PCP concentration levels, and contours. The overhead view of the CSM is shown on **Figure 12**.

The three cross-section alignments generated during the 2014 update were updated with the March and June 2018 data as well. The alignment locations are shown on **Figure 12**. These cross-sections were generated in AutoCAD to depict the subsurface conditions at key locations and include the following:

- Parallel to the flow direction (cross-section A-A', **Figure 13**);
- Parallel to Eagle Road and perpendicular to the primary flow direction (cross-section B-B', **Figure 14**);
- Perpendicular to primary flow direction in the vicinity of historic groundwater discharge to the stream (cross-section C-C', **Figure 15**).

The electronic files of the surface map and the subsurface cross-sections constitutes the site CSM. Using this electronic resource, a variety of figures depicting different aspects of the CSM can be generated based on the requirements of the user.

Review of the data indicates that the primary contaminant demonstrating the extent of contamination is PCP. While other contaminants, such as naphthalene, are present at levels of concern, they do not have the overall lateral extent nor the consistently high concentrations of PCP. Therefore for mapping and

visual interpretation purposes, PCP is the most appropriate/conservative site chemical to depict the extent of contamination.

Historical CSM interpretation of the site is that there are two distinct zones of contamination, a shallow zone and a deep zone. While it is possible to separate out the contamination into these zones, comparison of the two indicates that with the exception of the occasional hot spots, plume morphology between depths is very similar. This is a result of the local geology which includes overburden, weathered rock which transition to bedrock in a heterogeneous manner across the site. However, with this in mind for the purposes of the CSM, the deep plume (which is the larger of the two plumes) was utilized to depict the overall extent of the contamination. This is considered the most conservative approach to depicting the current conditions of the CSM.

Review of pump test and boring log data at RW-5, RW-6, and RW-7 indicated a zone of vertical fracturing near the area shown on **Figure 12**. At this time, the fracture zone has not been fully delineated, and the approximate alignment shown on the map is the area estimated to have an impact on the wells currently included in the O&M monitoring. Based on the alignment of Naylor's Run, the rocks observed in the creek, and the approximate alignment of the fractures on the historic Naylor's Run stream channel, it is probable that the fracture zone extends further north and south away from the approximate alignment shown on the map.

A review of the updated CSM indicates that the vast majority of the plume is currently being captured by the existing remediation system. While 100% capture may not always occur due to abnormal conditions (such as an excessively rainy season, or technical issues) the remediation system has reduced the overall size of the plume from the 2005 extent and appears to contain it. However, since the 2017 CSM update, there does not appear to have a significant change in plume volume, though there has been a change in morphology, as seen by the extent of the 2018 plume when compared to the 2017 plume. Thus the plume appears to be within the capture zone.

Vertically, the extent of the plume is based on the groundwater model and analytical data, and the capture zone analysis indicates that groundwater capture extends below the bottom of the recovery wells. Cross-sections showing the estimated extent of vertical contamination are shown in **Figures 13, 14, and 15**. Overall, there has been little changed in the vertical profile of the plume when comparing the 2017 plumes.

Review of the cross-sections B-B' and C-C' indicate that while the contamination is migrating primarily in a northwest to southeast orientation, there is some migration away from the inferred source areas perpendicular to the primary regional flow direction. The CZA indicates that most of this migration is captured by the treatment system. It should also be noted that similar to the previous year's plumes, there appears to be influence on the plume morphology being caused by the pumping and re-injection of treated water into the aquifer. In particular, the plume is "pinched" near Eagle Road, with the plume wider to the northwest under the Source Area, and then again southeast underneath the YMCA. Continuation of this trend could indicate the start of hydraulic isolation between the source area and the downgradient plume.

3.3 DISCUSSION

Based upon a review of the groundwater data generated through June 2018, there has been contaminant reduction in both shallow and deep zones in general. Contaminant concentrations in some wells

fluctuated over the past three years and did not indicate a decreasing trend over time. **Appendix B** presents historical PCP concentrations in wells from February 2008 to June 2018.

Based on the 2017-2018 data, PCP concentrations in monitoring wells CW-13D, CW-22S and CW-22D continued to be non-detect. In March 2018, PCP concentrations in monitoring wells CW-1D, CW-4S, CW-5S, CW-5D, CW-10D, CW-16S, CW-16D, CW-18D, CW-20D, NW-1, IW-4 and IW-5 were also non-detect. Free product was observed at well R-2; however, the floating product depth continued to be non-existent at those wells formerly containing product.

Based on the 2012-2018 data, PCP concentrations for RW-8, RW-9, and RW-10 and monitoring wells (CW-32, CW-33, and CW-34) continued to be non-detect or remained well below the remediation goal. In March 2018, these three wells along with ROS area monitoring wells (CW-32, CW-33, and CW-34) were analyzed for SVOC using a reporting limit of 1 µg/L or lower based on EPA and DEP's mutual agreement.

Three ROS area wells (RW-8 thru RW-10) were tested for dieldrin (as pesticide) in September 2017, December 2017 and March 2018. Other three ROS area wells (CW-32, CW-33, and CW-34) were also tested for dieldrin in September 2017. Based on the results, dieldrin was detected in all six ROS area wells at concentrations exceeding its remediation goal of 0.038 µg/L.

PCP concentrations in HAV-04 reduced while there was no change in HAV-05. PCP concentration in downgradient wells (CW-10D and CW-13D) located southeast of the main groundwater contaminant plume has been non-detect since March 2017.

During the latest round of sampling in June 2018, PCP was detected at concentrations exceeding the remediation goal of 1 µg/L in downgradient monitoring wells MW-1, MW-2 and CW-12D (2.6 µg/L, 44 µg/L, and 17.4 µg/L, respectively). Historically, PCP concentrations in wells MW-2 and CW-12 have been non-detect. This unexpected spike in concentration could potentially be attributed to extended treatment plant shutdown in May 2018 because of plant repair activities.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The following conclusions have been made based on the analytical and hydrogeologic data collected over the monitoring period:

- Overall, there has been contaminant reduction in both shallow and deep groundwater zones since operation of the treatment plant began.
- The overall areal extent of the PCP plume based on 2018 data is smaller compared to 2017 based on PCP groundwater concentrations. Also, the magnitude of the plume is slightly lower.
- In general, historical trends of PCP concentrations in groundwater indicate a very gradual and uneven decrease in PCP concentrations.
- PCP concentrations for ROS Area recovery wells RW-8, RW-9, and RW-10 and ROS area monitoring wells CW-32, CW-33, and CW-34 continued to be non-detect.

- PCP concentrations in HAV-04 and HAV-05 have reduced significantly in last 4 years although it is still >1 mg/L in HAV-04. And it appears that downgradient wells CW-9S and CW-10S do not have any interconnection with these wells.

4.2 RECOMMENDATIONS

The following recommendations are made with respect to the groundwater monitoring results:

- Continue evaluating analytical and hydrogeologic data to determine the long-term effects of the extraction system on reducing the extent of the contaminant plume and the removal of contaminants.
- Continue monitoring the ROS Area recovery wells and nearby monitoring wells on an annual basis, as these wells have met the cleanup goal for VOCs and SVOCs.
- Sample HAV-04 and HAV-05 annually, because no significant change in concentration is expected on a quarterly basis.
- Monitor for anomalous fluctuations in PCP concentration in downgradient wells and conduct additional investigation.

5.0 REFERENCES

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TABLES

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- 2 Well Construction Details
- 3 June 2018 Well Groundwater Level Data
- 4A Summary of September 2017 Quarterly Sampling Event Analytical Results
- 4B Summary of December 2017 Quarterly Sampling Event Analytical Results
- 4C Summary of March 2018 Annual Sampling Event Analytical Results
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- 5 Historical Contaminant Concentrations in Monitoring Wells
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TABLE 1
REMEDIATION GOALS FOR GROUNDWATER
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

CHEMICAL	GOAL	UNIT	OU ⁽¹⁾ ⁽²⁾
Benzene	5 (MCL)	µg/L	2
Benzo(a)pyrene	0.2 (MCL)	µg/L	Both
Dieldrin	0.038 (Risk-Based)	µg/L	3
Bis(2-ethylhexyl)phthalate	6 (MCL)	µg/L	Both
Dibenzofuran	4 (Risk-Based)	µg/L	3
Ethylbenzene	700 (MCL)	µg/L	2
2-Methylnaphthalene	2 (Risk-Based)	µg/L	3
Naphthalene	3 (Risk-Based)	µg/L	3
Pentachlorophenol (PCP)	1 (MCL)	µg/L	Both
Phenanthrene	41 (Risk-Based)	µg/L	Both
Toluene	1,000 (MCL)	µg/L	2
Total 2,3,7,8-TCDD	0.00003 (MCL)	µg/L	Both
TCE	5 (MCL)	µg/L	2
1,2-Trichloroethylene	100 (MCLG)	µg/L	2
1,2,4-Trimethylbenzene	16 (Risk-Based)	µg/L	3
1,3,5-Trimethylbenzene	16 (Risk-Based)	µg/L	3
4,6-Dinitro-2-methylphenol	1.7 (Risk-Based)	µg/L	3
Vinyl chloride	5 (MCL)	µg/L	2
Xylene	10,000 (MCL)	µg/L	2
Aluminum	50-200 (SMCL)	µg/L	3
Arsenic	50 (MCL) (OU-2); 10 (MCL) (OU-3)	µg/L	Both
Chromium	100 (MCL)	µg/L	3
Barium	2,000 (MCL)	µg/L	3
Manganese	50 (SMCL)	µg/L	Both
Iron	300 (SMCL)	µg/L	3
Vanadium	3.1 (Risk-Based)	µg/L	3

References:

¹ Table 23 in OU-2 ROD, dated September 1991.

² Table 15 in OU-3 ROD, dated April 2008.

**TABLE 2
WELL CONSTRUCTION DETAILS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA**

Well-ID	Well diameter	Top of Casing Elevation	Well depth below top of casing		Screen interval Below TOC	Location	Installed	Comments
			ft.	top bot.				
CW-1D	2"	312.70	57.60	52.60 - 57.60		off Lawrence Road	February 1988	Sample annually (March)
CW-1I	2"	312.27	34.10	24.10 - 34.10		off Lawrence Road	February 1988	Deleted from sampling program March 2010
CW-1S	2"	312.17	21.30	11.30 - 21.30		off Lawrence Road	February 1988	Sample annually (March)
CW-2D	2"	316.51	65.20	57.20 - 65.20		GWTP Property, NE corner of cap	February 1988	Sample annually (March)
CW-2I	2"	316.45	41.20	31.20 - 41.20		GWTP Property, NE corner of cap	February 1988	Sample annually (March)
CW-2S	2"	316.38	26.20	16.20 - 26.20		GWTP Property, NE corner of cap	February 1988	Deleted from sampling program March 2010
CW-3D	2"	303.67	45.05	35.05 - 45.05		, NW building corner	February 1988	Sample annually (March)
CW-3I	2"	303.66	19.10	14.10 - 19.10		, NW building corner	February 1988	Deleted from sampling program March 2010
CW-3S	2"	303.80	15.60	5.60 - 15.60		, NW building corner	February 1988	2016 SAP - Sample biennial (March)
CW-4D	2"	304.29	49.25	39.25 - 49.25		SW building corner	February 1988	Sample annually (March)
CW-4I	2"	304.41	34.30	24.30 - 34.30		SW building corner	February 1988	Sample annually (March)
CW-4S	2"	304.53	23.02	8.02 - 23.02		SW building corner	February 1988	Sample annually (March)
CW-5D	2"	301.63	45.30	35.30 - 45.30		SE building corner	February 1988	Sample annually (March)
CW-5I	2"	301.80	30.65	20.65 - 30.65		SE building corner	February 1988	Deleted from sampling program March 2010
CW-5S	2"	302.16	16.93	8.00 - 18.00		building corner	February 1988	Sample annually (March)
CW-6D	2"	299.97	46.75	38.50 - 48.50		, NE building corner	February 1988	Abandoned 2012 by YMCA
CW-6I	2"	299.83	33.90	26.90 - 33.90		, NE building corner	February 1988	Abandoned 2012 by YMCA
CW-6S	2"	299.60	22.40	8.50 - 24.50		, NE building corner	February 1988	Abandoned 2012 by YMCA
CW-7D	4"	302.90	49.60	40.00 - 50.00			1991	2016 SAP - Sample every 5 years (Mar 2020)
CW-7S	4"	301.74	29.40	20.00 - 30.00			1991	2016 SAP - Sample every 5 years (Mar 2020)
CW-8D	4"	298.26	53.50	33.50 - 53.50		End of Ralston Ave.	1991	2016 SAP - Sample every 5 years (Mar 2020)
CW-8S	4"	299.11	30.00	20.00 - 30.00		End of Ralston Ave.	1991	2016 SAP - Sample every 5 years (Mar 2020)
CW-9D	4"	293.92	63.14	53.14 - 63.14		Rittenhouse Circle	September 2002	2016 SAP - Sample biennial (March 2019)
CW-9S	2"	293.79	35.60	25.60 - 35.60		Rittenhouse Circle	September 2002	Sample only if there is an exceedance in CW-9D
CW-10D	4"	279.90	54.28	39.28 - 54.28		Rittenhouse Circle	September 2002	Sample annually (March)
CW-10S	2"	280.10	24.30	9.30 - 24.30		Rittenhouse Circle	September 2002	Sample only if there is an exceedance in CW-10D
CW-11D	2"	276.92	71.03	56.03 - 71.03		Rittenhouse Circle	September 2002	2016 SAP - Sample biennial (March 2019)
CW-11S	2"	276.92	39.70	29.70 - 39.70		Rittenhouse Circle	September 2002	Sample only if there is an exceedance in CW-11D
CW-12D	4"	269.70	49.53	39.53 - 49.53		Rittenhouse Circle	September 2002	Sample Quarterly (Mar/Jun/Sep/Dec)
CW-12S	4"	269.67	34.80	24.80 - 34.80		Rittenhouse Circle	September 2002	Sample only if there is an exceedance in CW-12D
CW-13D	2"	292.12	75.25	60.25 - 75.25		Lawrence Road	September 2002	Sample Quarterly (Mar/Jun/Sep/Dec)
CW-13S	4"	292.01	45.14	33.14 - 45.14		Lawrence Road	September 2002	Sample only if there is an exceedance in CW-13D
CW-14D	2"	320.74	82.21	67.21 - 82.21		Lawrence Road Park behind rowhomes	September 2002	Deleted from sampling program March 2010
CW-14S	2"	320.43	40.55	25.55 - 40.55		Lawrence Road Park behind rowhomes	September 2002	Deleted from sampling program March 2010
CW-15S	2"	249.26	33.92	23.92 - 33.92		Bailey Park NW end of basketball courts	September 2002	Deleted from sampling program March 2010
CW-16D	2"	314.2	90.00	75.0 - 90.0			August 2004	Sample annually (March)
CW-16I	2"	314.3	68.00	53.0 - 68.0			August 2004	Deleted from sampling program March 2010
CW-16S	6"	314.0	55.00	38.0 - 55.0			March 2005	Sample annually (March)
CW-17D	2"	308.6	78.00	62.0 - 77.0		SW corner RW-3	August 2004	Sample annually (March)
CW-18D	2"	302.2	68.00	58.0 - 68.0		SE corner CW-5S	August 2004	Sample annually (March)
CW-19D	2"	299.1	101.00	68.0 - 78.0		rear parking lot near CW-6D	August 2004	Source Area - Sample annually (March)
CW-20D	2"	310.2	66.00	50.0 - 65.0		Lawrence Road	August 2004	Sample annually (March)
CW-20S	2"	310.1	35.00	15.0 - 35.0		Lawrence Road	August 2004	Sample annually (March)
CW-21D	2"	281.3	65.00	55.0 - 65.0		) rear yard	April 2005	Sample annually (March)
CW-21S	2"	281.3	40.00	30.0 - 40.0		) rear yard	April 2005	Sample annually (March)
CW-22D	2"	295.9	55.00	48.0 - 58.0		rear O.W.	March 2005	Sample Quarterly (Mar/Jun/Sep/Dec)
CW-22S	2"	297.0	28.30	18.0 - 28.0		rear W.	January 2005	Sample Quarterly (Mar/Jun/Sep/Dec)
CW-23D	2"	314.3	50.00	35.0 - 50.0		R-4	March 2005	2016 SAP - Sample every 5 years (Mar 2020)
CW-24D	6"	315.0	50.00	35.0 - 50.0			March 2005	Source Area - Sample annually (March)
CW-25D	6"	313.3	46.00	36.0 - 46.0			April 2005	Converted to RW-5 12/21/2005
CW-26D	6"	312.7	45.00	35.0 - 45.0		near RW-4	April 2005	Source Area - Sample annually (March)
CW-27D	6"	311.5	45.00	35.0 - 45.0		front yard	April 2005	Source Area - Sample annually (March)
CW-28D	6"	310.1	45.00	35.0 - 45.0		front yard	April 2005	Source Area - Sample annually (March)
CW-29D	6"	310.8	45.00	30.0 - 45.0		Cap area rear of	April 2005	Converted to IW-4 June 2011
CW-30D	6"	311.4	45.00	35.0 - 45.0		Cap area rear of	April 2005	Converted to IW-5 September 2011
CW-31D	4"	307.34	120.00	90.0 - 120.0		Loading Dock area of	Former B-2 (converted November 2008)	Converted to RW-7 April 2005

**TABLE 2
WELL CONSTRUCTION DETAILS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA**

Well-ID	Well diameter	Top of Casing Elevation	Well depth below top of casing	Screen interval below TOC	Location	Installed	Comments
		ft.	top	bot.			
EW-1	6"	303.09	80.00	40.00 - 80.00	██████████ rear parking lot	December 1995	Abandoned May 2005
EW-2	6"	301.74	75.00	40.00 - 75.00	██████████ rear parking lot	December 1995	Converted to MW-3 May 2005
EW-3	6"	298.07	82.00	44.00 - 82.00	██████████ parking lot	December 1995	Abandoned May 2005
CW-32	2"	261.47	23.00	13.00 - 23.00	ROS area	April 2010	ROS area monitoring well - sample semi-annually
CW-33	2"	260.31	16.00	6.00 - 16.00	ROS area	April 2010	ROS area monitoring well - sample semi-annually
CW-34	2"	260.78	26.00	16.00 - 26.00	ROS area	April 2010	ROS area monitoring well - sample semi-annually
HAV-02	2"	305.70	28.30	18.30 - 28.30	██████████, outside office entrance	July 1981	Abandoned 2012 by YMCA
HAV-04	2"	292.62	6.77	3.00 - 6.77	██████████) rear yard	July 1981	Per EPA - Sample Quarterly (Mar/Jun/Sep/Dec)
HAV-05	2"	292.56	10.05	6.50 - 11.50	██████████) rear yard	July 1981	Per EPA - Sample Quarterly (Mar/Jun/Sep/Dec)
HAV-07	2"	281.59	8.82	6.00 - 11.00	██████████) rear yard	July 1981	2016 SAP - Sample biennial (March 2019)
NW-1-81	4"	306.56	26.00	14.50 - 26.00	Along Eagle Road near GWTP	November 1981	2016 SAP - Sample biennial (March 2019)
NW-6-81	4"	308.19	24.00	14.00 - 24.00	██████████ off Lawrence Road	November 1981	Sample annually (March)
R-2	4"	311.36	29.00	9.00 - 29.00	██████████ near RW-2	November 1981	Sample annually (March)
R-4	4"	314.76	33.83	20.33 - 33.83	██████████	November 1981	Deleted from sampling program March 2010
MW-1	2"	283.96	21.65	4.50 - 24.50	Collection Trench	prior to 1999?	Sample Quarterly (Mar/Jun/Sep/Dec)
MW-2	2"	284.29	11.30	1.50 - 11.50	██████████) rear yard	prior to 1999?	Sample Quarterly (Mar/Jun/Sep/Dec)
MW-3	2"	301.37	63.00	53.0 - 63.0	██████████ parking lot	Former EW-2	Sample annually (March)
RW-1	6"	307.05	28.71	8.00 - 28.04	west side Eagle Road	August 1998	Offline March 2006; Converted to IW-1 June 2010
RW-2	6"	309.60	26.10	6.50 - 26.10	west side Eagle Road, ██████████	August 1998	Offline December 2005; Converted to IW-2 June 2010
RW-3	6"	306.59	25.75	9.10 - 25.75	east side Eagle Road, ██████████	August 1998	Sample annually (March)
RW-4	6"	311.22	26.10	6.52 - 26.10	west side Eagle Road, ██████████	August 1998	Offline August 2005; Converted to IW-3 June 2010
RW-5	6"	~309.80	46.00	36.00 - 46.00	██████████ exit lane	Former CW-25D (online Feb 2006)	Sample semi-annually (Mar/Sep)
RW-6	6"	283.25	35.00	25.00 - 35.00	downgradient of Collection Trench	2005 (online Apr 2006)	Sample semi-annually (Mar/Sep)
RW-7	4"	306.84	120.00	90.00 - 120.00	In front of ██████████	Former CW-31D (converted 2010)	Sample semi-annually (Mar/Sep)
RW-8	4"	256.32	17.00	7.00 - 17.00	ROS area	April 2010	Sample Quarterly (Mar/Jun/Sep/Dec)
RW-9	4"	256.78	18.00	8.00 - 18.00	ROS area	April 2010	Sample Quarterly (Mar/Jun/Sep/Dec)
RW-10	4"	257.87	18.00	8.00 - 18.00	ROS area	April 2010	Sample Quarterly (Mar/Jun/Sep/Dec)
IW-1	6"	307.05	28.71	8.00 - 28.04	west side Eagle Road	Former RW-1 (converted June 2010)	Online August 2010 Sample annually (March)
IW-2	6"	309.60	26.10	6.50 - 26.10	west side Eagle Road, ██████████	Former RW-2 (converted June 2010)	Online August 2010 Sample annually (March)
IW-3	6"	311.22	26.10	6.52 - 26.10	west side Eagle Road ██████████	Former RW-4 (converted June 2010)	Online August 2010 Sample annually (March)
IW-4	6"	310.8	45.00	30.00 - 45.00	Cap area rear of ██████████	Former CW-29D (converted June 2011)	Online July 2011 Sample annually (March)
IW-5	6"	311.4	45.00	35.00 - 45.00	Cap area rear of ██████████	Former CW-30D (converted September 2011)	Online October 2011 Sample annually (March)
B-1	4"	306.84	120.00	open borehole	In front of ██████████	October 2008	Observation Well
B-2/CW-31D	4"	307.34	120.00	open borehole	In front of ██████████	October 2008	Converted to CW-31D November 2008
B-3	4"	306.84	120.00	open borehole	In front of ██████████	October 2008	Observation Well
PZ-1	1"	286.49	8.97	n/a	Collection Trench	1999	Piezometer
PZ-2	1"	291.60	13.70	n/a	Collection Trench	1999	Piezometer
PZ-3	1"	285.26	11.92	n/a	Collection Trench	1999	Piezometer
PZ-4	1"	285.60	11.94	n/a	Collection Trench	1999	Piezometer - not found
TCE MW-1S	2"	308.30	15.00	5.00 - 15.00	SE corner ██████████	July 2011 TCE Study well - Weston	Site background well
TCE MW-1I	2"	308.13	25.00	15.00 - 25.00	SE corner ██████████	July 2011 TCE Study well - Weston	Site background well
TCE MW-2S	2"	307.31	16.00	6.00 - 16.00	rear of ██████████	July 2011 TCE Study well - Weston	Site background well
TCE MW-2I	2"	307.32	30.00	20.00 - 30.00	rear of ██████████	July 2011 TCE Study well - Weston	Site background well

Table 3
June 2018 Well Groundwater Level Data

Well ID	System Status >>		OFF/OFF	OFF/OFF	ON/ON	ON/ON		OFF/OFF	OFF/OFF	ON/ON	ON/ON	
	Total Depth	Top of Well Elev	DTW (12/26/17)	GW Elev (12/26/17)	DTW (4/3/18)	GW Elev (4/3/18)	Draw Down	DTW (6/12/18)	GW Elev (6/12/18)	DTW (6/27/18)	GW Elev (6/27/18)	Draw Down
	ft	msl					ft					ft
CW-1D	57.60	312.70	18 03	294.67		312.70	(18 03)	12.19	300.51	12.68	300 02	0.49
CW-1S	21.30	312.17	17.45	294.72		312.17	(17.45)	11.71	300.46	12.21	299 96	0.50
CW-2D	65.20	316.51	29.45	287.06		316.51	(29.45)	21.44	295.07	19.92	296 59	(1.52)
CW-2I	41.20	316.45	nd	#VALUE!		316.45	#VALUE!	21.18	295.27	18.38	298.07	(2.80)
CW-2S	26.20	316.38	25 90	290.48	23.50	292.88	(2.40)	20 93	295.45	19.10	297 28	(1.83)
CW-3D	45.05	303 67	nd	#VALUE!	nd	#VALUE!	#VALUE!	10.10	293.57	10.31	293.36	0.21
CW-3S	15.60	303 80	nd	#VALUE!	nd	#VALUE!	#VALUE!	nd	#VALUE!	nd	#VALUE!	#VALUE!
CW-4D	49.25	304.29	19.40	284.89	nd	#VALUE!	#VALUE!	12.02	292.27	13.05	291.24	1.03
CW-4I	34.30	304.41	nd	#VALUE!	nd	#VALUE!	#VALUE!	nd	#VALUE!		304.41	#VALUE!
CW-4S	23.02	304.53	20.15	284.38	nd	#VALUE!	#VALUE!	12.76	291.77	13.78	290.75	1.02
CW-5D	45.30	301.63	15 90	285.73	nd	#VALUE!	#VALUE!	8.50	293.13	9.40	292 23	0.90
CW-5S	16.93	302.16	15 30	286.86	nd	#VALUE!	#VALUE!	9.02	293.14	9.82	292.34	0.80
CW-7D	49.60	302.90	14 20	288.70	10.92	291.98	(3.28)	9.50	293.40	9.91	292.99	0.41
CW-7S	29.40	301.74	13 33	288.41	9.51	292.23	(3.82)	8.50	293.24	10.83	290 91	2.33
CW-8D	53.50	298.26	14 53	283.73	11.31	286.95	(3.22)	10 80	287.46	11.35	286 91	0.55
CW-8S	30.00	299.11	13.41	285.70	10.35	288.76	(3.06)	10 82	288.29	11.40	287.71	0.58
CW-9D	63.14	293.92	8.89	285.03	nd	#VALUE!	#VALUE!	1.79	292.13	1.38	292.54	(0.41)
CW-9S	35.60	293.79	7.72	286.07	nd	#VALUE!	#VALUE!	0.80	292.99	2.03	291.76	1.23
CW-10D	54.28	279 90	6.05	273.85	nd	#VALUE!	#VALUE!	3.35	276.55	3.95	275.95	0.60
CW-10S	24.30	280.10	5.38	274.72	nd	#VALUE!	#VALUE!	4.25	275.85	4.88	275.22	0.63
CW-11D	71.03	276 92	8.02	268.90	nd	#VALUE!	#VALUE!	nd	#VALUE!	7.45	269.47	#VALUE!
CW-11S	39.70	276 92	9.20	267.72	nd	#VALUE!	#VALUE!	7.54	269.38	7.24	269.68	(0.30)
CW-12D	49.53	269.70	5.66	264.04	nd	#VALUE!	#VALUE!	4.61	265.09	4.30	265.40	(0.31)
CW-12S	34.80	269.67	6.60	263.07	5.40	264.27	(1.20)	4.10	265.57	5.24	264.43	1.14
CW-13D	75.25	292.12	19.77	272.35	nd	#VALUE!	#VALUE!	17 35	274.77	17.06	275 06	(0.29)
CW-13S	45.14	292 01	18.48	273.53	nd	#VALUE!	#VALUE!	15.77	276.24	16.02	275 99	0.25
CW-14D	82.21	320.74	22 60	298.14	16.92	303.82	(5.68)	14.13	306.61	16.15	304 59	2.02
CW-14S	40.55	320.43	21 34	299.09	13.52	306.91	(7.82)	19.75	300.68	13.30	307.13	(6.45)
CW-15S	33.92	249.26	2.91	246.35	2.55	246.71	(0.36)	2.50	246.76	2.81	246.45	0.31
CW-16D	90.00	314.18	28.10	286.08		314.18	(28.10)	20 97	293.21	21.50	292 68	0.53
CW-16S	55.00	313.98	27 89	286.09		313.98	(27 89)	21.41	292.57	21.74	292 24	0.33
CW-17D	78.00	308.55	23 80	284.75		308.55	(23 80)	17 90	290.65	18.85	289 70	0.95
CW-18D	68.00	302.17	16.75	285.42		302.17	(16.75)	10 35	291.82	13.45	288.72	3.10
CW-19D	101.00	299.06	15 80	283.26		299.06	(15 80)	9.85	289.21	13.72	285 34	3.87
CW-20D	66.00	310.17	23 80	286.37		310.17	(23 80)	16 95	293.22	17.02	293 15	0.07
CW-20S	35.00	310.14	23 69	286.45		310.14	(23 69)	16 68	293.46	17.12	293 02	0.44
CW-21D	65.00	281.29	0.80	280.49		281.29	(0.80)	Artisan	#VALUE!	0.30	280.99	#VALUE!
CW-21S	40.00	281.29	0.40	280.89		281.29	(0.40)	Artisan	#VALUE!	0.40	280 89	#VALUE!
CW-22D	55.00	295.85	20.45	275.40		295.85	(20.45)	17.15	278.70	17.43	278.42	0.28
CW-22S	28.30	297.04	18.41	278.63		297.04	(18.41)	15 05	281.99	15.26	281.78	0.21
CW-23D	50.00	314.28	23 61	290.67		314.28	(23 61)	17 94	296.34	17.95	296 33	0.01
CW-24D	50.00	314.97	28 89	286.08		314.97	(28 89)	21 86	293.11	22.87	292.10	1.01
CW-26D	45.00	312.66	26.76	285.90		312.66	(26.76)	19 36	293.30	20.69	291 97	1.33
CW-27D	45.00	311.49	25 55	285.94		311.49	(25 55)	18 05	293.44	18.90	292 59	0.85
CW-28D	45.00	310.07	24.10	285.97		310.07	(24.10)	16 50	293.57	17.00	293 07	0.50
CW-32	23.00	261.47	4.10	257.37		261.47	(4.10)	3.85	257.62	4.09	257 38	0.24
CW-33	16.00	260.31	4.51	255.80		260.31	(4.51)	4.00	256.31	4.21	256.10	0.21
CW-34	26.00	260.78	5.20	255.58		260.78	(5.20)	3.80	256.98	5.10	255 68	1.30
HAV-04	6.77	292.62	5.75	286.87		292.62	(5.75)	Artisan	#VALUE!	0.50	292.12	#VALUE!
HAV-05	10.05	292.56	7.58	284.98		292.56	(7.58)	Artisan	#VALUE!	1.90	290.66	#VALUE!
HAV-07	8.82	281.59	0.85	280.74		281.59	(0.85)	Artisan	#VALUE!	0.30	281.29	#VALUE!
MW-1	21.65	283 96	2.71	281.25	nd	#VALUE!	#VALUE!	0.30	283.66	3.32	280.64	3.02
MW-2	11.30	284.29	3.10	281.19		284.29	(3.10)	2.91	281.38	4.29	280 00	1.38
MW-3	63.00	301.74	6.51	295.23		301.74	(6.51)	13 60	288.14	nd	#VALUE!	#VALUE!
NW-1-81	26.60	306.56	17.70	288.86		306.56	(17.70)	10 81	295.75	10.52	296 04	(0.29)
NW-6-81	24.00	308.19	16.10	292.09		308.19	(16.10)	10 25	297.94	10.65	297 54	0.40
R-2	28.61	311.36	25 35	286.01	20.70	290.66	(4.65)	17 69	293.67	17.82	293 54	0.13
R-4	33.83	314.76	24 32	290.44	19.80	294.96	(4.52)	18.44	296.32	18.45	296.31	0.01
IW-1	28.04	307 05	20 06	286.99	nd	#VALUE!	#VALUE!	11.68	295.37	10.30	296.75	(1.38)
IW-2	26.10	309 60	23 80	285.80	nd	#VALUE!	#VALUE!	16.05	293.55	16.64	292.96	0.59
IW-3	26.10	311.22	21 58	289.64	20.52	290.70	(1.06)	17 81	293.41	19.20	292.02	1.39
IW-4	45.00	310 83	26 64	284.19	nd	#VALUE!	#VALUE!	18.70	292.13	8.32	302.51	(10.38)
IW-5	45.00	311.41	26 85	284.56	nd	#VALUE!	#VALUE!	18.39	293.02	7.00	304.41	(11.39)
RW-3	25.75	306.59	21 05	285.54	nd	#VALUE!	#VALUE!	14.50	292.09	14.47	292.12	(0.03)
RW-5	42.50	309.80	45 20	264.60	49.20	260.60	4.00	nd	#VALUE!	nd	#VALUE!	#VALUE!
RW-6	36.75	283.25	2.91	280.34	91.60	191.65	88 69	0.50	282.75	3.01	280.24	2.51
RW-7	120.00	306.84	91 60	215.24	91.60	215.24	0.00	13 21	293.63	15.01	291.83	1.80
B-1	120.00	307.19	19 90	287.29	22.80	284.39	2.90	12 92	294.27	14.38	292 81	1.46
B-3	120.00	307.03	20.10	286.93	15.20	291.83	(4.90)	12.17	294.86	10.18	296 85	(1.99)
RW-8	17.00	256.32	51 90	204.42	51.90	204.42	0.00	Artisan	#VALUE!	Artisan	#VALUE!	#VALUE!
RW-9	18.00	256.78	10 60	246.18	10.90	245.88	0.30	0.80	255.98	1.23	255.55	0.43
RW-10	18.00	257.87	13 20	244.67	36.60	221.27	23.40	1.76	256.11	2.02	255 85	0.26
Trench Sump	17.50	285 00	13 90	271.10	11.40	273.60	(2.50)	1.85	283.15	nd	#VALUE!	#VALUE!

nd = No Data

Recovery System was OFF from 3/14/16 to 3/21/16

Injection System was OFF from 3/14/16 to 3/30/16

OFF/OFF = Recovery OFF / Injection System OFF

ON/OFF = Recovery system ON / Injection System OFF

TABLE 4A
SUMMARY OF SEPTEMBER 2017 QUARTERLY SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS											
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP-01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW5	HAV-LTR-DUP-02	HAV-LTR-RW6	HAV-LTR-RW7	
Sample Date:	Goals for	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/12/2017	9/13/2017	
Duplicate of:	Groundwater		HAV-LTR-RW8							HAV-LTR-RW5			
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Benzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.7	1.6	0.5	0.8	
Ethylbenzene	700	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.4	4.2	0.5 U	1.9	
Toluene	1000	0.2 J	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	1.9	0.5 U	0.6	
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	10	10	0.6	1.7	
Vinyl Chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.9	0.9	0.5 U	0.5 U	
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Benzo(a)pyrene	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Dibenzofuran	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4	4	0.7 J	3	
4,6-Dinitro-2-methylphenol	1.7	15 U	16 U	15 U	15 U	16 U	16 U	15 U	15 U	16 U	16 U	16 U	
bis(2-Ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
2-Methylnaphthalene	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	2	0.5 U	0.1 J	
Naphthalene	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	11	12	0.5 U	5	
Pentachlorophenol	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	600	480	200	460	
Phenanthrene	41	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	9	10	0.5 U	6	
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Pentachlorophenol	1	0.063	0.068	0.11	0.032 JP	0.052 U	0.052 U	0.11	NA	NA	NA	NA	
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Dieldrin	0.038	0.18	NA	0.15	0.28	0.39	0.41	0.24	NA	NA	NA	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4A
SUMMARY OF SEPTEMBER 2017 QUARTERLY SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS												FIELD QC	
Sample ID:	Remediation	HAV-LTR-CTR	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-HAV04	HAV-LTR-HAV05	HAV-LTR-TB-01	HAV-LTR-FB-01			
Sample Date:	Goals for	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/5/2017	9/11/2017			
Duplicate of:	Groundwater														
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result			
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Benzene	5	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4	6.4	0.5 U	0.5 U			
Ethylbenzene	700	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	6.9	0.5 U	0.5 U			
Toluene	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6	0.8	0.5 U	0.1 J			
Trichloroethene	5	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	5.1	2.1	1.4	0.5 U	0.5 U			
Vinyl Chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Benzo(a)pyrene	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U			
Dibenzofuran	4	0.5 J	1 U	1 U	1 U	1 U	1 U	1 U	3	0.9 J	NA	1 U			
4,6-Dinitro-2-methylphenol	1.7	16 U	15 U	16 U	16 U	15 U	16 U	16 U	22	16 U	NA	16 U			
bis(2-Ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U			
2-Methylnaphthalene	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	78	0.5 U	NA	0.5 U			
Naphthalene	3	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	160	3	NA	0.5 U			
Pentachlorophenol	1	73	3 J	5 U	5 U	5 U	5 U	5 U	1200	270	NA	5 U			
Phenanthrene	41	0.4 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	13	2	NA	0.5 U			
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.052 U			
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017 U			

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the

U - Not Detected Above Laboratory Quar

5.5 - Exceeds Remediation Goal for GW

DATA SUMMARY OF ANALYTICAL RESULTS
DECEMBER 2017
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC				ROS AREA WELLS							
Sample ID:	Remediation	HAV-LTR-FB01		HAV-LTR-TB01		HAV-LTR-RW8		HAV-LTR-DUP01		HAV-LTR-RW9		HAV-LTR-RW10	
Sample Date:	Goals for	12/12/2017		12/12/2017		12/12/2017		12/12/2017		12/12/2017		12/12/2017	
Duplicate of:	Groundwater							HAV-LTR-RW8					
		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Benzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	700	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Benzo(a)pyrene	0.2	0.6	U	NA		0.5	U	0.5	U	0.5	U	0.5	U
Dibenzofuran	4	1	U	NA		1	U	1	U	1	U	1	U
4,6-Dinitro-2-methylphenol	1.7	17	U	NA		16	U	16	U	15	U	16	U
bis(2-Ethylhexyl)phthalate	6	6	U	NA		5	U	5	U	5	U	5	U
2-Methylnaphthalene	2	0.6	U	NA		0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.6	U	NA		0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	6	U	NA		5	U	5	U	5	U	5	U
Phenanthrene	41	0.6	U	NA		0.5	U	0.5	U	0.5	U	0.5	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	0.048	U	NA		0.048	U	0.049	U	0.038	JP	0.12	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	0.017	U	NA		0.24		NA		0.3		0.26	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

DATA SUMMARY OF ANALYTICAL RESULTS
DECEMBER 2017
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-HAV5	HAV-LTR-CW12D	HAV-LTR-CW13D			
Sample Date:	Goals for	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/13/2017	12/13/2017	12/13/2017			
Duplicate of:	Groundwater										
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	0.5 U	0.5 U	0.5 U	0.5 U	2.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	0.5 U	0.5 U	0.5 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	1000	0.5 U	0.5 U	0.5 U	0.2 J	0.4 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.6	0.2 J	4.4	0.5 U	0.5 U	0.5 U
Vinyl Chloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzo(a)pyrene	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibenzofuran	4	1 U	1 U	1 U	1 U	2	1 U	1 U	1 U	1 U	1 U
4,6-Dinitro-2-methylphenol	1.7	16 U	15 U	15 U	15 U	16 U	15 U	15 U	15 U	15 U	15 U
bis(2-Ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	2	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	3	0.5 U	0.5 U	0.5 U	0.5 U	0.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Pentachlorophenol	1	5 U	5 U	5 U	5 U	190	5 U	5 U	5 U	5 U	5 U
Phenanthrene	41	0.5 U	0.5 U	0.5 U	0.5 U	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation Li

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS												
Sample ID:	Remediation	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW10	HAV-LTR-RW8	HAV-LTR-RW8X	HAV-LTR-RW9	HAV-LTR-CW12D	HAV-LTR-CW10D	HAV-LTR-CW13D			
Sample Date:	Goals for	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018			
Duplicate of:	Groundwater						HAV-LTR-RW8							
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result			
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Aluminum	200	1,100	21.5 U	2,130	22.1 J	21.5 U	21.5 U	30.1 J	NA	NA	NA			
Arsenic	10	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	NA	NA	NA			
Barium	2000	264	159	155	102	134	133	29.7	NA	NA	NA			
Iron	300	1,330	37.4 U	2,520	1,660	1,190	1,430	1,050	NA	NA	NA			
Manganese	50	84.6	6.4	885	1,240	13.4	12.8	626	NA	NA	NA			
Vanadium	3.1	2.8	0.21 U	5.3	1.1	0.21 U	0.21 U	0.7	NA	NA	NA			
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Pentachlorophenol	1	0.027 U	0.026 U	0.084	0.027 U	0.027 U	0.027 U	0.065	NA	NA	NA			
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Dieldrin	0.038	NA	NA	NA	0.11	0.23	0.23	0.087	NA	NA	NA			
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L			
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Benzene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Ethylbenzene	700	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.3 J	0.1 U	0.1 U	0.1 U	0.1 U			
Toluene	1000	0.1 U	0.1 U	0.2 J	0.1 J	0.1 J	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U			
Trichloroethene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.6	3.8			
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Dibenzofuran	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U			
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			
Pentachlorophenol	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U			
Phenanthrene	41	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW13X	HAV-LTR-CW20D	HAV-LTR-CW20S	HAV-LTR-CTR	HAV-LTR-CW16D	HAV-LTR-CW16S	HAV-LTR-CW17D	HAV-LTR-CW18D	HAV-LTR-CW19D	HAV-LTR-CW1D	HAV-LTR-CW1S
Sample Date:	Goals for	3/19/2018	3/19/2018	3/19/2018	3/27/2018	3/26/2018	3/26/2018	3/28/2018	3/26/2018	3/28/2018	3/27/2018	3/27/2018
Duplicate of:	Groundwater	HAV-LTR-CW13D										
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	21.5 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	NA	NA	NA	0.72 U	NA	NA	NA	NA	NA	NA	NA
Barium	2000	NA	NA	NA	172	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	802	NA	NA	NA	NA	NA	NA	NA
Manganese	50	NA	NA	NA	4320	NA	NA	NA	NA	NA	NA	NA
Vanadium	3.1	NA	NA	NA	0.21 U	NA	NA	NA	NA	NA	NA	NA
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	NA	0.336	NA	12.4	NA	NA	NA	NA	NA
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	0.1 U	0.1 U	0.1 U	0.2 J	0.1 U	0.1 U	4.6	0.1 U	0.5 J	0.1 U	0.3 J
Ethylbenzene	700	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5	0.1 U	0.2 U
Toluene	1000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	0.2 J	0.1 J	0.3 J	0.1 U	0.2 U
Trichloroethene	5	3.8	0.1 U	0.1 U	0.2 J	0.1 U	0.1 U	1.1	0.1 U	0.7	8	200
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	24	22
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3	0.5 U	1	0.5 U	0.5 J
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	0.6	0.1 U	0.1 J	0.1 U	0.1 U	0.1 U
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.3 J	1	0.1 U	0.5 J	0.1 U	0.1 U	0.1 U
Pentachlorophenol	1	1 U	1 U	1 J	130	1 U	1 U	1300	1 U	450	1 U	210
Phenanthrene	41	0.1 U	0.1 U	0.1 U	0.1 U	0.5 J	2	5	0.1 U	0.7	0.1 U	0.1 U

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

												OTHER SITE WELLS
Sample ID:	Remediation	HAV-LTR-CW21D	HAV-LTR-CW21S	HAV-LTR-CW21X	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-CW24D	HAV-LTR-CW26D	HAV-LTR-CW27D	HAV-LTR-CW27X	HAV-LTR-CW28D	HAV-LTR-CW2D
Sample Date:	Goals for	3/27/2018	3/27/2018	3/27/2018	3/27/2018	3/27/2018	3/26/2018	3/26/2018	3/20/2018	3/20/2018	3/19/2018	3/19/2018
Duplicate of:	Groundwater	HAV-LTR-CW21D										
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	NA	NA	21.5 U	NA	NA	NA	NA	NA
Arsenic	10	NA	NA	NA	NA	NA	20.9	NA	NA	NA	NA	NA
Barium	2000	NA	NA	NA	NA	NA	193	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA	64600	NA	NA	NA	NA	NA
Manganese	50	NA	NA	NA	NA	NA	5470	NA	NA	NA	NA	NA
Vanadium	3.1	NA	NA	NA	NA	NA	0.21 U	NA	NA	NA	NA	NA
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	1.8	1.1	1.8	0.1 U	0.1 U	21	0.4 J	0.1 U	0.1 U	0.1 U	0.1 U
Ethylbenzene	700	0.4 J	0.3 J	0.5 J	0.1 U	0.1 U	6.4	0.1 J	0.4 J	0.4 J	0.4 J	0.1 U
Toluene	1000	0.2 J	0.1 U	0.2 J	0.1 U	0.1 U	1.4	0.3 J	0.1 J	0.1 J	0.2 J	0.1 U
Trichloroethene	5	0.9	0.8	0.9	0.1 U	0.1 U	0.2 J	0.1 U	0.2 J	0.2 J	0.1 U	0.3 J
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	4	1	0.6 J	1	0.5 U	0.5 U	6	0.5 U	1	1	0.5 U	0.5 U
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	41	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	240	0.1 U	0.1 U	0.2 J	0.1 U	0.1 U
Pentachlorophenol	1	430	260	510	1 U	1 U	890	1 U	5 J	4 J	390	37
Phenanthrene	41	0.2 J	0.1 U	0.3 J	0.1 U	0.1 U	20	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I	HAV-LTR-CW3D	HAV-LTR-CW4D	HAV-LTR-CW4I	HAV-LTR-CW4S	HAV-LTR-CW5D	HAV-LTR-CW5S	HAV-LTR-HAV04	HAV-LTR-HAV05	HAV-LTR-IW1	HAV-LTR-IW2
Sample Date:	Goals for	3/19/2018	3/28/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/28/2018	3/28/2018	3/20/2018	3/20/2018
Duplicate of:	Groundwater											
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	408	NA	NA	NA	NA	NA	149	53 J
Arsenic	10	NA	NA	NA	31	NA	NA	NA	NA	NA	1.1 J	5.3
Barium	2000	NA	NA	NA	123	NA	NA	NA	NA	NA	27.7	183
Iron	300	NA	NA	NA	23100	NA	NA	NA	NA	NA	4700	51300
Manganese	50	NA	NA	NA	10000	NA	NA	NA	NA	NA	266	6900
Vanadium	3.1	NA	NA	NA	1.8	NA	NA	NA	NA	NA	1.9	3.6
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	NA	NA	NA	NA	NA	NA	35.6	NA	NA
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	0.1 U	0.1 U	2	9.2	0.1 U	0.1 U	0.1 U	2	0.8	0.1 U	0.1 U
Ethylbenzene	700	0.1 U	0.1 U	15	1	0.1 U	0.1 U	0.1 U	1	3.4	0.1 U	0.6
Toluene	1000	0.1 J	0.1 U	0.3 J	0.1 J	0.1 J	0.1 U	0.1 U	0.2 J	0.2 J	0.1 U	0.7
Trichloroethene	5	0.1 U	0.1 U	0.2 J	0.5 J	0.1 U	0.1 U	0.1 U	0.9	0.3 J	0.1 U	0.3 J
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J
Dibenzofuran	4	0.5 U	0.7 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	1	3	0.1 U	0.1 U
Pentachlorophenol	1	1 J	170	54	330	1 U	1 U	1 U	990	200	1 U	2500
Phenanthrene	41	0.1 U	0.1 U	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.6

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-IW4	HAV-LTR-IW5	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-MW3	HAV-LTR-NW01	HAV-LTR-NW06	HAV-LTR-RW3	HAV-LTR-RW5	HAV-LTR-RW5X	HAV-LTR-RW6
Sample Date:	Goals for	3/28/2018	3/28/2018	3/27/2018	3/27/2018	3/28/2018	3/20/2018	3/27/2018	3/27/2018	3/26/2018	3/26/2018	3/27/2018
Duplicate of:	Groundwater										HAV-LTR-RW5	
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	21.5 U	NA	NA	NA	NA	NA	32.2 J	NA	21.5 U	21.5 U	21.5 U
Arsenic	10	0.72 U	NA	NA	NA	NA	NA	5.6	NA	8.9	8.4	0.72 U
Barium	2000	7.1	NA	NA	NA	NA	NA	72.5	NA	78.9	85.9	85.5
Iron	300	483	NA	NA	NA	NA	NA	6960	NA	17300	16600	40300
Manganese	50	27.3	NA	NA	NA	NA	NA	5180	NA	7850	8340	2090
Vanadium	3.1	0.35 J	NA	NA	NA	NA	NA	0.21 U	NA	0.21 U	0.21 U	0.21 U
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	NA	NA	NA	44.9	NA	NA	1.14	0.96	NA
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.5 J	0.1 U	0.1 U	0.2 J	7	7.2	0.8
Ethylbenzene	700	0.1 U	0.1 U	0.1 U	0.1 U	0.6	0.1 U	0.1 U	7.4	9.5	9.3	0.1 U
Toluene	1000	0.1 J	0.1 U	0.1 U	0.1 U	0.4 J	0.1 U	0.1 U	2.2	1.8	1.8	0.3 J
Trichloroethene	5	0.1 U	0.1 U	0.1 J	0.1 U	0.9	0.1 U	0.2 J	0.6	6.6	6.3	0.6
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.7	0.7	0.1 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	4	0.6 U	0.5 U	0.5 U	0.5 U	0.8 J	0.5 U	0.5 U	2	4	4	0.6 J
4,6-Dinitro-2-methylphenol	1.7	6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	6 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	4	3	4	0.1 U
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	49	21	29	0.1 U
Pentachlorophenol	1	1 U	1 U	1 U	1 U	510	1 U	1200	1300	800	760	200
Phenanthrene	41	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	4	8	9	0.1 U

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4C
SUMMARY OF MARCH 2018 ANNUAL SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

			FIELD QC									
Sample ID:	Remediation	HAV-LTR-RW7	HAV-LTR-FB01	HAV-LTR-FB02	HAV-LTR-FB03	HAV-LTR-TB01	HAV-LTR-TB02	HAV-LTR-TB03	HAV-LTR-TB04	HAV-LTR-TB05		
Sample Date:	Goals for	3/27/2018	3/19/2018	3/27/2018	3/26/2018	3/19/2018	3/20/2018	3/26/2018	3/27/2018	3/28/2018		
Duplicate of:	Groundwater											
		Result	Result	Result	Result	Result	Result	Result	Result	Result		
INORGANICS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Aluminum	200	21.5 U	21.5 U	NA	NA	NA	NA	NA	NA	NA		
Arsenic	10	1.6 J	0.72 U	NA	NA	NA	NA	NA	NA	NA		
Barium	2000	74.6	0.72 U	NA	NA	NA	NA	NA	NA	NA		
Iron	300	11400	37.4 U	NA	NA	NA	NA	NA	NA	NA		
Manganese	50	7590	0.9 U	NA	NA	NA	NA	NA	NA	NA		
Vanadium	3.1	0.21 U	0.21 U	NA	NA	NA	NA	NA	NA	NA		
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Pentachlorophenol	1	NA	0.028 U	NA	NA	NA	NA	NA	NA	NA		
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Dieldrin	0.038	NA	0.0048 U	NA	NA	NA	NA	NA	NA	NA		
DIOXINS/FURANS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L		
Toxicity Equivalent Quotient (TEQ)	30	NA	NA	0.0276	NA	NA	NA	NA	NA	NA		
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Benzene	5	0.8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Ethylbenzene	700	1.7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Toluene	1000	0.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J		
Trichloroethene	5	1.4	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	NA		
Dibenzofuran	4	3	0.5 U	0.5 U	0.5 U	NA	NA	NA	NA	NA		
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	NA	NA	NA	NA	NA		
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	NA	NA	NA	NA	NA		
2-Methylnaphthalene	2	0.4 J	0.1 U	0.1 U	0.1 J	NA	NA	NA	NA	NA		
Naphthalene	3	11	0.1 U	0.1 U	0.2 J	NA	NA	NA	NA	NA		
Pentachlorophenol	1	960	1 U	1 U	1 U	NA	NA	NA	NA	NA		
Phenanthrene	41	3	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	NA		

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4D
SUMMARY OF JUNE 2018 QUARTERLY SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation Goals for	SITE WELLS					
		HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01	
Sample Date:	Groundwater	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018	
Duplicate of:		Result	Result	Result	Result	Result	
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
BENZENE	5	1 U	1 U	1 U	1 U	1 U	
ETHYLBENZENE	700	1 U	1 U	1 U	1 U	1 U	
TOLUENE	1000	1 U	1 U	1 U	1 U	1 U	
TRICHLOROETHYLENE (TCE)	5	1 U	3.6	1 U	1 U	1 U	
VINYL CHLORIDE	5	1 U	1 U	1 U	1 U	1 U	
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
2-METHYLNAPHTHALENE	2	0.35 J	1.5 U	1.6 U	1.4 U	1.6 U	
4,6-DINITRO-2-METHYLPHENOL	1.7	6.2 U	6.1 U	6.3 U	5.7 U	6.3 U	
BENZO(A)PYRENE	0.2	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U	
BIS(2-ETHYLHEXYL) PHTHALATE	6	3.1 U	0.28 J	3.2 U	2.8 U	3.2 U	
DIBENZOFURAN	4	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
NAPHTHALENE	3	1.3 J	1.5 U	1.6 U	1.4 U	1.6 U	
PENTACHLOROPHENOL	1	17.4	6.1 U	6.3 U	5.7 U	2.6 J	
PHENANTHRENE	41	0.14 J	1.5 U	1.6 U	1.4 U	1.6 U	
DIOXINS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 4D
SUMMARY OF JUNE 2018 QUARTERLY SAMPLING EVENT ANALYTICAL RESULTS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

						FIELD QC	
Sample ID:	Remediation	HAV-LTR-MW02	HAV-LTR-R2	HAV-LTR-DUP01	HAV-LTR-FB01	HAV-LTR-TB01	
Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018	
Duplicate of:	Groundwater			HAV-LTR-R2			
		Result	Result	Result	Result	Result	
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
BENZENE	5	1 U	5 U	5 U	1 U	1 U	
ETHYLBENZENE	700	1 U	13.7	13.4	1 U	1 U	
TOLUENE	1000	1 U	4.9 J	4.8 J	1 U	1 U	
TRICHLOROETHYLENE (TCE)	5	1 U	5 U	5 U	1 U	1 U	
VINYL CHLORIDE	5	1 U	5 U	5 U	1 U	1 U	
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
2-METHYLNAPHTHALENE	2	1.4 U	191	213	1.4 U	NA	
4,6-DINITRO-2-METHYLPHENOL	1.7	5.6 U	594 U	5.8 U	5.7 U	NA	
BENZO(A)PYRENE	0.2	1.4 U	149 U	1.5 U	1.4 U	NA	
BIS(2-ETHYLHEXYL) PHTHALATE	6	2.8 U	297 U	2.9 U	2.9 U	NA	
DIBENZOFURAN	4	2.8 U	297 U	4.6	2.9 U	NA	
NAPHTHALENE	3	1.4 U	715	803	1.4 U	NA	
PENTACHLOROPHENOL	1	44	7410	7960	5.7 U	NA	
PHENANTHRENE	41	1.4 U	149 U	12.7	1.4 U	NA	
DIOXINS	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	
TEQ WHO 2005 - EDLx0.0	30	NA	26	NA	NA	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

TABLE 5
HISTORICAL CONTAMINANT CONCENTRATIONS IN MONITORING WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Well Location	Mar. 11		Jun. 11	Sep. 11		Dec. 11	Mar. 12		Jun. 12	Sep. 12		Dec. 12	Mar. 13		Jun. 13	Nov. 13	Jan. 14	Apr. 14		Jul. 14	Sep. 14		Dec. 14	Apr. 15		Jul. 15	Sep. 15		Dec. 15	Mar. 16		Jun. 16	Sep. 16		Dec. 16	
	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	PCP ug/L	Dioxin ppt (ng/l)	PCP ug/L	Dieldrin ug/L
CW-1S	180+						13						160					145						97						202						
CW-1I																																				
CW-1D	30	0.00025					20						8.9					11.4	0.00004					7.3					2.7							
CW-2S																																				
CW-2I			4200				2800+						2500					657						327					1340							
CW-2D	1800+	0.00132					1700+						1800					2310	0.00038					2675				2260								
CW-3S			3.1				54						2.3					ND						ND				ND								
CW-3I																																				
CW-3D	220+	0.00207					120+						140					552	0.000559					209				215								
CW-4S	410+						68						1000					807						528				373								
CW-4I			640				740+						1400					956						1660				2350								
CW-4D	120+	0.00036					ND						1700					1180	0.000246					1260				2030								
CW-5S			ND				ND						240					3.3						108				5.9								
CW-5I																																				
CW-5D	ND	0.00033					ND						16					ND	0.000184					6				ND								
CW-6S			ND				ND																													
CW-6I																																				
CW-6D	440+	0.00073					150+																													
CW-7S							ND											ND						ND												
CW-7D							ND											ND						ND												
CW-8S	ND												ND											ND												
CW-8D	0.54												ND											ND												
R-2	500+	0.369					6000+	0.297					3300	0.176																						
R-4																																				
HAV-02	3700+	0.356					7800																													
HAV-04			4900				4000						2900					3290						4180					5910							
HAV-07	0.18		ND	ND		ND	ND		ND	0.48		0.59	ND		ND	ND	ND			ND			ND		ND				ND							
HAV-05	660+	0.134	270	860+		360+	3100	0.0244	4600	4500		6000	3600	0.073	3100	5960	4130	2020	0.0188	1800			3920	3490	0.028	2150			502	0.0179						
NW-01	9.3	0.0866				9.3	ND	0.0525					9.8	0.1060				ND	0.025					ND	0.035				ND	0.101						
NW-06	1100+	0.00051				1100+	1600+						520					891	0.00042					471					504							
CW-9S							ND																													
CW-9D				0.51						0.31								ND						ND					ND							
CW-10S	ND												ND																							
CW-10D				180+	0.00022					6.70	0.0000068							ND	0.000068					ND	0.000080				6.2	0.00115						
CW-11S	ND												ND																							
CW-11D				ND						1.20								ND						ND					ND							
CW-12S							ND																	ND												
CW-12D				0.19						0.86								4						ND					ND		ND		ND			
CW-13S							ND																	ND												
CW-13D				ND						63		ND						115						ND					ND		ND		ND			
CW-14S	ND						ND						ND																							
CW-14D	ND						ND						ND																							
CW-15	ND						ND						ND					ND																		
IW-1(RW-1)	41					130+	430+		210	410		190	ND			643		358						981					1060							
IW-2(RW-2)	5.6					4000+	2400+		6200	5200		5500	4800			10200		4750						4920					DRY							
RW-3	4300+						5000						3800					8620						4160	0.00230				2540							
IW-3(RW-4)	2.5					510+	1700		3100			DRY	DRY					980						DRY				DRY								
RW-5	1300+	0.00026		2900+			1900	0.000697		2000	0.0017		5200	0.00013		4040		2860	0.00328		2350	0.00016		3820	0.00009		2740	0.00030		3410	0.00259		2050(2220)	0.000175(0.000162)		
RW-6	310+	0.000009		780+			460			470			700			289		306	0.00033					498			400		418			436				
RW-7	2300+			3700+			3100+			2300			3200			2850		2580						2110	0.00005		2080		2740			1970				
RW-8							ND			ND		ND	ND		ND	ND	ND	ND		ND	ND	ND	ND	ND		0.056	ND		ND		ND	ND/ND		ND/ND	0.24	
RW-9							ND			ND		ND	ND		ND	ND	ND	ND		ND	ND	ND	ND	ND		0.076	0.079 J		ND		ND	ND/ND(ND)		0.099/ND	0.14	
RW-10							ND			160		ND	ND		ND	ND	ND	ND		ND	ND	2.4 J	ND	ND		0.062	ND		ND		ND	ND/ND		0.076/ND	0.18	
CTR	330+	0.0040		710+			420+	0.00233	1200	0.000031			500	0.00227		775		415	0.00018		509	0.00959		255	0.00565		287	0.00071		430	0.00048		575	0.000518		
Plant Inf.	1700	0.00012	1600	3300	0.0019	2200	1900	0.197	3600	1900	0.0000	1800	2400	0.0014	2200	3620		3240	0.00014	2740				1710	0.00012		2010	0.00051	1780	1530	0.00128	1530	1790	0.000381	600	
MW-1	2.6		5.0	27		8.1	ND		18	81		19	2.4		ND	10.6	3.4	ND		ND	3.3		ND	ND		ND	ND		1.8	ND		ND		ND		
MW-2	0.50		ND	2.9		3.7	12		ND	0.73		1.3	ND		ND	ND	ND	4.3		ND	1.70		ND	2.8		ND	ND		3.0 J	ND		ND		ND		
MW-3	1500+						900+						920					1040						599				773								
CW-16S	1200+						470+	0.00833					2300	0.022				101	0.00274					8.4	0.00310				7.0	0.0166						
CW-16I																																				
CW-16D	48	0.00105					31						33					29.55	0.00048					3												

TABLE 5
HISTORICAL CONTAMINANT CONCENTRATIONS IN MONITORING WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Well Location	Mar. 17			Jun. 17		Sep. 17		Dec.17		Mar. 18			Jun. 18		Well Location
	PCP ug/L	Dioxin ppt (ng/l)	Dieldrin ug/L	PCP ug/L	Dieldrin ug/L	PCP ug/L	Dieldrin ug/L	PCP ug/L	Dieldrin ug/L	PCP ug/L	Dioxin ppt (ng/l)	Dieldrin ug/L	PCP ug/L	Dioxin ppt (ng/l)	
CW-1S	210				ND					210					CW-1S
CW-1I															CW-1I
CW-1D	5.0 J									ND					CW-1D
CW-2S															CW-2S
CW-2I	420									1 J					CW-2I
CW-2D	760									37					CW-2D
CW-3S	DRY														CW-3S
CW-3I															CW-3I
CW-3D	59(54)									170					CW-3D
CW-4S	55									ND					CW-4S
CW-4I	420									330					CW-4I
CW-4D	320									54					CW-4D
CW-5S	1.0 J									ND					CW-5S
CW-5I															CW-5I
CW-5D	ND									ND					CW-5D
CW-6S															CW-6S
CW-6I															CW-6I
CW-6D															CW-6D
CW-7S															CW-7S
CW-7D															CW-7D
CW-8S															CW-8S
CW-8D															CW-8D
R-2													7410(7960)	0.026	R-2
R-4															R-4
HAV-02															HAV-02
HAV-04	1300			1700		1200				990					HAV-04
HAV-07	ND														HAV-07
HAV-05	190	0.154		94		270		190		200	0.0356				HAV-05
NW-01	ND	0.0674			ND					ND	0.0449				NW-01
NW-06	1400									1200					NW-06
CW-9S	ND														CW-9S
CW-9D	ND														CW-9D
CW-10S	ND														CW-10S
CW-10D	ND									ND					CW-10D
CW-11S															CW-11S
CW-11D	ND														CW-11D
CW-12S															CW-12S
CW-12D	ND			ND		ND		ND		ND			17.4		CW-12D
CW-13S	ND														CW-13S
CW-13D	ND{ND}			ND		ND		ND		ND{ND}			ND		CW-13D
CW-14S															CW-14S
CW-14D															CW-14D
CW-15															CW-15
IW-1(RW-1)	360									ND					IW-1(RW-1)
IW-2(RW-2)	2600									2500					IW-2(RW-2)
RW-3	610									1300					RW-3
IW-3(RW-4)	DRY									DRY					IW-3(RW-4)
RW-5	650(470)	0.000398(0.00047)			0.022	600(480)				800(760)	0.00114(0.00096)				RW-5
RW-6	110					200				200					RW-6
RW-7	320				0.012 J	160				960					RW-7
RW-8	ND/ND{ND}		0.42{0.56}	0.034 J	0.29{0.31}	0.063{0.068}/ND{ND}	0.18	ND{ND}/ND{ND}	0.24	ND{ND}/ND{ND}		0.23{0.23}			RW-8
RW-9	0.14/ND		0.27	0.14	0.24	0.11/ND	0.15	0.038 JP/ND	0.30	0.065/ND		0.09			RW-9
RW-10	ND/ND		0.30	0.048 J	0.29	0.032 JP/ND	0.28	0.12/ND	0.26	ND/ND		0.11			RW-10
CTR	43	0.000156				73				130	0.000336				CTR
Plant Inf.	690	0.000127		920		630		680		510	0.000268		2610		Plant Inf.
MW-1	ND			ND		3 J		ND		ND			7.6 J		MW-1
MW-2	ND			ND		ND		ND		ND			44		MW-2
MW-3	49									510					MW-3
CW-16S	3.0 J	0.000849								ND	0.012400				CW-16S
CW-16I															CW-16I
CW-16D	ND									ND					CW-16D
CW-17D	410									1300					CW-17D
CW-18D	ND									ND					CW-18D
CW-19D	390									450					CW-19D
CW-20S	1.0 J									1 J					CW-20S
CW-20D	ND									ND					CW-20D
CW-21S	450									260					CW-21S
CW-21D	530(500)									430(510)					CW-21D
CW-22S	ND			ND	0.17	ND		ND		ND			ND		CW-22S
CW-22D	ND			ND		ND		ND		ND			ND		CW-22D
CW-23D															CW-23D
CW-24D	620	0.0296								890					CW-24D
CW-25D															CW-25D
CW-26D	ND									ND					CW-26D
CW-27D	490(540)				ND					5 J{4 J}					CW-27D
CW-28D	490									390					CW-28D
IW-4(CW-29D)	50									ND					IW-4(CW-29D)
IW-5(CW-30D)	3.0 J									ND					IW-5(CW-30D)
CW-31D															CW-31D
CW-32	ND/ND		0.74		0.66	ND/ND	0.39			ND/ND					CW-32
CW-33	ND/ND		0.66		0.47	ND/ND	0.41			ND/ND					CW-33
CW-34	0.088/ND		0.32		0.25	0.11/ND	0.24			0.084/ND					CW-34

TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-RW-8																							
Sample Date:	Goals for	3/19/2012	9/24/2012	12/17/2012	3/19/2013	6/12/2013	11/12/2013	1/27/2014	4/29/2014	6/30/2014	10/1/2014	12/30/2014	4/20/2015	7/1/2015	9/21/2015	12/16/2015	3/21/2016	6/14/2016	9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	12/12/2017	3/19/2018
	Groundwater																								
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L
Aluminum	200	200 U	NA	NA	NA	1510	NA	NA	NA	89 U	NA	NA	89 U	NA	NA	NA	NA	NA	0.11	NA	8.58	NA	NA	NA	21.5 U
Arsenic	10	10 U	NA	NA	NA	10 U	NA	NA	NA	3	NA	NA	3 U	NA	NA	NA	NA	NA	0.003 U	NA	0.0024	NA	NA	NA	0.72 U
Barium	2000	90.4 J	NA	NA	NA	231 J	NA	NA	NA	81	NA	NA	NA	NA	NA	NA	NA	NA	0.097	NA	0.251	NA	NA	NA	134
Iron	300	100 U	NA	NA	NA	6180 J	NA	NA	NA	23	NA	NA	52 J	NA	NA	NA	NA	NA	0.43	NA	15.9	NA	NA	NA	1,190
Manganese	50	865	NA	NA	NA	1830	NA	NA	NA	760	NA	NA	4.8 J	NA	NA	NA	NA	NA	0.54	NA	0.333	NA	NA	NA	13.4
Vanadium	3.1	50 U	NA	NA	NA	50 U	NA	NA	NA	2.2 U	NA	NA	NA	NA	NA	NA	NA	NA	0.0021 J	NA	0.0215	NA	NA	NA	0.21 U
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L
2-Methyl-4,6-dinitrophenol	1.7	10 U	10 U	10 U	10 U	10 U	7.6 U	7.5 U	7.5 U	7.5 U	7.6 U	7.5 U	7.6 U	7.5 U	7.7 U	6 U	5.6 U	5.7 U	6 U	5 U	5 U	5 U	15 U	16 U	5 U
2-Methylnaphthalene	2	5 U	5 U	5 U	5 U	5 U	1.9 U	1.9 U	1.4 U	1.4 U	1.9 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Benzo(a)pyrene	0.2	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Bis(2-ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.9 U	3 U	2.8 U	2.9 U	3 U	2 U	2 U	2 U	5 U	5 U	2 U
Dibenzofuran	4	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.9 U	3 U	2.8 U	2.9 U	3 U	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U
Naphthalene	3	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Pentachlorophenol	1	10 U	10 U	10 U	10 U	10 U	15.2 U	15.1 U	15 U	15.1 U	0.93 U	15.1 U	14.9 U	15 U	0.19 U	0.19 U	5.6 U	0.19 U	6 U	1 U	1 U	1 U	5 U	5 U	1 U
Phenanthrene	41	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	0.018 J	1.4 U	1.4 U	1.4 U	1.4 U	0.1 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
Benzene	5	5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Ethylbenzene	700	5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.2 J
Toluene	1000	5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.5 U	0.1 J
Trichloroethene	5	5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Vinyl Chloride	5	5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.063	0.048 U	0.027 U	
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	ug/L	ug/L	ug/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.24	0.42	0.29	0.18	0.24	0.23

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation Limit
5.5 - Exceeds Remediation Goal for GW

TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-RW-9																								
Sample Date:	Goals for	3/19/2012	9/24/2012	12/20/2012	3/19/2013	6/12/2013	11/12/2013	1/27/2014	4/29/2014	6/30/2014	10/1/2014	12/30/2014	4/20/2014	7/1/2015	9/21/2015	12/16/2015	12/16/2015	3/21/2016	6/14/2016	9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	12/12/2017	3/19/2018
	Groundwater																									
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
Aluminum	200	200 U	NA	NA	200 U	NA	NA	NA	89 U	NA	NA	NA	590	NA	NA	NA	NA	NA	NA	0.36	NA	0.0528 J	NA	NA	NA	30.1 J
Arsenic	10	10 U	NA	NA	10 U	NA	NA	NA	3	NA	NA	NA	3 U	NA	NA	NA	NA	NA	NA	0.003 U	NA	0.003 U	NA	NA	NA	0.72 U
Barium	2000	85.5 J	NA	NA	200 U	NA	NA	NA	82	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	NA	0.107	NA	NA	NA	29.7
Iron	300	100 U	NA	NA	100 U	NA	NA	NA	19	NA	NA	NA	220	NA	NA	NA	NA	NA	NA	0.92	NA	0.232	NA	NA	NA	1,050
Manganese	50	1940	NA	NA	364	NA	NA	NA	730	NA	NA	NA	35	NA	NA	NA	NA	NA	NA	1.7	NA	0.991	NA	NA	NA	626
Vanadium	3.1	50 U	NA	NA	50 U	NA	NA	NA	2.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0029	NA	0.00077	NA	NA	NA	0.7
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
2-Methyl-4,6-dinitrophenol	1.7	10 U	10 U	10 U	10 U	10 U	7.6 U	7.6 U	7.4 U	7.7 U	8.1 U	7.6 U	7.4 U	7.6 U	7.5 U	5.9 U	5.9 U	5.6 U	5.6 U	5.9 U	5 U	5 U	5 U	15 U	15 U	5 U
2-Methylnaphthalene	2	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Benzo(a)pyrene	0.2	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	1.4 U	1.4 U	1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Bis(2-ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	2.9 U	2.8 U	2.8 U	2.9 U	3 U	2.8 U	2.8 U	2.8 U	2.8 U	2.9 U	3 U	2.8 U	2.8 U	3 U	2 U	2 U	2 U	5 U	5 U	2 U
Dibenzofuran	4	5 U	5 U	5 U	5 U	5 U	2.9 U	2.8 U	2.8 U	2.9 U	3 U	2.8 U	2.8 U	2.82.9 U	2.8 U	2.9 U	3 U	2.8 U	2.8 U	3 U	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U
Naphthalene	3	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	1.4 U	1.4 U	0.72 J	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Pentachlorophenol	1	10 U	10 U	10 U	10 U	10 U	15.2 U	15.2 U	14.8 U	15.5 U	16.2 U	15.2 U	14.9 U	15 U	0.079 J	0.41	0.43	5.6 U	0.19 U	5.9 U	1 U	1 U	1 U	5 U	5 U	1 U
Phenanthrene	41	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	0.098 U	0.099 U	1.4 U	1.4 U	0.14 J	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
Benzene	5	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Ethylbenzene	700	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Toluene	1000	0.5 U	5 U	0.75 J	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Trichloroethene	5	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
Vinyl Chloride	5	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	0.038 JP	0.065
PESTICIDES	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.14	0.27	0.24	0.15	0.3	0.087

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation L
5.5 - Exceeds Remediation Goal for GW

TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-RW-10																									
Sample Date:	Goals for	3/19/2012	10/2/2012	12/20/2012	3/19/2013	6/12/2013	11/12/2013	1/27/2014	4/29/2014	6/30/2014	10/1/2014	12/30/2014	4/20/2015	7/1/2015	9/21/2015	12/16/2015	3/21/2016	6/14/2016		9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	12/12/2017	3/19/2018	
	Groundwater																										
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L	
Aluminum	200	200 U	NA	NA	NA	200 U	NA	NA	NA	44 U	NA	NA	180	NA	NA	NA	NA	NA	NA	0.2	NA	0.1 U	NA	NA	NA	22.1 J	
Arsenic	10	10 U	NA	NA	NA	10 U	NA	NA	NA	3	NA	NA	3 U	NA	NA	NA	NA	NA	NA	0.003 U	NA	0.003 U	NA	NA	NA	0.72 U	
Barium	2000	85.8 J	NA	NA	NA	200 U	NA	NA	NA	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21	NA	0.125	NA	NA	NA	102	
Iron	300	100 U	NA	NA	NA	2850 J	NA	NA	NA	390	NA	NA	NA	540	NA	NA	NA	NA	NA	1.3	NA	0.262	NA	NA	NA	1,660	
Manganese	50	1600	NA	NA	NA	1240	NA	NA	NA	1400	NA	NA	NA	480	NA	NA	NA	NA	NA	3.2	NA	1.1	NA	NA	NA	1,240	
Vanadium	3.1	50 U	NA	NA	NA	50 U	NA	NA	NA	0.85 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0027	NA	0.00031 J	NA	NA	NA	1.1	
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L	
2-Methyl-4,6-dinitrophenol	1.7	10 U	10 U	10 U	10 U	10 U	7.5 U	7.6 U	7.5 U	7.5 U	7.5 U	7.7 U	7.6 U	7.4 U	7.7 U	5.7 U	6.2 U	5.8 U		5.9 U	5 U	5 U	5 U	15 U	16 U	5 U	
2-Methylnaphthalene	2	5 U	2.7 J	5 U	5 U	5 U	1.9 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U		1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Benzo(a)pyrene	0.2	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U		1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Bis(2-ethylhexyl)phthalate	6	5 U	5 U	5 U	5 U	5 U	2.8 U	2.9 U	2.8 U	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U	2.9 U	2.8 U	3.1 U	2.9 U		3 U	2 U	2 U	2 U	5 U	5 U	2 U	
Dibenzofuran	4	5 U	0.21 J	5 U	5 U	5 U	2.8 U	2.9 U	2.8 U	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U	2.9 U	2.8 U	3.1 U	2.9 U		3 U	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	
Naphthalene	3	5 U	13	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.4 U		1.5 U	0.1 JB	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Pentachlorophenol	1	10 U	160 J	10 U	10 U	10 U	15.1 U	15.2 U	15 U	15.1 U	0.94 U	2.4 J	15.2 U	14.9 U	0.19 U	0.19 U	6.2 U	0.19 U		5.9 U	1 U	1 U	1 U	5 U	5 U	1 U	
Phenanthrene	41	5 U	0.5 J	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	0.094 U	1.4 U	1.4 U	1.4 U	1.4 U	0.095 U	1.5 U	1.4 U		1.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L	
Benzene	5	0.5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Ethylbenzene	700	0.5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Toluene	1000	0.5 U	5 U	1.2 J	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.0	1 U		1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 J	
Trichloroethene	5	0.5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
Vinyl Chloride	5	0.5 U	5 U	5 U	5 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.1 U	
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L	
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	0.032 JP	0.12	0.027 U	
PESTICIDES	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L	
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0.18	0.3	0.29	0.28	0.26	0.11	

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation L
5.5 - Exceeds Remediation Goal for GW

TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW32																			
Sample Date:	Goals for	10-May	10-Dec	3/19/2012	9/24/2012	12/17/2012	3/19/2013	6/12/2013	1/27/2014	4/29/2014	6/30/2014	12/30/2014	4/20/2015	7/1/2015	3/21/2016	9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	3/19/2018
	Groundwater																				
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	200	NA	NA	70.7 J	NA	NA	200 U	NA	NA	150	NA	NA	69 J	NA	NA	950	NA	628	NA	NA	1,100
Arsenic	10	NA	NA	10 U	NA	NA	10 U	NA	NA	3 U	NA	NA	3 U	NA	NA	3 U	NA	ND	NA	NA	0.72 U
Barium	2000	NA	NA	180 J	NA	NA	200 UJ	NA	NA	200	NA	NA	NA	NA	NA	240	NA	241	NA	NA	264
Iron	300	NA	NA	100 U	NA	NA	100 UJ	NA	NA	150	NA	NA	56 U	NA	NA	1300	NA	740	NA	NA	1,330
Manganese	50	NA	NA	48.6	NA	NA	42.9	NA	NA	49	NA	NA	51	NA	NA	77	NA	66.1	NA	NA	84.6
Vanadium	3.1	NA	NA	50 U	NA	NA	50 U	NA	NA	1	NA	NA	NA	NA	NA	3.8	NA	1.7	NA	NA	2.8
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Methyl-4,6-dinitrophenol	1.7	10 U	9 U	9.9 U	10 U	10 U	10 U	10 U	7.5 U	7.5 U	7.4 U	8.4 U	7.6 U	7.8 U	5.8 U	5.8 U	NA	ND	NA	16 U	5 U
2-Methylnaphthalene	2	5 U	4 U	5 U	5 U	5 U	5 U	5 U	1.9 U	1.4 U	1.4 U	1.6 U	1.4 U	1.5 U	1.5 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
Benzo(a)pyrene	0.2	5 U	4 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.6 U	1.4 U	1.5 U	1.5 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
Bis(2-ethylhexyl)phthalate	6	5 U	4 B	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.8 U	3.2 U	2.8 U	2.9 U	2.9 U	0.27 J	NA	ND	NA	5 U	2 U
Dibenzofuran	4	5 U	4 U	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.8 U	3.2 U	2.8 U	2.9 U	2.9 U	2.9 U	NA	ND	NA	1 U	0.5 U
Naphthalene	3	5 U	4 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.6 U	1.4 U	1.5 U	1.5 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
Pentachlorophenol	1	10 U	1 J	9.9 UJ	10 U	10 U	10 U	10 U	15.1 U	15.1 U	14.8 U	16.8 U	15.2 U	0.19 U	5.8 U	5.8 U	NA	ND	NA	5 U	1 U
Phenanthrene	41	5 U	4 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.6 U	1.4 U	1.5 U	1.5 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Benzene	5	5 U	5 U	0.5 UJ	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Ethylbenzene	700	5 U	5 U	0.5 UJ	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Toluene	1000	5 U	5 U	0.5 UJ	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Trichloroethene	5	5 U	5 U	0.5 UJ	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Vinyl Chloride	5	5 U	5 U	0.5 UJ	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 U	NA	ND	NA	0.052 U	0.027 U
PESTICIDES	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.54	0.74	0.66	0.39	NA

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation L
5.5 - Exceeds Remediation Goal for GW

TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW33																			
Sample Date:	Goals for	10-May	10-Dec	3/19/2012	9/24/2012	12/17/2012	3/19/2013	6/12/2013	1/27/2014	4/29/2014	6/30/2014	12/30/2014	4/20/2015	7/1/2015	3/21/2016	9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	3/19/2018
	Groundwater																				
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	200	NA	NA	117 J	NA	NA	200 U	NA	NA	89 U	NA	NA	NA	89 U	NA	NA	89 U	NA	ND	NA	21.5 U
Arsenic	10	NA	NA	10 U	NA	NA	10 U	NA	NA	3 U	NA	NA	3 U	NA	NA	3 U	NA	ND	NA	NA	0.72 U
Barium	2000	NA	NA	125 J	NA	NA	200 UJ	NA	NA	140	NA	NA	NA	NA	NA	150	NA	167	NA	NA	159
Iron	300	NA	NA	188	NA	NA	100 UJ	NA	NA	25	NA	NA	34 J	NA	NA	19 J	NA	68.9 J	NA	NA	37.4 U
Manganese	50	NA	NA	16.8	NA	NA	15 U	NA	NA	6.1	NA	NA	7.2	NA	NA	4 J	NA	3.9	NA	NA	6.4
Vanadium	3.1	NA	NA	50 U	NA	NA	50 U	NA	NA	2.2 U	NA	NA	NA	NA	NA	0.99 J	NA	0.43 J	NA	NA	0.21 U
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Methyl-4,6-dinitrophenol	1.7	10 U	10 U	9.9 U	10 U	10 U	10 U	10 U	7.5 U	7.5 U	7.6 U	8.9 U	7.9 U	7.6 U	5.8 U	5.7 U	NA	ND	NA	16 U	5 U
2-Methylnaphthalene	2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.9 U	1.4 U	1.4 U	1.4 U	1.7 U	1.5 U	1.4 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
Benzo(a)pyrene	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.7 U	1.5 U	1.4 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
Bis(2-ethylhexyl)phthalate	6	5 U	5 B	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.9 U	3.3 U	3 U	2.8 U	2.9 U	2.9 U	NA	ND	NA	5 U	2 U
Dibenzofuran	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.9 U	3.3 U	3 U	2.8 U	2.9 U	2.9 U	NA	ND	NA	1 U	0.5 U
Naphthalene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.7 U	1.5 U	1.4 U	1.4 U	0.4 J	NA	ND	NA	0.5 U	0.1 U
Pentachlorophenol	1	10 U	0 J	9.9 UJ	10 U	10 U	10 U	10 U	15.1 U	15 U	15.2 U	17.8 U	15.8 U	0.19 U	5.8 U	5.7 U	NA	ND	NA	5 U	1 U
Phenanthrene	41	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.4 U	1.4 U	1.4 U	1.7 U	1.5 U	1.4 U	1.4 U	1.4 U	NA	ND	NA	0.5 U	0.1 U
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Benzene	5	5 U	5 U	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Ethylbenzene	700	5 U	5 U	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Toluene	1000	5 U	5 U	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Trichloroethene	5	5 U	5 U	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
Vinyl Chloride	5	5 U	5 U	0.5 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	ND	NA	0.5 U	0.1 U
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 U	NA	ND	NA	0.052 U	0.026 U
PESTICIDES	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.45	0.66	0.47	0.41	NA

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation L
5.5 - Exceeds Remediation Goal for GW

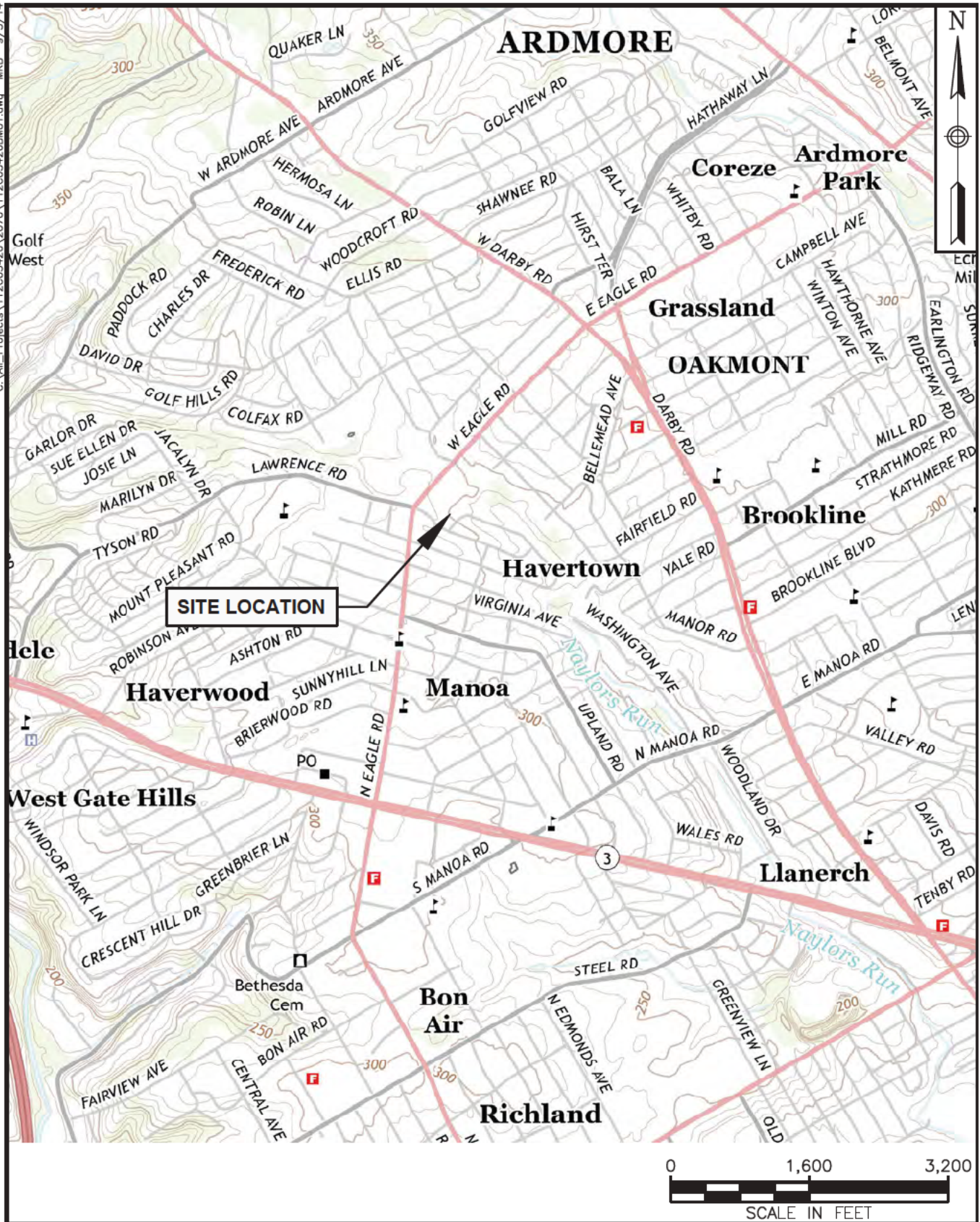
TABLE 6
COMPARISON OF GROUNDWATER REMEDIATION GOALS TO SAMPLING RESULTS OF ROS WELLS
HAVERTOWN PCP SUPERFUND SITE
HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW34																				HAV-LTR-MW1I	HAV-LTR-MW1S	HAV-LTR-MW2I	HAV-LTR-MW2S															
Sample Date:	Goals for	10-May	10-Dec	3/19/2012	9/24/2012	12/17/2012	3/19/2013	6/12/2013	1/27/2014	4/29/2014	6/30/2014	12/30/2014	4/20/2015	7/1/2015	3/21/2016	9/14/2016	12/21/2016	3/20/2017	6/14/2017	9/11/2017	3/19/2018	9/14/2016	9/14/2016	9/14/2016	9/14/2016															
	Groundwater																																							
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L															
Aluminum	200	NA	NA	156	J	NA	NA	200	U	NA	NA	34	J	NA	NA	55	J	NA	682	NA	NA	2,130	1700	2700	89	U	89	U												
Arsenic	10	NA	NA	10	U	NA	NA	10	U	NA	NA	3	U	NA	NA	3	U	NA	ND	NA	NA	0.72	U	4.5	1.6	J	3	U	8.9											
Barium	2000	NA	NA	108	J	NA	NA	200	U	NA	NA	94	U	NA	NA	110	U	NA	122	NA	NA	155	28	69	37	140	140													
Iron	300	NA	NA	248	NA	NA	NA	115	J	NA	NA	94	U	NA	NA	77	U	NA	1020	NA	NA	2,520	360	260	56	J	20400													
Manganese	50	NA	NA	526	NA	NA	NA	217	U	NA	NA	58	U	NA	NA	110	U	NA	368	NA	NA	885	950	880	210	660	660													
Vanadium	3.1	NA	NA	50	U	NA	NA	50	U	NA	NA	0.75	U	NA	NA	1.3	J	1.9	U	NA	NA	5.3	1.4	J	1.3	J	0.83	J	1	J										
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L													
2-Methyl-4,6-dinitrophenol	1.7	10	U	10	U	9.8	U	10	U	10	U	7.8	U	7.5	U	7.4	U	6.4	U	5.7	U	NA	ND	NA	15	U	5	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
2-Methylnaphthalene	2	5	U	5	U	4.9	U	5	U	5	U	1.9	U	1.4	U	1.4	U	1.5	U	1.4	U	1.6	U	1.4	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA		
Benzo(a)pyrene	0.2	5	U	5	U	4.9	U	5	U	5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.4	U	1.6	U	1.4	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA		
Bis(2-ethylhexyl)phthalate	6	5	U	5	B	4.9	U	5	U	5	U	2.9	U	2.8	U	2.8	U	3	U	3	U	2.9	U	0.53	J	2.8	U	NA	ND	NA	5	U	2	U	NA	NA	NA	NA	NA	NA
Dibenzofuran	4	5	U	5	U	4.9	U	5	U	5	U	2.9	U	2.8	U	2.8	U	3	U	3	U	2.9	U	3.2	U	2.8	U	NA	ND	NA	1	U	0.5	U	NA	NA	NA	NA	NA	NA
Naphthalene	3	5	U	5	U	4.9	U	5	U	5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.4	U	1.6	U	1.4	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA		
Pentachlorophenol	1	10	U	3	J	9.8	U	10	U	10	U	10	U	15.5	U	15	U	14.8	U	16.2	U	15.8	U	15.5	U	6.4	U	5.7	U	NA	ND	NA	5	U	1	U	NA	NA	NA	NA
Phenanthrene	41	5	U	5	U	4.9	U	5	U	5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.5	U	1.4	U	1.6	U	1.4	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L												
Benzene	5	5	U	5	U	0.5	U	5	U	5	U	5	U	1	U	NA	1	U	1	U	1	U	1	U	1	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA	
Ethylbenzene	700	5	U	5	U	0.5	U	5	U	5	U	5	U	1	U	NA	1	U	1	U	1	U	1	U	1	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA	
Toluene	1000	5	U	5	U	0.5	U	5	U	5	U	5	U	1	U	NA	1	U	1	U	1	U	1	U	1	U	NA	ND	NA	0.5	U	0.2	J	NA	NA	NA	NA	NA	NA	
Trichloroethene	5	5	U	5	U	0.5	U	5	U	5	U	5	U	1	U	NA	1	U	1	U	1	U	1	U	1	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA	
Vinyl Chloride	5	5	U	5	U	0.5	U	5	U	5	U	5	U	1	U	NA	1	U	1	U	1	U	1	U	1	U	NA	ND	NA	0.5	U	0.1	U	NA	NA	NA	NA	NA	NA	
HERBICIDES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L												
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.098	J	NA	0.088	NA	0.11	0.084	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
PESTICIDES	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L												
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.32	0.25	0.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

NA - Not Analyzed
µg/L - Micrograms per Liter
J - Estimated Value
B - Detection in the Blank
U - Not Detected Above Laboratory Quantitation L
5.5 - Exceeds Remediation Goal for GW

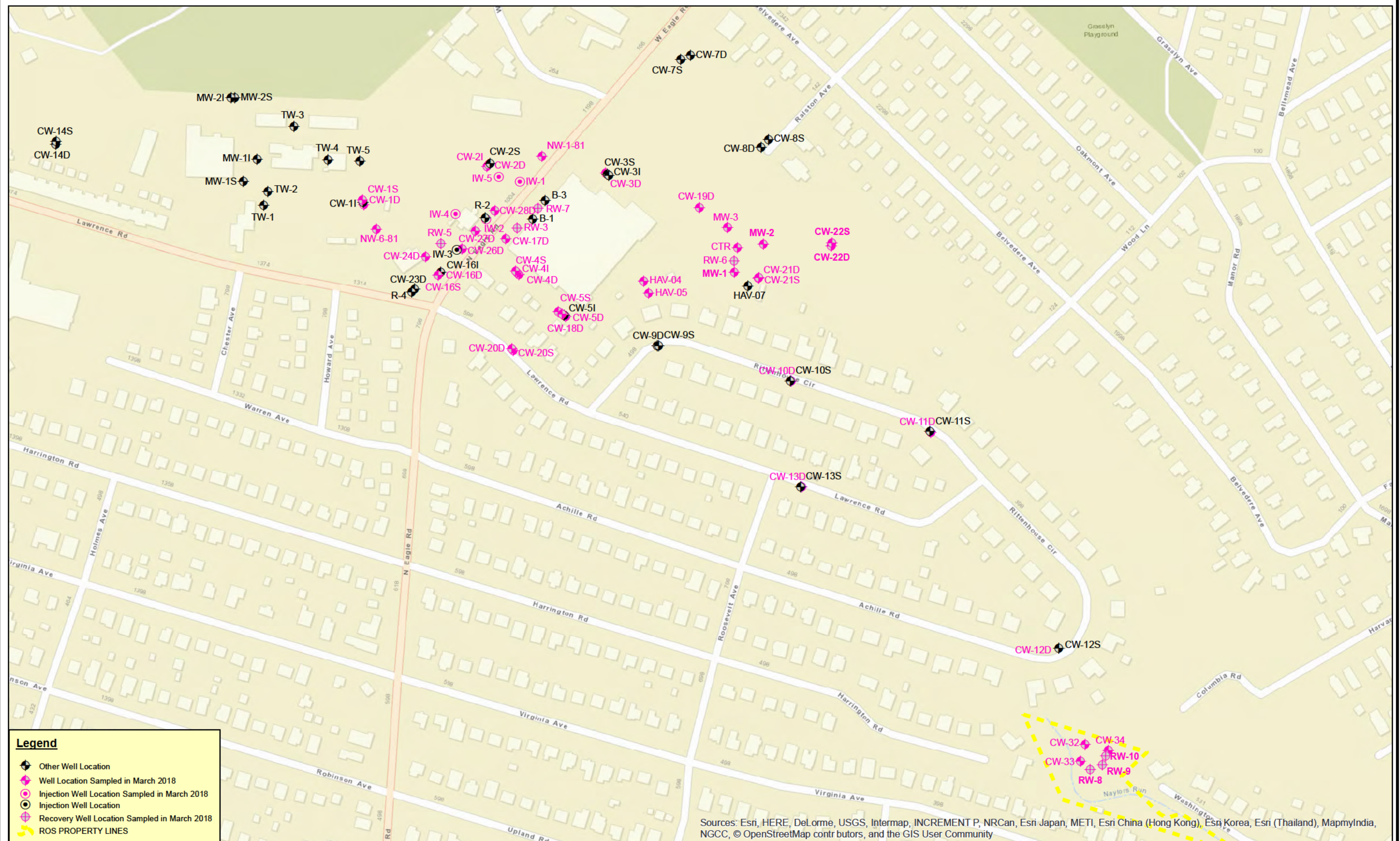
FIGURES

- 1 Site Location Map
- 2 Wells Sampled in March 2018
- 3 Shallow Groundwater Contours, June 2018
- 4 Deep Groundwater Contours, June 2018
- 5 Shallow Overburden PCP Plume Map, March 2018
- 6 Deep Bedrock PCP Plume Map, March 2018
- 7 Source Area PCP Concentration Graph - Injection Wells and Surrounding Wells (2011 - 2018)
- 8 Source Area PCP Concentration Graph - Recovery Wells and PCG/YMCA Wells (2011 - 2018)
- 9 PCP Concentration Graph - Collection Trench Area Wells (2011 - 2018)
- 10 PCP Concentration Graph - Plume Perimeter Wells (2011 - 2018)
- 11 PCP Concentration Graph - Injection Wells (2011 - 2018)
- 12 Site conceptual model- site plan 2018
- 13 Cross-section A-A'
- 14 Cross-section B-B'
- 15 Cross-section C-C

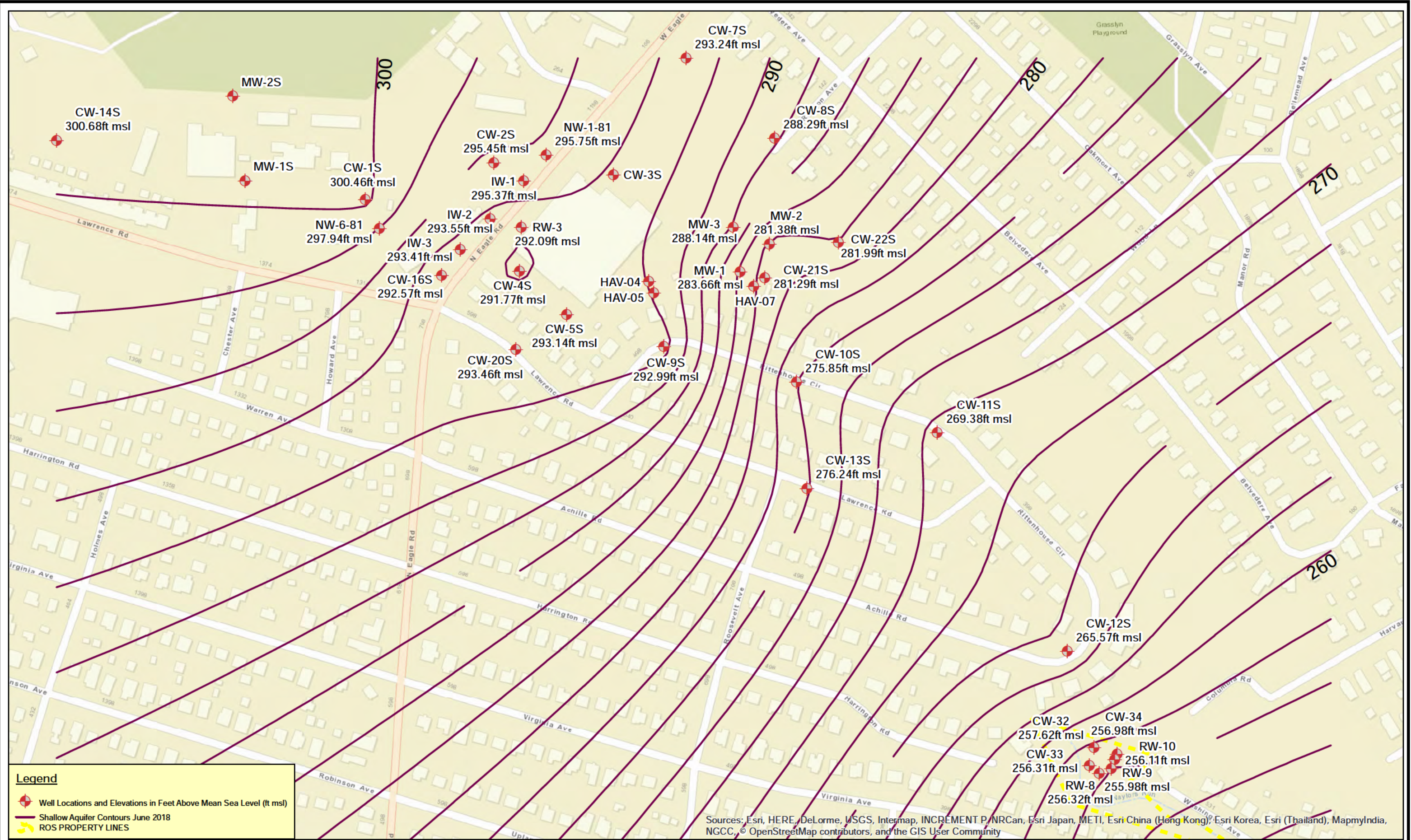


**SITE LOCATION MAP
HAVERTOWN PCP SUPERFUND SITE
DELAWARE COUNTY
HAVERTOWN, PENNSYLVANIA**

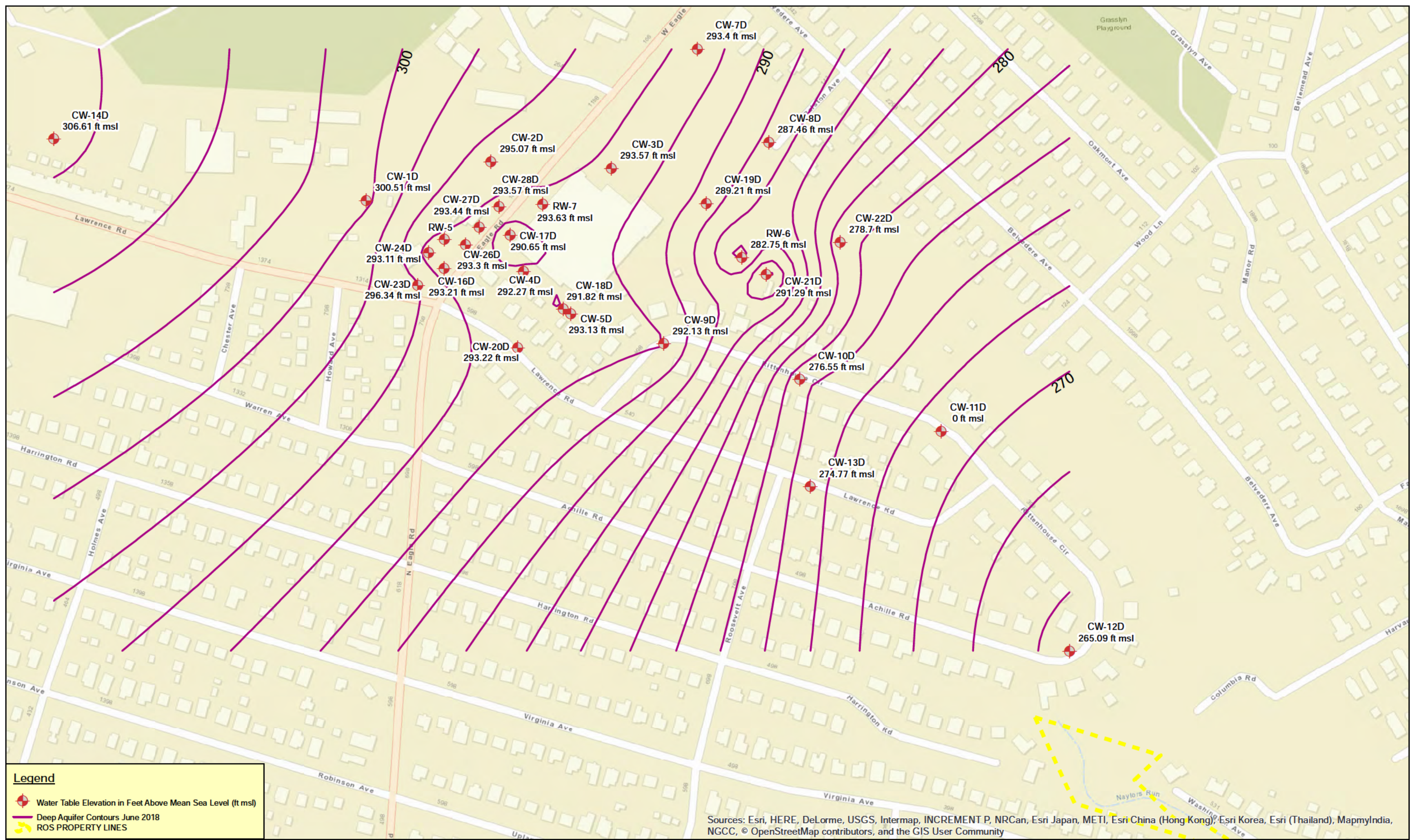
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FIGURE NUMBER 1	



S:\03-Projects\Federal\IEPA R3 RAC Assignments\Havertown\103IS3930- PADEP thru IRISC-7\Deliverables\Annual GW Monitoring Report 2017-2018\Figures\Figure 3 - Shallow Groundwater Contours June 2018.mxd



S:\03-Projects\Federal\PEPA R3 RAC Assignments\Havertown\103IS3930- PADEP thru IRRSC-7\Deliverables\Annual GW Monitoring Report 2017-2018\Figures\Figure 4 - Deep Groundwater Contours June 2018.mxd



This map is provided by Tetra Tech solely for display and reference purposes and is subject to change without notice. No claims, either real or assumed, as to the absolute accuracy or precision of any data contained herein are made by Tetra Tech, nor will Tetra Tech be held responsible for any use of this document for purposes other than which it was intended.

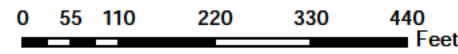
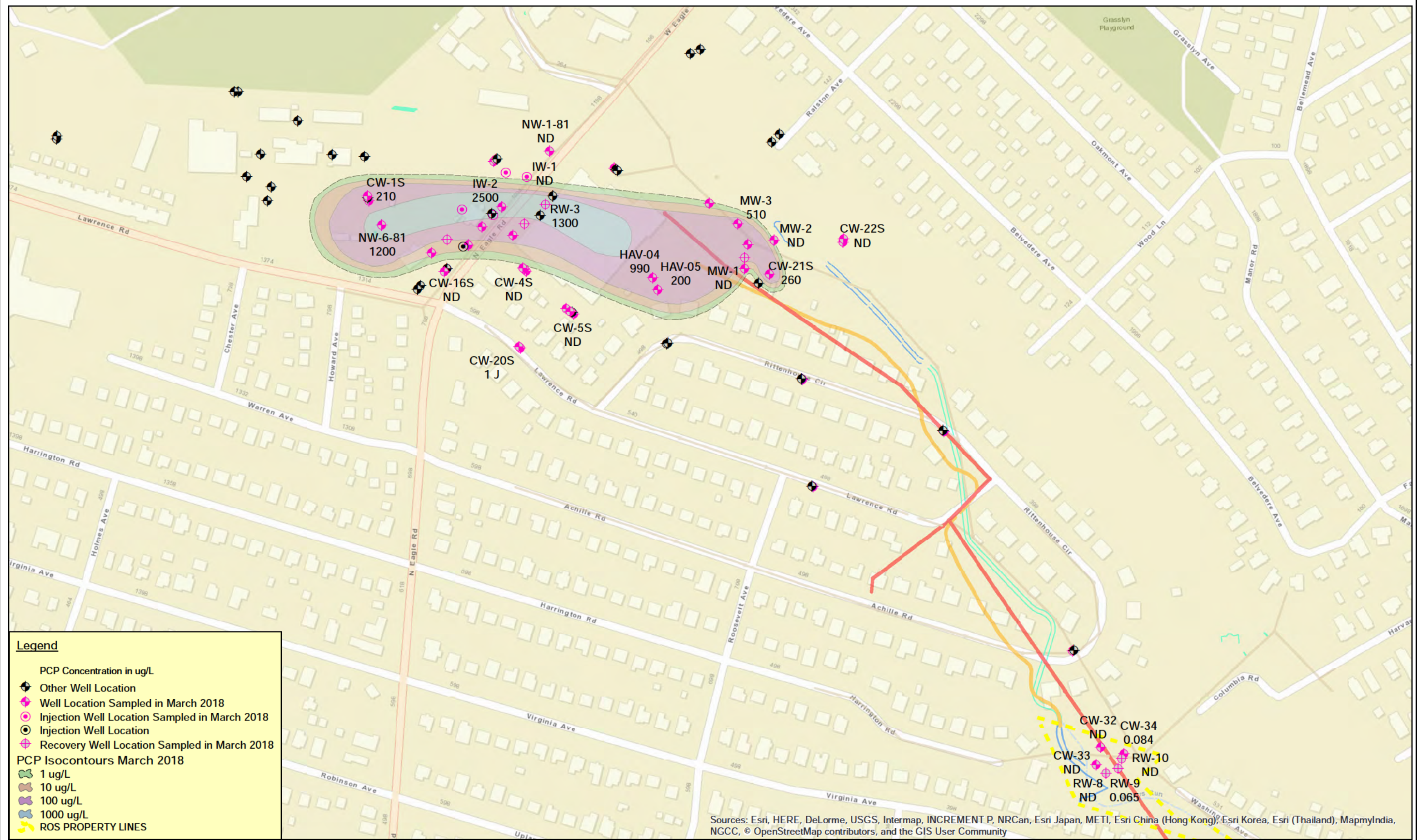
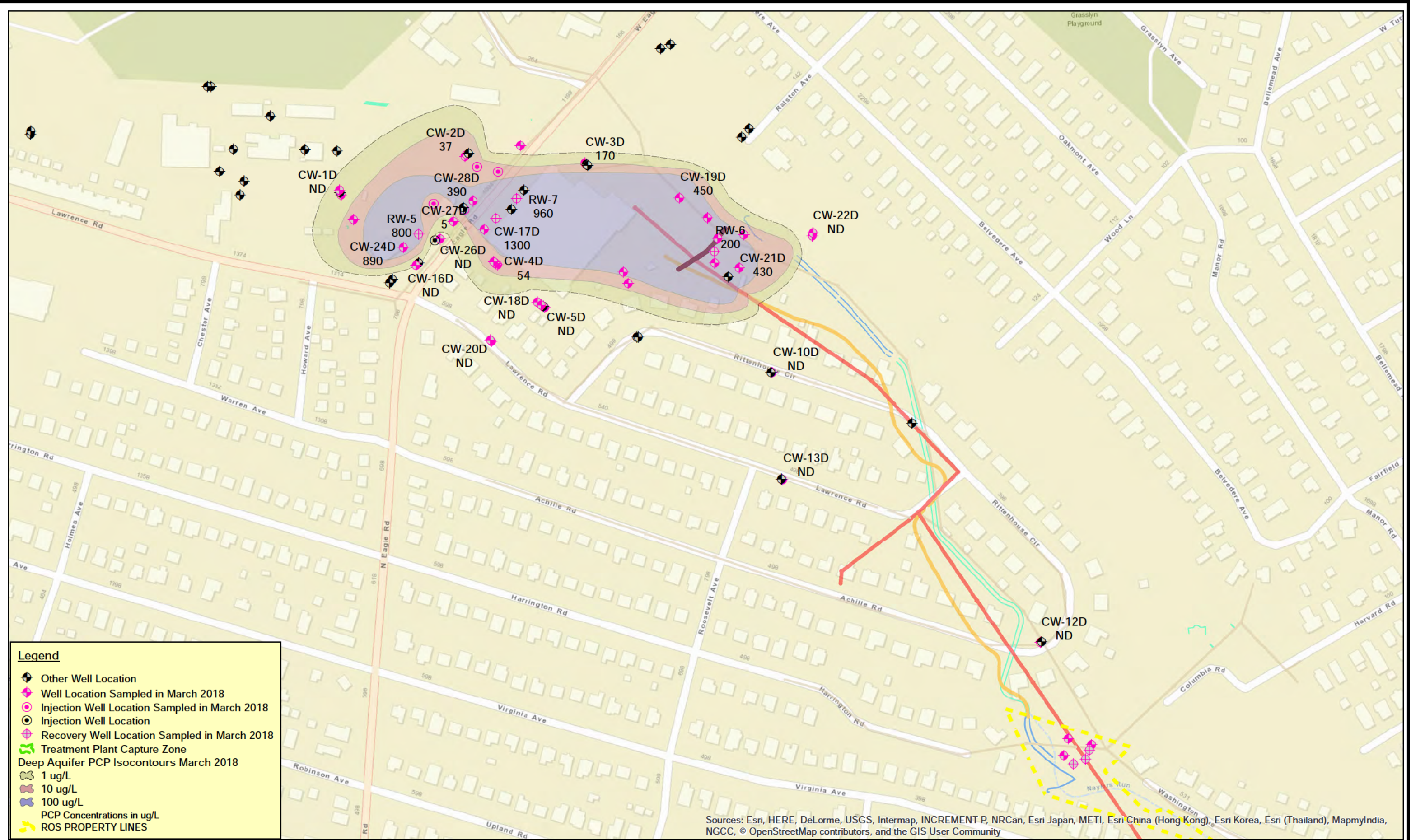


FIGURE 4 - DEEP WATER TABLE ELEVATION
JUNE 2018
HAVERTWON PCP SUPERFUND SITE
DELAWARE COUNTY
HAVERTOWN, PENNSYLVANIA

S:\03-Projects\Federal\IEPA R3 RAC Assignments\Havertown\103IS3930- PADEP thru IRISC-7\Deliverables\Annual GW Monitoring Report 2017-2018\Figures\Figure 5 - Shallow Overburden PCP Plume Map March 2018.mxd



S:\03-Projects\Federal\EPA R3 RAC Assignments\Havertown\103IS3930- PADEP thru IRRSC-7\Deliverables\Annual GW Monitoring Report 2017-2018\Figures\Figure 6 - Deep Bedrock PCP Plume Map March 2018.mxd



2011 - 2018

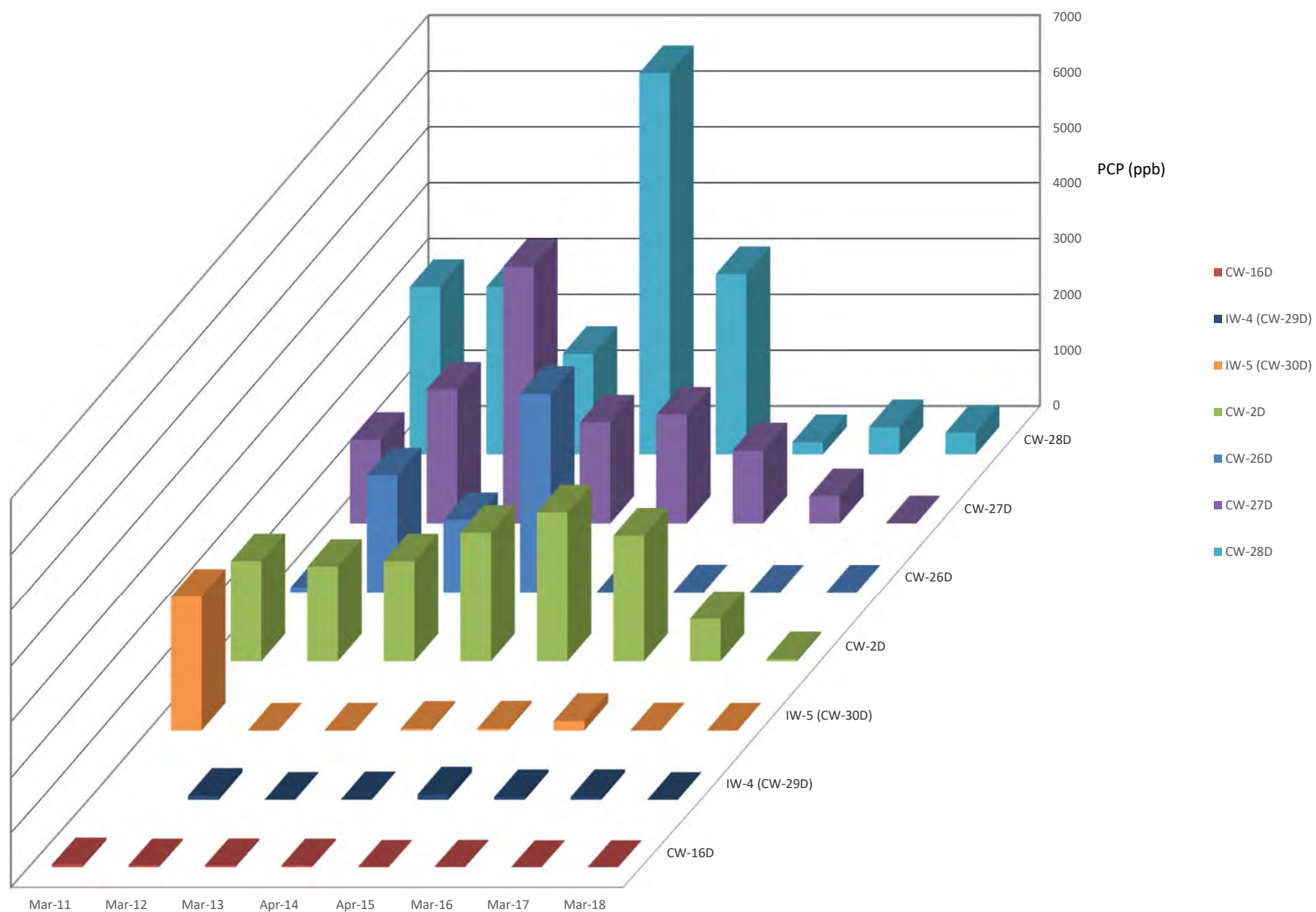


Figure 8
Source Area PCP Concentration - Recovery Wells and YMCA Wells
2011 - 2018

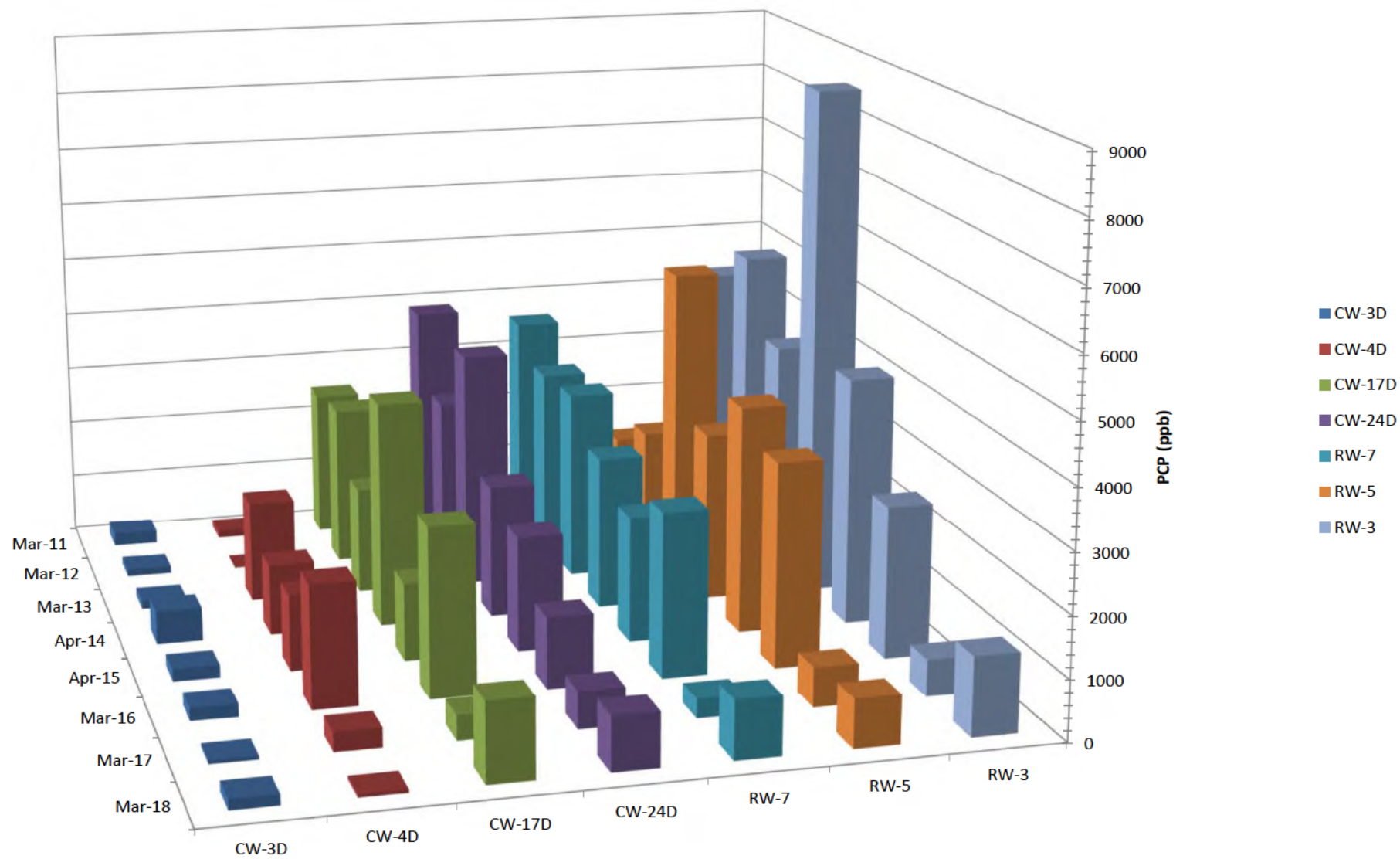


Figure 9
PCP Concentration Graph - Collection Trench Area Wells
2011 - 2018

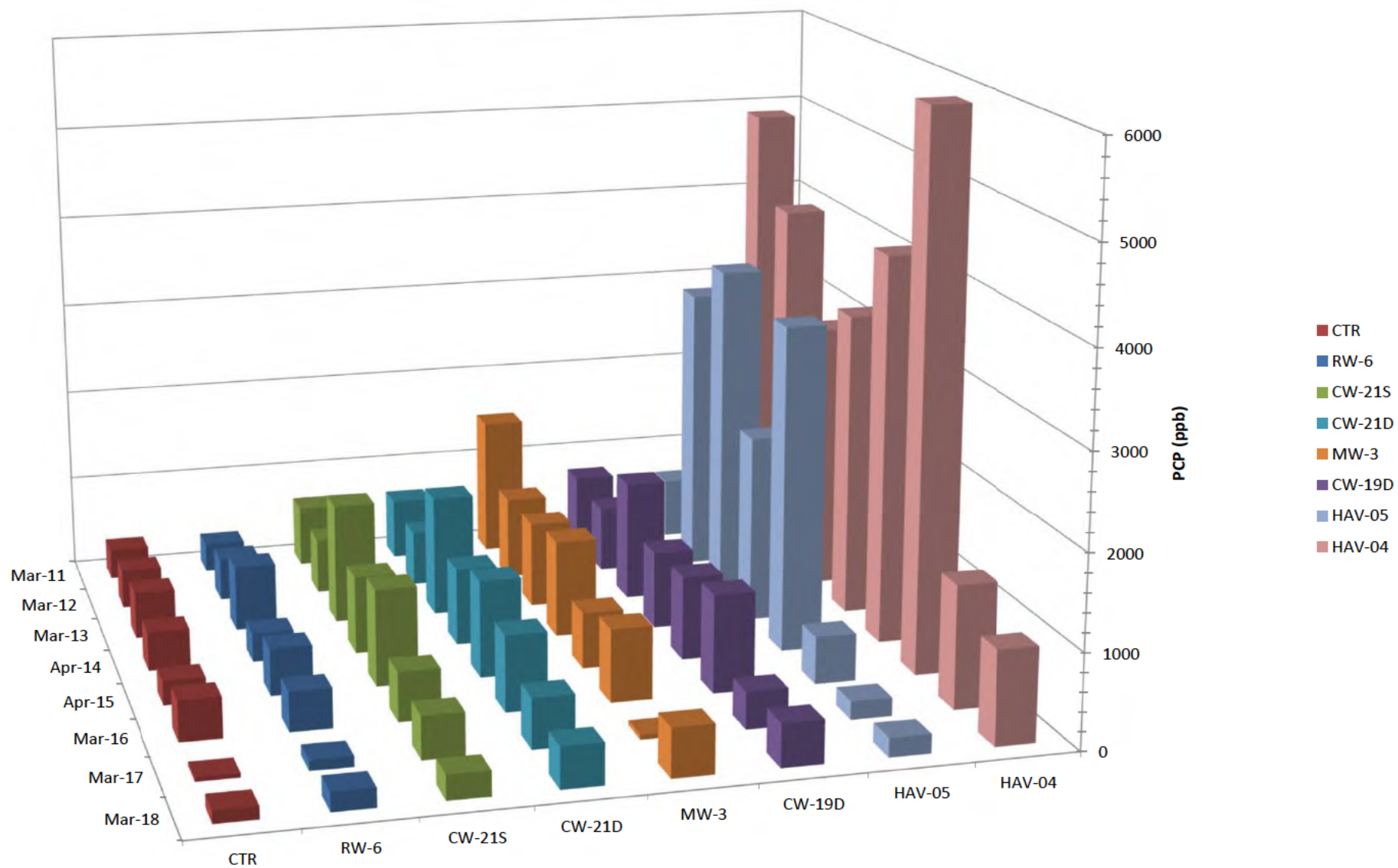


Figure 10
PCP Concentration Graph - Plume Perimeter Wells
2011 - 2018

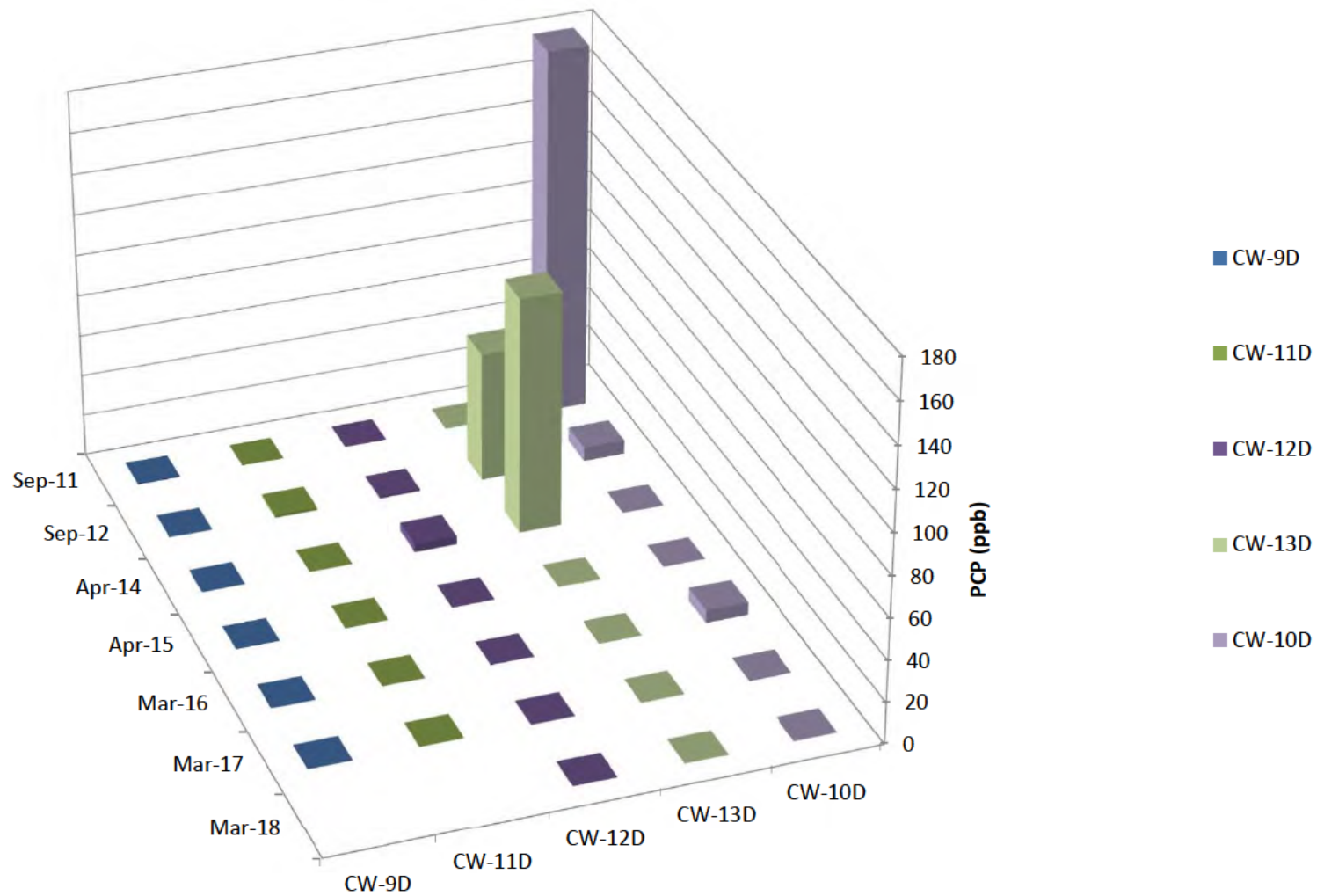
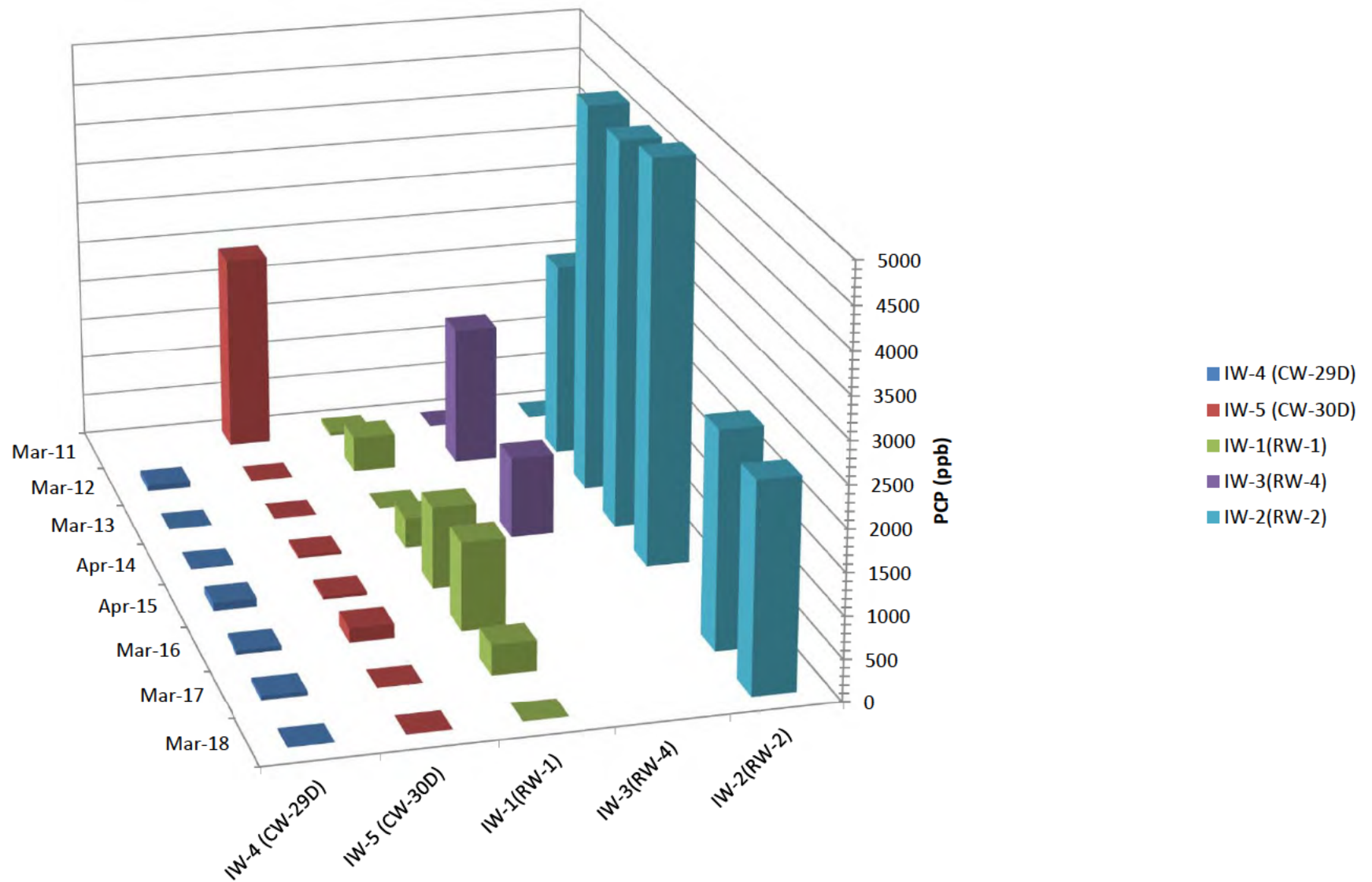


Figure 11
PCP Concentration Graph - Injection Wells
2011 - 2018



S:\03-Projects\Federal\EPA R3 RAC Assignments\Havertown\103IS3930- PADEP thru IRRSC-7\Deliverables\Annual GW Monitoring Report 2017-2018\Figure 12 CSM Update march 2018.mxd



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
FIGURE 13
CONCEPTUAL MODEL CROSS SECTION A-A'
DATA USED - 6/12/18 (SYSTEM OFF)

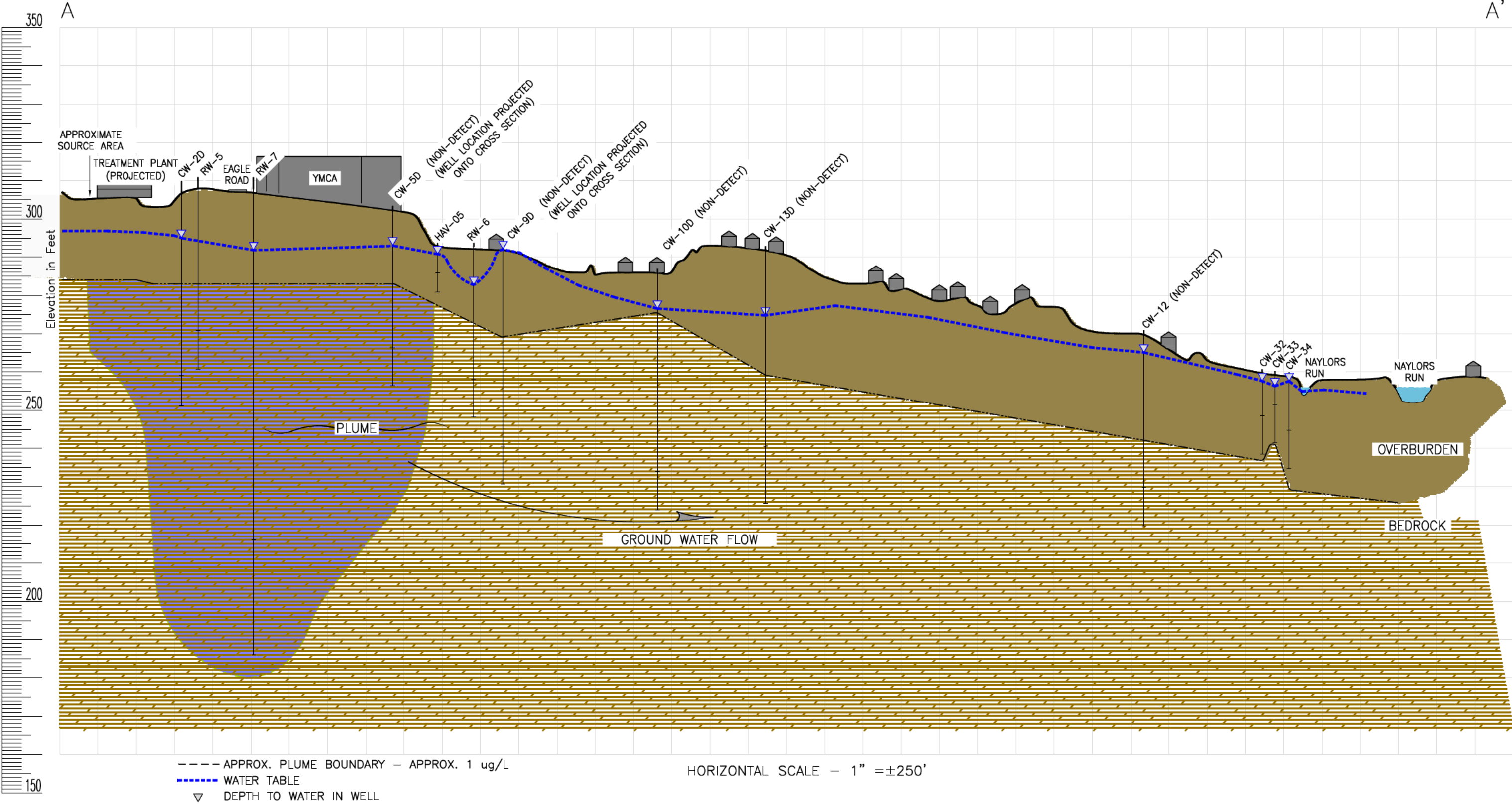
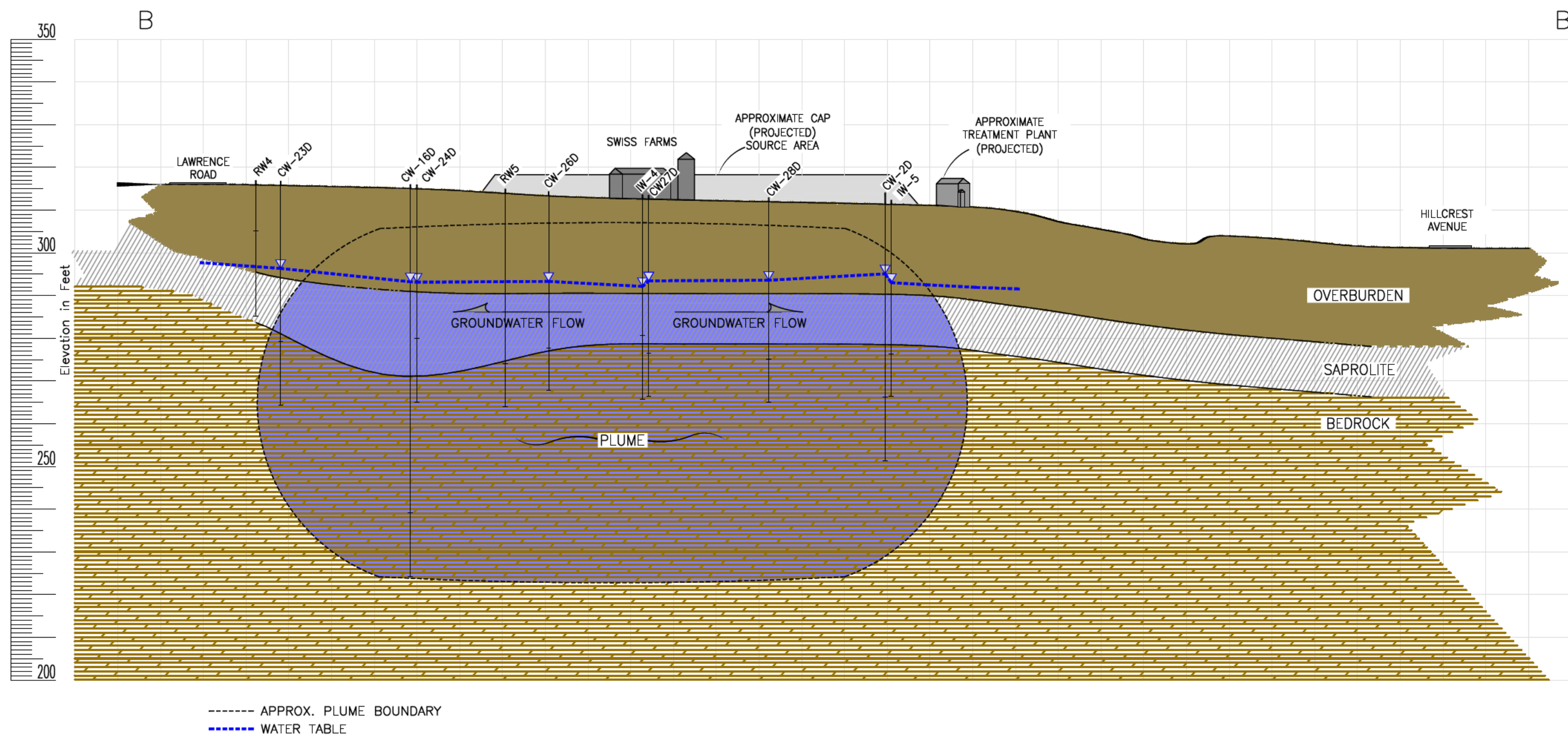
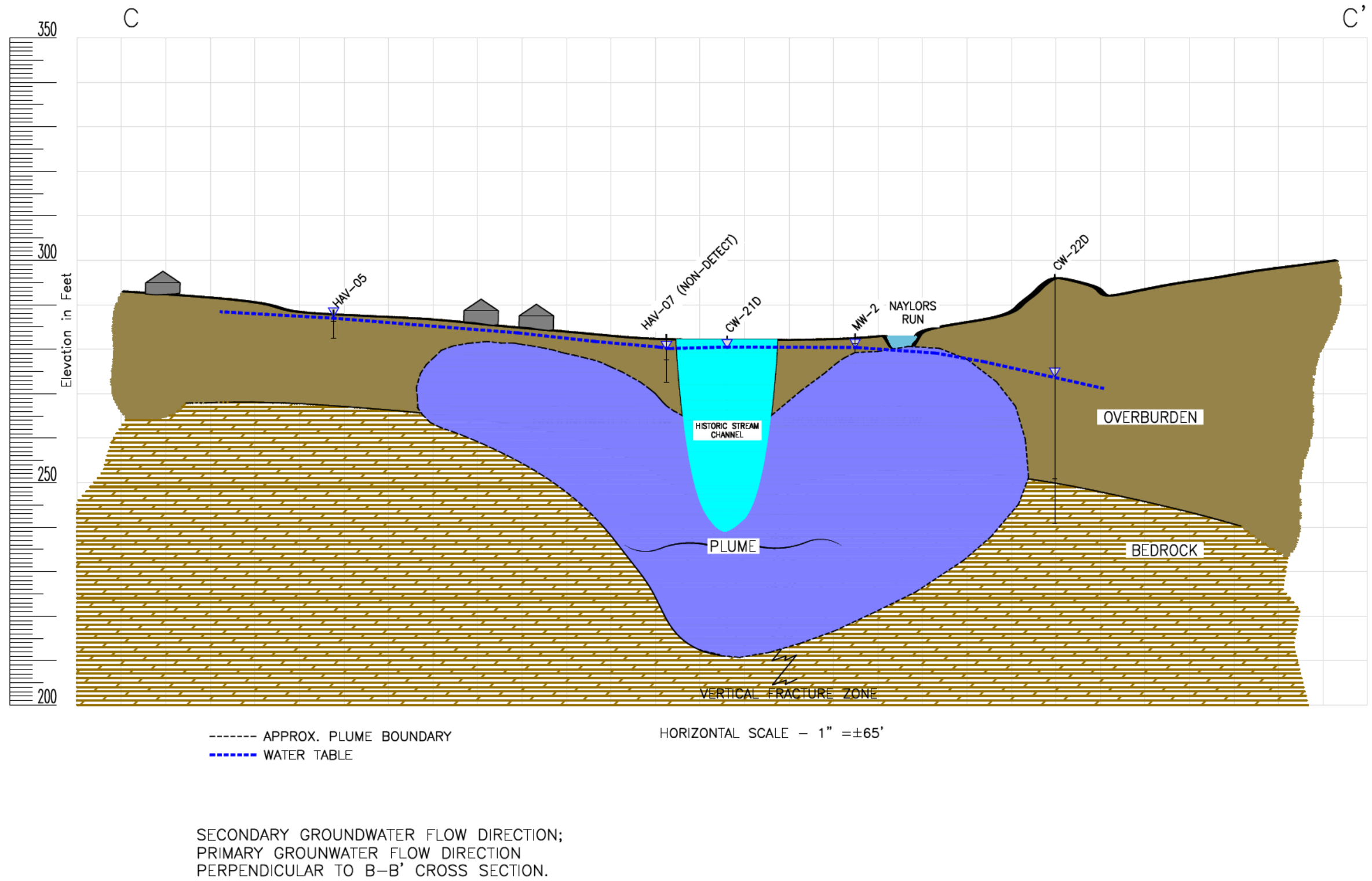


FIGURE 14

CONCEPTUAL MODEL CROSS SECTION B-B'
DATA USED - 6/12/18 (SYSTEM OFF)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
FIGURE 15
CONCEPTUAL MODEL CROSS SECTION C-C'
DATA USED - 6/27/18 (SYSTEM ON)



APPENDIX A

ANALYTICAL DATA

A-1 SEPTEMBER 2017 GROUNDWATER DATA

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS										
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP-01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW5			
Sample Date:	Goals for	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/12/2017			
Duplicate of:	Groundwater		HAV-LTR-RW8									
		Result	Result	Result	Result	Result	Result	Result	Result	Result		
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
1,1,1-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,1,2,2-Tetrachloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,1,2-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,1-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,1-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	
1,2,3-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,2,4-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,2,4-Trimethylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	5.4	
1,2-Dibromo-3-chloropropane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
1,2-Dibromoethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,2-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	
1,2-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,2-Dichloropropane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,3,5-Trimethylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2	
1,3-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
1,4-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
2-Butanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2-Hexanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Methyl-2-pentanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Acetone	-	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	
Benzene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1.7	
Bromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Bromodichloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Bromoform	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Bromomethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Carbon Disulfide	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	
Carbon Tetrachloride	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Chlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Chloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Chloroform	-	0.1 U	0.1 J	0.1 U	0.1 J	0.3 J	0.2 J	0.3 J	0.3 J	0.3 J	1.6	
Chloromethane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
cis-1,2-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	16	
cis-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS										
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP-01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW5			
Sample Date:	Goals for	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/12/2017			
Duplicate of:	Groundwater		HAV-LTR-RW8									
		Result	Result	Result	Result	Result	Result	Result	Result	Result		
Cyclohexane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.4 J		
Dibromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Dichlorodifluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Ethylbenzene	700	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	4.4		
Freon 113	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U		
Isopropylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.8		
m+p-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	3.3		
Methyl Acetate	-	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U		
Methyl Tertiary Butyl Ether	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.7		
Methylcyclohexane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.6		
Methylene Chloride	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5		
o-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	14		
Styrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Tetrachloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.2 J	0.1 U	0.1 U	0.2 J		
Toluene	1000	0.2 J	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2		
trans-1,2-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J		
trans-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Trichloroethene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	10		
Trichlorofluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.9		
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
1,1'-Biphenyl	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	11		
1,2,4,5-Tetrachlorobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
2,2'-oxybis(1-Chloropropane)	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
2,3,4,6-Tetrachlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	45		
2,4,5-Trichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1		
2,4,6-Trichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.7 J		
2,4-Dichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
2,4-Dimethylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
2,4-Dinitrophenol	-	10 U	11 U	10 U	11 U	11 U	11 U	11 U	10 U	10 U		
2,4-Dinitrotoluene	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
2,6-Dinitrotoluene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
2-Chloronaphthalene	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U		
2-Chlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS										
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP-01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW5			
Sample Date:	Goals for	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/12/2017			
Duplicate of:	Groundwater		HAV-LTR-RW8									
		Result	Result	Result	Result	Result	Result	Result	Result	Result		
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		2	
2-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
2-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
2-Nitrophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
3,3'-Dichlorobenzidine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	
3-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U	
4-Bromophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4-Chloro-3-methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4-Chloroaniline	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	
4-Chlorophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
4-Nitrophenol	-	10 U	11 U	10 U	11 U	11 U	11 U	11 U	10 U		10 U	
Acenaphthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		3	
Acenaphthylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Acetophenone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
Anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		1	
Atrazine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	
Benzaldehyde	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	
Benzo(a)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Benzo(b)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Benzo(g,h,i)perylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Benzo(k)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
bis(2-Chloroethoxy)methane	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
bis(2-Chloroethyl)ether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	
Butylbenzylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	
Caprolactam	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		5 U	
Carbazole	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	
Chrysene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Dibenz(a,h)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	
Dibenzofuran	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		4	
Diethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS										
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP-01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-CW32	HAV-LTR-CW33	HAV-LTR-CW34	HAV-LTR-RW5			
Sample Date:	Goals for	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/11/2017	9/12/2017			
Duplicate of:	Groundwater		HAV-LTR-RW8									
		Result	Result	Result	Result	Result	Result	Result	Result	Result		
Dimethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		
Di-n-butylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		
Di-n-octylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		
Fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.3 J		
Fluorene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	9		
Hexachlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Hexachlorobutadiene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
Hexachlorocyclopentadiene	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Hexachloroethane	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
Indeno(1,2,3-cd)pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		
Isophorone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	11		
Nitrobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
N-Nitroso-di-n-propylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
N-Nitrosodiphenylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
Pentachlorophenol	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	600		
Phenanthrene	41	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	9		
Phenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
Pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.4 J		
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Pentachlorophenol	1	0.063	0.068	0.11	0.032	JP	0.028	U	0.028	U	0.11	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Dieldrin	0.038	0.18	NA	0.15	0.28		0.39		0.41	0.24	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-DUP-02	HAV-LTR-RW6	HAV-LTR-RW7	HAV-LTR-CTR	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D		
Sample Date:	Goals for	9/12/2017	9/12/2017	9/13/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017		
Duplicate of:	Groundwater	HAV-LTR-RW5									
		Result	Result	Result	Result	Result	Result	Result	Result		
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	-	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trimethylbenzene	-	5	0.1 U	13	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromoethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	-	0.1 J	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene	-	1.9	0.1 U	2.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Butanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	-	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Benzene	5	1.6	0.5	0.8	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromomethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon Disulfide	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Carbon Tetrachloride	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	-	1.5	0.2 J	0.9	0.2 J	0.5 J	0.1 U	0.4 J	0.4 J	0.4 J	0.4 J
Chloromethane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	-	15	1.6	3.1	0.3 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	0.1 J
cis-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-DUP-02	HAV-LTR-RW6	HAV-LTR-RW7	HAV-LTR-CTR	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D		
Sample Date:	Goals for	9/12/2017	9/12/2017	9/13/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017		
Duplicate of:	Groundwater	HAV-LTR-RW5									
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Cyclohexane	-	0.5 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Ethylbenzene	700	4.2	0.1 U	1.9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Freon 113	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene	-	2.9	0.3 J	3.7	0.4 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
m+p-Xylene	-	3.2	0.1 U	1.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methyl Acetate	-	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Methyl Tertiary Butyl Ether	-	0.7	1.2	0.3 J	0.2 J	0.1 U	0.1 U	0.1 U	0.2 J	0.2 J	0.2 J
Methylcyclohexane	-	0.8	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Methylene Chloride	-	0.5 J	0.2 U	0.4 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene	-	13	0.1 U	9.3	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Styrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene	-	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Toluene	1000	1.9	0.1 U	0.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene	-	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene	5	10	0.6	1.7	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichlorofluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	5	0.9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1'-Biphenyl	-	12	0.5 U	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4,5-Tetrachlorobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,2'-oxybis(1-Chloropropane)	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,3,4,6-Tetrachlorophenol	-	45	6	10	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4,5-Trichlorophenol	-	1 J	1 J	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4,6-Trichlorophenol	-	0.6 J	0.7 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4-Dichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4-Dimethylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4-Dinitrophenol	-	10 U	10 U	10 U	10 U	10 U	11 U	11 U	11 U	10 U	10 U
2,4-Dinitrotoluene	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,6-Dinitrotoluene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chloronaphthalene	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
2-Chlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-DUP-02	HAV-LTR-RW6	HAV-LTR-RW7	HAV-LTR-CTR	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D		
Sample Date:	Goals for	9/12/2017	9/12/2017	9/13/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017		
Duplicate of:	Groundwater	HAV-LTR-RW5									
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
2-Methylnaphthalene	2	2	0.1 U	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Nitrophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
3,3'-Dichlorobenzidine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
3-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Bromophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chloro-3-methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chloroaniline	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chlorophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Nitrophenol	-	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U
Acenaphthene	-	3	0.1 U	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acetophenone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Anthracene	-	1	0.1 U	0.8	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Atrazine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzaldehyde	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(a)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(g,h,i)perylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis(2-Chloroethoxy)methane	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bis(2-Chloroethyl)ether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Butylbenzylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Caprolactam	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chrysene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenz(a,h)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	4	4	0.7 J	3	0.5 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Diethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-DUP-02	HAV-LTR-RW6	HAV-LTR-RW7	HAV-LTR-CTR	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D		
Sample Date:	Goals for	9/12/2017	9/12/2017	9/13/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017	9/12/2017		
Duplicate of:	Groundwater	HAV-LTR-RW5									
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Dimethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Di-n-butylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Di-n-octylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Fluoranthene	-	0.3 J	0.1 U	0.2 J	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluorene	-	9	1	8	1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorocyclopentadiene	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Indeno(1,2,3-cd)pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Isophorone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	3	12	0.1 U	5	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nitrobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-Nitroso-di-n-propylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-Nitrosodiphenylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Pentachlorophenol	1	480	200	460	73	3 J	1 U	1 U	1 U	1 U	1 U
Phenanthrene	41	10	0.1 U	6	0.4 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Phenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Pyrene	-	0.4 J	0.1 U	0.3 J	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the prima

U - Not Detected Above Laboratory Quantitation

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

								FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-HAV04	HAV-LTR-HAV05	AV-LTR-FB-01	HAV-LTR-TB-01				
Sample Date:	Goals for	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/11/2017	9/5/2017				
Duplicate of:	Groundwater										
		Result	Result	Result	Result	Result	Result				
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
1,1,1-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trimethylbenzene	-	0.1 U	0.1 U	130	24	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromoethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	-	0.1 U	0.1 U	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene	-	0.1 U	0.1 U	1.4	1.8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Butanone	-	1 U	1 U	2.1 J	1.5 J	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	-	3 U	3 U	13	4.3 J	3 U	3 U	3 U	3 U	3 U	3 U
Benzene	5	0.1 U	0.1 U	4	6.4	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromomethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon Disulfide	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Carbon Tetrachloride	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	-	0.1 U	0.5 J	0.2 J	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloromethane	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	-	2.7	12	0.3 J	0.3 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
cis-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

								FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-HAV04	HAV-LTR-HAV05	AV-LTR-FB-01	HAV-LTR-TB-01				
Sample Date:	Goals for	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/11/2017	9/5/2017				
Duplicate of:	Groundwater										
		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1 U	0.1 U	0.9	0.2 J	0.1 U	0.1 U				
Dibromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Dichlorodifluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Ethylbenzene	700	0.1 U	0.1 U	4.5	6.9	0.1 U	0.1 U				
Freon 113	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U				
Isopropylbenzene	-	0.1 U	0.1 U	7.2	4.6	0.1 U	0.1 U				
m+p-Xylene	-	0.1 U	0.1 U	11	1.8	0.1 U	0.1 U				
Methyl Acetate	-	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U				
Methyl Tertiary Butyl Ether	-	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Methylcyclohexane	-	0.1 U	0.1 U	0.8	0.3 J	0.1 U	0.1 U				
Methylene Chloride	-	0.2 U	0.2 U	0.3 J	0.3 J	0.2 U	0.2 U				
o-Xylene	-	0.1 U	0.1 U	50	20	0.1 U	0.1 U				
Styrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Tetrachloroethene	-	0.1 U	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U				
Toluene	1000	0.1 U	0.1 U	0.6	0.8	0.1 J	0.1 U				
trans-1,2-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
trans-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Trichloroethene	5	0.2 J	5.1	2.1	1.4	0.1 U	0.1 U				
Trichlorofluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
1,1'-Biphenyl	-	0.5 U	0.5 U	7	2	0.5 U	NA				
1,2,4,5-Tetrachlorobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA				
2,2'-oxybis(1-Chloropropane)	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA				
2,3,4,6-Tetrachlorophenol	-	0.5 U	0.5 U	32	8	0.5 U	NA				
2,4,5-Trichlorophenol	-	0.5 U	0.5 U	13	7	0.5 U	NA				
2,4,6-Trichlorophenol	-	0.5 U	0.5 U	0.5 U	1	0.5 U	NA				
2,4-Dichlorophenol	-	0.5 U	2	0.5 U	0.5 U	0.5 U	NA				
2,4-Dimethylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA				
2,4-Dinitrophenol	-	10 U	11 U	11 U	11 U	10 U	NA				
2,4-Dinitrotoluene	-	1 U	1 U	1 U	1 U	1 U	NA				
2,6-Dinitrotoluene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA				
2-Chloronaphthalene	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NA				
2-Chlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA				

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

						FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-HAV04	HAV-LTR-HAV05	AV-LTR-FB-01	HAV-LTR-TB-01		
Sample Date:	Goals for	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/11/2017	9/5/2017		
Duplicate of:	Groundwater								
		Result	Result	Result	Result	Result	Result		
2-Methylnaphthalene	2	0.1 U	0.1 U	78	0.1 U	0.1 U	NA		
2-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
2-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
2-Nitrophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
3,3'-Dichlorobenzidine	-	2 U	2 U	2 U	2 U	2 U	NA		
3-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	22	5 U	5 U	NA		
4-Bromophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4-Chloro-3-methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4-Chloroaniline	-	2 U	2 U	2 U	2 U	2 U	NA		
4-Chlorophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
4-Nitrophenol	-	10 U	11 U	11 U	11 U	10 U	NA		
Acenaphthene	-	0.1 U	0.1 U	5	1	0.1 U	NA		
Acenaphthylene	-	0.1 U	0.1 U	0.1 U	0.3 J	0.1 U	NA		
Acetophenone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
Anthracene	-	0.1 U	0.1 U	2	0.3 J	0.1 U	NA		
Atrazine	-	2 U	2 U	2 U	2 U	2 U	NA		
Benzaldehyde	-	1 U	1 U	1 U	1 U	1 U	NA		
Benzo(a)anthracene	-	0.1 U	0.1 U	0.3 J	0.1 U	0.1 U	NA		
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA		
Benzo(b)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA		
Benzo(g,h,i)perylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA		
Benzo(k)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA		
bis(2-Chloroethoxy)methane	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
bis(2-Chloroethyl)ether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA		
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	NA		
Butylbenzylphthalate	-	2 U	2 U	2 U	2 U	2 U	NA		
Caprolactam	-	5 U	5 U	5 U	5 U	5 U	NA		
Carbazole	-	0.5 U	0.5 U	0.8 J	0.5 U	0.5 U	NA		
Chrysene	-	0.1 U	0.1 U	0.3 J	0.1 U	0.1 U	NA		
Dibenz(a,h)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA		
Dibenzofuran	4	0.5 U	0.5 U	3	0.9 J	0.5 U	NA		
Diethylphthalate	-	2 U	2 U	2 U	2 U	2 U	NA		

ANALYTICAL DATA
SEPTEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

								FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-HAV04	HAV-LTR-HAV05	AV-LTR-FB-01	HAV-LTR-TB-01				
Sample Date:	Goals for	9/11/2017	9/11/2017	9/12/2017	9/12/2017	9/11/2017	9/5/2017				
Duplicate of:	Groundwater										
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Dimethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	NA			
Di-n-butylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	NA			
Di-n-octylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	NA			
Fluoranthene	-	0.1 U	0.1 U	1	0.2 J	0.1 U	0.1 U	NA			
Fluorene	-	0.1 U	0.1 U	7	2	0.1 U	0.1 U	NA			
Hexachlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA			
Hexachlorobutadiene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA			
Hexachlorocyclopentadiene	-	5 U	5 U	5 U	5 U	5 U	5 U	NA			
Hexachloroethane	-	1 U	1 U	1 U	1 U	1 U	1 U	NA			
Indeno(1,2,3-cd)pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA			
Isophorone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA			
Naphthalene	3	0.1 U	0.1 U	160	3	0.1 U	0.1 U	NA			
Nitrobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA			
N-Nitroso-di-n-propylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA			
N-Nitrosodiphenylamine	-	0.5 U	0.5 U	4	0.5 U	0.5 U	0.5 U	NA			
Pentachlorophenol	1	1 U	1 U	1200	270	1 U	1 U	NA			
Phenanthrene	41	0.1 U	0.1 U	13	2	0.1 U	0.1 U	NA			
Phenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA			
Pyrene	-	0.1 U	0.1 U	2	0.2 J	0.1 U	0.1 U	NA			
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	NA	NA	0.028 U	NA				
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	NA	NA	0.0045 U	NA				

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the prima

U - Not Detected Above Laboratory Quantitation

5.5 - Exceeds Remediation Goal for GW

A-2 DECEMBER 2017 GROUNDWATER DATA

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS								OTHER SITE WELLS					
Sample ID:	Remediation	HAV-LTR-RW8		HAV-LTR-DUP01		HAV-LTR-RW9		HAV-LTR-RW10		HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-HAV5	
Sample Date:	Goals for	12/12/2017		12/12/2017		12/12/2017		12/12/2017		12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/13/2017	
Duplicate of:	Groundwater			HAV-LTR-RW8											
		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,1,2,2-Tetrachloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,1,2-Trichloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,1-Dichloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,1-Dichloroethene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2,3-Trichlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2,4-Trichlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2,4-Trimethylbenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		3.8	
1,2-Dibromo-3-chloropropane	-	0.2 U		0.2 U		0.2 U		0.2 U		0.2 U		0.2 U		0.2 U	
1,2-Dibromoethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2-Dichlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2-Dichloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,2-Dichloropropane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,3,5-Trimethylbenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.5 J	
1,3-Dichlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
1,4-Dichlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
2-Butanone	-	1 U		1 U		1 U		1 U		1 U		1 U		1 U	
2-Hexanone	-	1 U		1 U		1 U		1 U		1 U		1 U		1 U	
4-Methyl-2-pentanone	-	1 U		1 U		1 U		1 U		1 U		1 U		1 U	
Acetone	-	3 U		3 U		3 U		3 U		3 U		3 U		4.5 J	
Benzene	5	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		2.8	
Bromochloromethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Bromodichloromethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Bromoform	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Bromomethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Carbon Disulfide	-	0.4 U		0.4 U		0.4 U		0.4 U		0.4 U		0.4 U		0.4 U	
Carbon Tetrachloride	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Chlorobenzene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Chloroethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Chloroform	-	0.1 J		0.1 J		0.1 J		0.1 J		0.1 U		0.4 J		0.3 J	
Chloromethane	-	0.2 U		0.2 U		0.2 U		0.2 U		0.2 U		0.2 U		0.2 U	
cis-1,2-Dichloroethene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.2 J	
cis-1,3-Dichloropropene	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Cyclohexane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Dibromochloromethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Dichlorodifluoromethane	-	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Ethylbenzene	700	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		1.9	

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS				OTHER SITE WELLS					
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-HAV5	
Sample Date:	Goals for	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/13/2017	
Duplicate of:	Groundwater		HAV-LTR-RW8								
		Result	Result	Result	Result	Result	Result	Result	Result	Result	
Freon 113	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Isopropylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	3.2	
m+p-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.4 J	
Methyl Acetate	-	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	
Methyl Tertiary Butyl Ether	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.1 U	
Methylcyclohexane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	
Methylene Chloride	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3 J	
o-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	4.8	
Styrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Tetrachloroethene	-	0.2 J	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Toluene	1000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 J	0.4 J	
trans-1,2-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
trans-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Trichloroethene	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.6	
Trichlorofluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1'-Biphenyl	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3	
1,2,4,5-Tetrachlorobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2,2'-oxybis(1-Chloropropane)	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2,3,4,6-Tetrachlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5	
2,4,5-Trichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	7	
2,4,6-Trichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.9 J	
2,4-Dichlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2,4-Dimethylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2,4-Dinitrophenol	-	11 U	11 U	10 U	11 U	11 U	10 U	10 U	10 U	11 U	
2,4-Dinitrotoluene	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,6-Dinitrotoluene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Chloronaphthalene	-	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	
2-Chlorophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.3 J	
2-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Nitrophenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
3,3'-Dichlorobenzidine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
3-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
4-Bromophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS								OTHER SITE WELLS					
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-HAV5					
Sample Date:	Goals for	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/13/2017					
Duplicate of:	Groundwater		HAV-LTR-RW8												
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
4-Chloro-3-methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Chloroaniline	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chlorophenyl-phenylether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methylphenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.9 J	
4-Nitroaniline	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Nitrophenol	-	11 U	11 U	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U
Acenaphthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2	
Acenaphthylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 J	
Acetophenone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.7	
Atrazine	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzaldehyde	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(a)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	
Benzo(a)pyrene	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	
Benzo(b)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 J	
Benzo(g,h,i)perylene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis(2-Chloroethoxy)methane	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bis(2-Chloroethyl)ether	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bis(2-Ethylhexyl)phthalate	6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Butylbenzylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS								OTHER SITE WELLS					
Sample ID:	Remediation	HAV-LTR-RW8	HAV-LTR-DUP01	HAV-LTR-RW9	HAV-LTR-RW10	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-CW22S	HAV-LTR-CW22D	HAV-LTR-HAV5					
Sample Date:	Goals for	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/13/2017					
Duplicate of:	Groundwater		HAV-LTR-RW8												
		Result	Result	Result	Result	Result	Result	Result	Result	Result			Result		
Caprolactam	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U		
Carbazole	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
Chrysene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.1 U		
Dibenz(a,h)anthracene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.1 U		
Dibenzofuran	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			2		
Diethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U			2 U		
Dimethylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U			2 U		
Di-n-butylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U			2 U		
Di-n-octylphthalate	-	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U			2 U		
Fluoranthene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.7		
Fluorene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			5		
Hexachlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.1 U		
Hexachlorobutadiene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
Hexachlorocyclopentadiene	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U		
Hexachloroethane	-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U			1 U		
Indeno(1,2,3-cd)pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.1 U		
Isophorone	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
Naphthalene	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.9		
Nitrobenzene	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
N-Nitroso-di-n-propylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
N-Nitrosodiphenylamine	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
Pentachlorophenol	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U			190		
Phenanthrene	41	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			5		
Phenol	-	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U		
Pyrene	-	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U			0.7		
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			µg/L		
Pentachlorophenol	1	0.026 U	0.027 U	0.038 JP	0.12	NA	NA	NA	NA	NA			NA		
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			µg/L		
Dieldrin	0.038	0.24	NA	0.3	0.26	NA	NA	NA	NA	NA			NA		

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-FB01	HAV-LTR-TB01
Sample Date:	Goals for	12/13/2017	12/13/2017	12/12/2017	12/12/2017
Duplicate of:	Groundwater				
		Result	Result	Result	Result
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2,2-Tetrachloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,1,2-Trichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,1-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2,3-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2,4-Trimethylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dibromo-3-chloropropane	-	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromoethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichloropropane	-	0.1 U	0.1 U	0.1 U	0.1 U
1,3,5-Trimethylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
2-Butanone	-	1 U	1 U	1 U	1 U
2-Hexanone	-	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	-	1 U	1 U	1 U	1 U
Acetone	-	3 U	3 U	3 U	3 U
Benzene	5	0.1 U	0.1 U	0.1 U	0.1 U
Bromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Bromodichloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Bromoform	-	0.1 U	0.1 U	0.1 U	0.1 U
Bromomethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Carbon Disulfide	-	0.4 U	0.4 U	0.4 U	0.4 U
Carbon Tetrachloride	-	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
Chloroethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	-	0.1 U	0.4 J	0.1 U	0.1 U
Chloromethane	-	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	-	1.5	9.6	0.1 U	0.1 U
cis-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U
Cyclohexane	-	0.1 U	0.1 U	0.1 U	0.1 U
Dibromochloromethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Dichlorodifluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Ethylbenzene	700	0.1 U	0.1 U	0.1 U	0.1 U

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-FB01	HAV-LTR-TB01
Sample Date:	Goals for	12/13/2017	12/13/2017	12/12/2017	12/12/2017
Duplicate of:	Groundwater				
		Result	Result	Result	Result
Freon 113	-	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene	-	0.1 U	0.1 U	0.1 U	0.1 U
m+p-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U
Methyl Acetate	-	0.3 U	0.3 U	0.3 U	0.3 U
Methyl Tertiary Butyl Ether	-	0.1 U	0.1 U	0.1 U	0.1 U
Methylcyclohexane	-	0.1 U	0.1 U	0.1 U	0.1 U
Methylene Chloride	-	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene	-	0.1 U	0.1 U	0.1 U	0.1 U
Styrene	-	0.1 U	0.1 U	0.1 U	0.1 U
Tetrachloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U
Toluene	1000	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,2-Dichloroethene	-	0.1 U	0.1 U	0.1 U	0.1 U
trans-1,3-Dichloropropene	-	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene	5	0.2 U	4.4	0.1 U	0.1 U
Trichlorofluoromethane	-	0.1 U	0.1 U	0.1 U	0.1 U
Vinyl Chloride	5	0.1 U	0.1 U	0.1 U	0.1 U
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L
1,1'-Biphenyl	-	0.5 U	0.5 U	0.6 U	NA
1,2,4,5-Tetrachlorobenzene	-	0.5 U	0.5 U	0.6 U	NA
2,2'-oxybis(1-Chloropropane)	-	0.5 U	0.5 U	0.6 U	NA
2,3,4,6-Tetrachlorophenol	-	0.5 U	0.5 U	0.6 U	NA
2,4,5-Trichlorophenol	-	0.5 U	0.5 U	0.6 U	NA
2,4,6-Trichlorophenol	-	0.5 U	0.5 U	0.6 U	NA
2,4-Dichlorophenol	-	0.5 U	0.5 U	0.6 U	NA
2,4-Dimethylphenol	-	0.5 U	0.5 U	0.6 U	NA
2,4-Dinitrophenol	-	10 U	10 U	11 U	NA
2,4-Dinitrotoluene	-	1 U	1 U	1 U	NA
2,6-Dinitrotoluene	-	0.5 U	0.5 U	0.6 U	NA
2-Chloronaphthalene	-	0.4 U	0.4 U	0.4 U	NA
2-Chlorophenol	-	0.5 U	0.5 U	0.6 U	NA
2-Methylnaphthalene	2	0.1 U	0.1 U	0.1 U	NA
2-Methylphenol	-	0.5 U	0.5 U	0.6 U	NA
2-Nitroaniline	-	0.5 U	0.5 U	0.6 U	NA
2-Nitrophenol	-	0.5 U	0.5 U	0.6 U	NA
3,3'-Dichlorobenzidine	-	2 U	2 U	2 U	NA
3-Nitroaniline	-	0.5 U	0.5 U	0.6 U	NA
4,6-Dinitro-2-methylphenol	1.7	5 U	5 U	6 U	NA
4-Bromophenyl-phenylether	-	0.5 U	0.5 U	0.6 U	NA

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

						FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D		HAV-LTR-CW13D		HAV-LTR-FB01		HAV-LTR-TB01	
Sample Date:	Goals for	12/13/2017		12/13/2017		12/12/2017		12/12/2017	
Duplicate of:	Groundwater								
		Result		Result		Result		Result	
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.6	U	NA	
4-Chloroaniline	-	2	U	2	U	2	U	NA	
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.6	U	NA	
4-Methylphenol	-	0.5	U	0.5	U	0.6	U	NA	
4-Nitroaniline	-	0.5	U	0.5	U	0.6	U	NA	
4-Nitrophenol	-	10	U	10	U	11	U	NA	
Acenaphthene	-	0.1	U	0.1	U	0.1	U	NA	
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	NA	
Acetophenone	-	0.5	U	0.5	U	0.6	U	NA	
Anthracene	-	0.1	U	0.1	U	0.1	U	NA	
Atrazine	-	2	U	2	U	2	U	NA	
Benzaldehyde	-	1	U	1	U	1	U	NA	
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	NA	
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	NA	
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	NA	
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	NA	
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	NA	
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.6	U	NA	
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.6	U	NA	
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	NA	
Butylbenzylphthalate	-	2	U	2	U	2	U	NA	

ANALYTICAL DATA
DECEMBER 2017 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC			
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-FB01	HAV-LTR-TB01
Sample Date:	Goals for	12/13/2017	12/13/2017	12/12/2017	12/12/2017
Duplicate of:	Groundwater				
		Result	Result	Result	Result
Caprolactam	-	5 U	5 U	6 U	NA
Carbazole	-	0.5 U	0.5 U	0.6 U	NA
Chrysene	-	0.1 U	0.1 U	0.1 U	NA
Dibenz(a,h)anthracene	-	0.1 U	0.1 U	0.1 U	NA
Dibenzofuran	4	0.5 U	0.5 U	0.6 U	NA
Diethylphthalate	-	2 U	2 U	2 U	NA
Dimethylphthalate	-	2 U	2 U	2 U	NA
Di-n-butylphthalate	-	2 U	2 U	2 U	NA
Di-n-octylphthalate	-	2 U	2 U	2 U	NA
Fluoranthene	-	0.1 U	0.1 U	0.1 U	NA
Fluorene	-	0.1 U	0.1 U	0.1 U	NA
Hexachlorobenzene	-	0.1 U	0.1 U	0.1 U	NA
Hexachlorobutadiene	-	0.5 U	0.5 U	0.6 U	NA
Hexachlorocyclopentadiene	-	5 U	5 U	6 U	NA
Hexachloroethane	-	1 U	1 U	1 U	NA
Indeno(1,2,3-cd)pyrene	-	0.1 U	0.1 U	0.1 U	NA
Isophorone	-	0.5 U	0.5 U	0.6 U	NA
Naphthalene	3	0.1 U	0.1 U	0.1 U	NA
Nitrobenzene	-	0.5 U	0.5 U	0.6 U	NA
N-Nitroso-di-n-propylamine	-	0.5 U	0.5 U	0.6 U	NA
N-Nitrosodiphenylamine	-	0.5 U	0.5 U	0.6 U	NA
Pentachlorophenol	1	1 U	1 U	1 U	NA
Phenanthrene	41	0.1 U	0.1 U	0.1 U	NA
Phenol	-	0.5 U	0.5 U	0.6 U	NA
Pyrene	-	0.1 U	0.1 U	0.1 U	NA
HERBICIDES	µg/L	µg/L	µg/L	µg/L	µg/L
Pentachlorophenol	1	NA	NA	0.026 U	NA
PESTICIDES	µg/L	µg/L	µg/L	µg/L	µg/L
Dieldrin	0.038	NA	NA	0.0044 U	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

P - Concentration difference between the primary a

U - Not Detected Above Laboratory Quantitation Lin

5.5 - Exceeds Remediation Goal for GW

A-3 MARCH 2018 GROUNDWATER DATA

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS															
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-RW8					
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Benzene	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.2	J	0.2	J	0.3	J	0.2	J	0.1	J	0.1	J	0.1	J	0.5	
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	1.5	
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS															
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-RW8					
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	0.3	J	0.1	U	0.1	U
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
m+p-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	1.7		2.3		0.1	U	0.1	U
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J
Methylcyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methylene Chloride	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.6		0.8		0.1	U	0.1	U
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.3	J	0.3	J	0.1	U	0.1	U	0.1	J	0.1	J	0.1	U	0.1	U
Toluene	1000	0.1	U	0.1	U	0.2	J	0.1	J	0.1	J	0.2	J	0.1	U	0.1	U
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4,5-Trichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS															
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-RW8					
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS															
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-RW8					
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Fluorene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Phenanthrene	41	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Phenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	0.027	U	0.026	U	0.084		0.027	U	0.027	U	0.027	U	0.065		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		0.11		0.23		0.23		0.087		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS														
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018
Duplicate of:	Groundwater											HAV-LTR-RW8				
		Result		Result		Result		Result		Result		Result		Result		Result
123789-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
12378-PeCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
12378-PeCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
234678-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
23478-PeCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
2378-TCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
2378-TCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
OCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
OCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
TEQ WHO 2005 - EDLx0.0	30	NA		NA		NA		NA		NA		NA		NA		NA
Total HpCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
Total HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
Total HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
Total HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
Total PeCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
Total PeCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
Total TCDD	-	NA		NA		NA		NA		NA		NA		NA		NA
Total TCDF	-	NA		NA		NA		NA		NA		NA		NA		NA
METALS	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L
Aluminum	200	1100		21.5	U	2130		22.1	J	21.5	U	21.5	U	30.1	J	NA
Antimony	-	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	NA
Arsenic	10	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	NA
Barium	2000	264		159		155		102		134		133		29.7		NA
Beryllium	-	0.23	J	0.099	J	0.17	J	0.071	U	0.071	U	0.071	U	0.071	U	NA
Cadmium	-	0.15	U	0.15	U	0.18	J	0.15	U	0.15	U	0.15	U	0.15	U	NA
Calcium	-	20400		21900		55800		95000		95000		92200		90500		NA
Chromium	-	7.2		0.87	U	3.9		1.2	J	0.87	U	0.87	U	0.87	U	NA
Cobalt	-	0.75		0.16	U	1.8		0.71		0.16	U	0.16	U	0.16	U	NA
Copper	-	2.7		0.54	U	2.5		8.5		0.95	J	1.1	J	14.9		NA
Iron	300	1330		37.4	U	2520		1660		1190		1430		1050		NA
Lead	-	0.43	JB	0.11	U	1.2	B	7.3	B	0.17	JB	0.27	JB	5.7	B	NA
Magnesium	-	12300		12400		17400		1600		19500		18900		18500		NA
Manganese	50	84.6		6.4		885		1240		13.4		12.8		626		NA
Nickel	-	3.2		1.2	J	5.3		1	U	1	U	1	U	1	U	NA

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		ROS AREA WELLS														
Sample ID:	Remediation	HAV-LTR-CW32		HAV-LTR-CW33		HAV-LTR-CW34		HAV-LTR-RW10		HAV-LTR-RW8		HAV-LTR-RW8X		HAV-LTR-RW9		HAV-LTR-CW12D
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018
Duplicate of:	Groundwater											HAV-LTR-RW8				
		Result		Result		Result		Result		Result		Result		Result		Result
Potassium	-	4370		4260		4250		4260		5870		5720		5090		NA
Selenium	-	1.4	J	1.3	J	0.73	J	0.77	J	0.6	J	0.64	J	0.69	J	NA
Silver	-	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	NA
Sodium	-	35500		29800		17900		18300		25200		25000		17100		NA
Thallium	-	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	NA
Vanadium	3.1	2.8		0.21	U	5.3		1.1		0.21	U	0.21	U	0.7		NA
Zinc	-	4.7	J	3.9	U	10.2	J	4.9	J	164		137		45.8		NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW10D		HAV-LTR-CW13D		HAV-LTR-CW13X		HAV-LTR-CW20D		HAV-LTR-CW20S		HAV-LTR-CTR		HAV-LTR-CW16D		HAV-LTR-CW16S	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/27/2018		3/26/2018		3/26/2018	
Duplicate of:	Groundwater					HAV-LTR-CW13D											
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	1.9	
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.4	J
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Benzene	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.3	J	0.5	J	0.5	J	1.2		0.1	U	0.1	J	1.3		0.1	U
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.3	J	7.7		7.6		0.1	U	0.1	U	0.2	J	0.1	U	0.1	U
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW10D		HAV-LTR-CW13D		HAV-LTR-CW13X		HAV-LTR-CW20D		HAV-LTR-CW20S		HAV-LTR-CTR		HAV-LTR-CW16D		HAV-LTR-CW16S	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/27/2018		3/26/2018		3/26/2018	
Duplicate of:	Groundwater					HAV-LTR-CW13D											
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.4	J	0.2	J	0.1	U	0.1	J
m+p-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	U	0.1	U	0.1	J	0.1	U	0.1	J	0.1	U	0.1	U
Methylcyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methylene Chloride	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.3	J
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Toluene	1000	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.6		3.8		3.8		0.1	U	0.1	U	0.2	J	0.1	U	0.1	U
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	4		0.5	U	0.5	U
2,4,5-Trichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1		0.5	U	0.5	U
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW10D		HAV-LTR-CW13D		HAV-LTR-CW13X		HAV-LTR-CW20D		HAV-LTR-CW20S		HAV-LTR-CTR		HAV-LTR-CW16D		HAV-LTR-CW16S	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/27/2018		3/26/2018		3/26/2018	
Duplicate of:	Groundwater					HAV-LTR-CW13D											
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	0.6	
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.8	
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	0.4	J
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	1	
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.4	J	3	
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	1	
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	1	
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.3	J	3	
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.3	J
Dibenzofuran	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

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Sample ID:	Remediation	HAV-LTR-CW10D		HAV-LTR-CW13D		HAV-LTR-CW13X		HAV-LTR-CW20D		HAV-LTR-CW20S		HAV-LTR-CTR		HAV-LTR-CW16D		HAV-LTR-CW16S	
Sample Date:	Goals for	3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/19/2018		3/27/2018		3/26/2018		3/26/2018	
Duplicate of:	Groundwater					HAV-LTR-CW13D											
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	0.1	U	0.7		4	
Fluorene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.6	
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	2	
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.3	J	1	
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	1	U	1	U	1	U	1	U	1	J	130		1	U	1	U
Phenanthrene	41	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.5	J	2	
Phenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.5		3	
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	NA		NA		NA		NA		NA		18.6		NA		486	
1234678-HpCDF	-	NA		NA		NA		NA		NA		4.87	J	NA		134	
1234789-HpCDF	-	NA		NA		NA		NA		NA		0.493	J	NA		9.53	J
123478-HxCDD	-	NA		NA		NA		NA		NA		0.424	J	NA		1.78	J
123478-HxCDF	-	NA		NA		NA		NA		NA		0.159	J	NA		2.45	J
123678-HxCDD	-	NA		NA		NA		NA		NA		1.06	J	NA		17.2	
123678-HxCDF	-	NA		NA		NA		NA		NA		0.346	J	NA		1.51	J
123789-HxCDD	-	NA		NA		NA		NA		NA		0.406	J	NA		4.17	J

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Sample ID:	Remediation	HAV-LTR-CW10D	HAV-LTR-CW13D	HAV-LTR-CW13X	HAV-LTR-CW20D	HAV-LTR-CW20S	HAV-LTR-CTR	HAV-LTR-CW16D	HAV-LTR-CW16S
Sample Date:	Goals for	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/27/2018	3/26/2018	3/26/2018
Duplicate of:	Groundwater	HAV-LTR-CW13D							
		Result	Result	Result	Result	Result	Result	Result	Result
123789-HxCDF	-	NA	NA	NA	NA	NA	0.601 J	NA	1.04 J
12378-PeCDD	-	NA	NA	NA	NA	NA	0.496 J	NA	1.56 J
12378-PeCDF	-	NA	NA	NA	NA	NA	0.93 J	NA	0.714 J
234678-HxCDF	-	NA	NA	NA	NA	NA	0.445 J	NA	3.97 J
23478-PeCDF	-	NA	NA	NA	NA	NA	0.285 J	NA	0.971 J
2378-TCDD	-	NA	NA	NA	NA	NA	0.144 U	NA	1.21 J
2378-TCDF	-	NA	NA	NA	NA	NA	0.242 U	NA	0.385 J
OCDD	-	NA	NA	NA	NA	NA	65	NA	3980
OCDF	-	NA	NA	NA	NA	NA	18 J	NA	1130
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	0.336	NA	12.4
Total HpCDD	-	NA	NA	NA	NA	NA	26.2	NA	836
Total HpCDF	-	NA	NA	NA	NA	NA	24.7	NA	812
Total HxCDD	-	NA	NA	NA	NA	NA	5.71 J	NA	71.1
Total HxCDF	-	NA	NA	NA	NA	NA	13.8	NA	150
Total PeCDD	-	NA	NA	NA	NA	NA	2.13 J	NA	9.55 J
Total PeCDF	-	NA	NA	NA	NA	NA	6.46 J	NA	20.8
Total TCDD	-	NA	NA	NA	NA	NA	1.23 J	NA	7.26
Total TCDF	-	NA	NA	NA	NA	NA	4.4	NA	18.8
METALS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	NA	NA	21.5 U	NA	NA
Antimony	-	NA	NA	NA	NA	NA	0.45 U	NA	NA
Arsenic	10	NA	NA	NA	NA	NA	0.72 U	NA	NA
Barium	2000	NA	NA	NA	NA	NA	172	NA	NA
Beryllium	-	NA	NA	NA	NA	NA	0.071 U	NA	NA
Cadmium	-	NA	NA	NA	NA	NA	0.15 U	NA	NA
Calcium	-	NA	NA	NA	NA	NA	75900	NA	NA
Chromium	-	NA	NA	NA	NA	NA	0.87 U	NA	NA
Cobalt	-	NA	NA	NA	NA	NA	13	NA	NA
Copper	-	NA	NA	NA	NA	NA	0.79 J	NA	NA
Iron	300	NA	NA	NA	NA	NA	802	NA	NA
Lead	-	NA	NA	NA	NA	NA	0.11 U	NA	NA
Magnesium	-	NA	NA	NA	NA	NA	39600	NA	NA
Manganese	50	NA	NA	NA	NA	NA	4320	NA	NA
Nickel	-	NA	NA	NA	NA	NA	3.6	NA	NA

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Sample ID:	Remediation	HAV-LTR-CW10D	HAV-LTR-CW13D	HAV-LTR-CW13X	HAV-LTR-CW20D	HAV-LTR-CW20S	HAV-LTR-CTR	HAV-LTR-CW16D	HAV-LTR-CW16S
Sample Date:	Goals for	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/19/2018	3/27/2018	3/26/2018	3/26/2018
Duplicate of:	Groundwater	HAV-LTR-CW13D							
		Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	NA	NA	NA	NA	7920	NA	NA
Selenium	-	NA	NA	NA	NA	NA	0.51 J	NA	NA
Silver	-	NA	NA	NA	NA	NA	0.15 U	NA	NA
Sodium	-	NA	NA	NA	NA	NA	88000	NA	NA
Thallium	-	NA	NA	NA	NA	NA	0.12 U	NA	NA
Vanadium	3.1	NA	NA	NA	NA	NA	0.21 U	NA	NA
Zinc	-	NA	NA	NA	NA	NA	3.9 U	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW17D		HAV-LTR-CW18D		HAV-LTR-CW19D		HAV-LTR-CW1D		HAV-LTR-CW1S		HAV-LTR-CW21D		HAV-LTR-CW21S		HAV-LTR-CW21X	
Sample Date:	Goals for	3/28/2018		3/26/2018		3/28/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018	
Duplicate of:	Groundwater															HAV-LTR-CW21D	
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.3	J	1		0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	J	0.2	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.6		3.3		0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	J	0.1	U	0.1	U	0.1	J	0.2	J	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	0.2	J	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U
Benzene	5	4.6		0.1	U	0.5	J	0.1	U	0.3	J	1.8		1.1		1.8	
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.8	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.5	J	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	1.2		0.4	J	1.7		85		180		1.5		1.4		1.5	
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U

ANALYTICAL DATA
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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW17D		HAV-LTR-CW18D		HAV-LTR-CW19D		HAV-LTR-CW1D		HAV-LTR-CW1S		HAV-LTR-CW21D		HAV-LTR-CW21S		HAV-LTR-CW21X	
Sample Date:	Goals for	3/28/2018		3/26/2018		3/28/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018	
Duplicate of:	Groundwater															HAV-LTR-CW21D	
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	0.5		0.1	U	0.2	U	0.4	J	0.3	J	0.5	J
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	1.9		0.1	U	0.9		0.1	U	0.4	J	2.5		1.3		2.6	
m+p-Xylene	-	0.1	U	0.1	U	0.3	J	0.1	U	0.2	U	0.2	J	0.1	J	0.2	J
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.6	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.2	J	0.1	J	1.3		0.4	J	5.2		0.3	J	0.4	J	0.3	J
Methylcyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Methylene Chloride	-	1.8		0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	0.1	U	0.1	U	0.9		0.1	U	0.2	U	0.7		0.3	J	0.7	
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.5	J	0.1	U	0.1	U	0.1	U
Toluene	1000	0.2	J	0.1	J	0.3	J	0.1	U	0.2	U	0.2	J	0.1	U	0.2	J
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	1.6		3.4		0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	1.1		0.1	U	0.7		8		200		0.9		0.8		0.9	
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	24		22		0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	8		0.5	U	3		0.5	U	0.9	J	4		1		4	
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	30		0.5	U	11		2		12		8		4		11	
2,4,5-Trichlorophenol	-	0.6	J	0.5	U	3		0.5	U	2		4		3		6	
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	3		5		1		1		0.9	J	2	
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.8	J	0.5	U	0.5	U	0.5	U	0.5	J
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	11	U	10	U	10	U	11	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	7		0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

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Sample ID:	Remediation	HAV-LTR-CW17D		HAV-LTR-CW18D		HAV-LTR-CW19D		HAV-LTR-CW1D		HAV-LTR-CW1S		HAV-LTR-CW21D		HAV-LTR-CW21S		HAV-LTR-CW21X	
Sample Date:	Goals for	3/28/2018		3/26/2018		3/28/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018	
Duplicate of:	Groundwater															HAV-LTR-CW21D	
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	11	U	10	U	10	U	11	U	10	U	10	U	10	U	10	U
Acenaphthene	-	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.3	J	0.1	J	0.3	J
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2		0.8	J	0.5	U
Anthracene	-	0.2	J	0.1	U	0.3	J	0.1	U	0.1	U	0.3	J	0.1	U	0.3	J
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbazole	-	1	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	3		0.5	U	1		0.5	U	0.5	J	1		0.6	J	1	
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

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Sample ID:	Remediation	HAV-LTR-CW17D		HAV-LTR-CW18D		HAV-LTR-CW19D		HAV-LTR-CW1D		HAV-LTR-CW1S		HAV-LTR-CW21D		HAV-LTR-CW21S		HAV-LTR-CW21X	
Sample Date:	Goals for	3/28/2018		3/26/2018		3/28/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018	
Duplicate of:	Groundwater															HAV-LTR-CW21D	
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Fluorene	-	2		0.3	J	4		0.1	U	0.6		4		2		4	
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.5	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	1300		1	U	450		1	U	210		430		260		510	
Phenanthrene	41	5		0.1	U	0.7		0.1	U	0.1	U	0.2	J	0.1	U	0.3	J
Phenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	

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Sample ID:	Remediation	HAV-LTR-CW17D	HAV-LTR-CW18D	HAV-LTR-CW19D	HAV-LTR-CW1D	HAV-LTR-CW1S	HAV-LTR-CW21D	HAV-LTR-CW21S	HAV-LTR-CW21X
Sample Date:	Goals for	3/28/2018	3/26/2018	3/28/2018	3/27/2018	3/27/2018	3/27/2018	3/27/2018	3/27/2018
Duplicate of:	Groundwater								HAV-LTR-CW21D
		Result	Result	Result	Result	Result	Result	Result	Result
123789-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
234678-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
23478-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
METALS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	-	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	-	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	-	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	-	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	-	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	-	NA	NA	NA	NA	NA	NA	NA	NA
Copper	-	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA	NA	NA	NA
Lead	-	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	-	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	-	NA	NA	NA	NA	NA	NA	NA	NA

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW17D	HAV-LTR-CW18D	HAV-LTR-CW19D	HAV-LTR-CW1D	HAV-LTR-CW1S	HAV-LTR-CW21D	HAV-LTR-CW21S	HAV-LTR-CW21X
Sample Date:	Goals for	3/28/2018	3/26/2018	3/28/2018	3/27/2018	3/27/2018	3/27/2018	3/27/2018	3/27/2018
Duplicate of:	Groundwater								HAV-LTR-CW21D
		Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	-	NA	NA	NA	NA	NA	NA	NA	NA
Silver	-	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	-	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	-	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	3.1	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	-	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS															
Sample ID:	Remediation	HAV-LTR-CW22D		HAV-LTR-CW22S		HAV-LTR-CW24D		HAV-LTR-CW26D		HAV-LTR-CW27D		HAV-LTR-CW27X		HAV-LTR-CW28D		HAV-LTR-CW2D	
Sample Date:	Goals for	3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/20/2018		3/20/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-CW27D					
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	60		0.1	U	0.1	U	0.1	U	6.1		0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	18		0.1	U	0.1	U	0.1	U	1		0.1	U
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	2.6	J	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	7.9		3	U	3	U	3	U	3	U
Benzene	5	0.1	U	0.1	U	21		0.4	J	0.1	U	0.1	U	0.1	U	0.1	U
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.9	
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.5	J	0.3	J	0.5	J	0.1	U	0.1	U	0.1	U	0.6		38	
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.3	J	0.3	J	0.2	J	0.4	J
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

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		OTHER SITE WELLS															
Sample ID:	Remediation	HAV-LTR-CW22D		HAV-LTR-CW22S		HAV-LTR-CW24D		HAV-LTR-CW26D		HAV-LTR-CW27D		HAV-LTR-CW27X		HAV-LTR-CW28D		HAV-LTR-CW2D	
Sample Date:	Goals for	3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/20/2018		3/20/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-CW27D					
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	5.6		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	6.4		0.1	J	0.4	J	0.4	J	0.4	J	0.1	U
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	2.8		0.1	J	0.7		0.7		0.3	J	0.1	U
m+p-Xylene	-	0.1	U	0.1	U	9.9		0.1	U	0.1	U	0.1	U	0.6		0.1	U
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	J	0.4	J	0.1	U	0.1	J	0.1	J	0.1	U	0.5	
Methylcyclohexane	-	0.1	U	0.1	U	0.9		0.1	U	0.1	J	0.1	J	0.1	U	0.1	U
Methylene Chloride	-	0.2	U	0.2	U	0.5	J	0.2	U	0.2	U	0.2	U	0.2	U	0.3	J
o-Xylene	-	0.1	U	0.1	U	19		0.1	U	0.1	U	0.1	U	1.8		0.1	U
Styrene	-	0.1	U	0.1	U	0.7		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Toluene	1000	0.1	U	0.1	U	1.4		0.3	J	0.1	J	0.1	J	0.2	J	0.1	U
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.1	U	0.1	U	0.2	J	0.1	U	0.2	J	0.2	J	0.1	U	0.3	J
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	19		0.5	U	2		1		0.5	U	0.5	U
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	0.5	U	0.5	U	30		0.5	U	3		2		16		2	
2,4,5-Trichlorophenol	-	0.5	U	0.5	U	22		0.5	U	0.5	J	0.5	U	1		0.5	U
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	0.6	J	0.5	U	1		1		0.6	J	0.5	U
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	10	U	10	U	10	U	10	U	11	U	11	U	10	U	11	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

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		OTHER SITE WELLS															
Sample ID:	Remediation	HAV-LTR-CW22D		HAV-LTR-CW22S		HAV-LTR-CW24D		HAV-LTR-CW26D		HAV-LTR-CW27D		HAV-LTR-CW27X		HAV-LTR-CW28D		HAV-LTR-CW2D	
Sample Date:	Goals for	3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/20/2018		3/20/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-CW27D					
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	41		0.2	J	0.1	U	0.1	U	0.1	U	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	10	U	10	U	10	U	10	U	11	U	11	U	10	U	11	U
Acenaphthene	-	0.1	U	0.1	U	11		0.1	J	0.7		0.7		0.1	U	0.1	U
Acenaphthylene	-	0.1	U	0.1	U	3		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	3		0.1	U	0.4	J	0.3	J	0.1	U	0.1	U
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	0.5	U	0.5	U	6		0.5	U	1		1		0.5	U	0.5	U
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

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Sample Date:	Goals for	3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/20/2018		3/20/2018		3/19/2018		3/19/2018	
Duplicate of:	Groundwater											HAV-LTR-CW27D					
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.5	J	0.1	U	0.1	J	0.1	J	0.1	U	0.1	U
Fluorene	-	0.1	U	0.1	U	19		0.6		3		3		0.1	U	0.1	U
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.1	U	240		0.1	U	0.1	U	0.2	J	0.1	U	0.1	U
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	1	U	1	U	890		1	U	5	J	4	J	390		37	
Phenanthrene	41	0.1	U	0.1	U	20		0.1	J	0.1	U	0.1	U	0.1	U	0.1	U
Phenol	-	0.5	U	0.5	U	0.5	U	0.7	J	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.5	J	0.1	U	0.1	J	0.2	J	0.1	U	0.1	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS									
Sample ID:	Remediation	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-CW24D	HAV-LTR-CW26D	HAV-LTR-CW27D	HAV-LTR-CW27X	HAV-LTR-CW28D	HAV-LTR-CW2D		
Sample Date:	Goals for	3/27/2018	3/27/2018	3/26/2018	3/26/2018	3/20/2018	3/20/2018	3/19/2018	3/19/2018		
Duplicate of:	Groundwater						HAV-LTR-CW27D				
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
123789-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
234678-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
23478-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
METALS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	21.5	U	NA	NA	NA	NA	NA	NA
Antimony	-	NA	NA	0.45	U	NA	NA	NA	NA	NA	NA
Arsenic	10	NA	NA	20.9		NA	NA	NA	NA	NA	NA
Barium	2000	NA	NA	193		NA	NA	NA	NA	NA	NA
Beryllium	-	NA	NA	0.071	U	NA	NA	NA	NA	NA	NA
Cadmium	-	NA	NA	0.15	U	NA	NA	NA	NA	NA	NA
Calcium	-	NA	NA	40500		NA	NA	NA	NA	NA	NA
Chromium	-	NA	NA	0.87	U	NA	NA	NA	NA	NA	NA
Cobalt	-	NA	NA	2.9		NA	NA	NA	NA	NA	NA
Copper	-	NA	NA	0.68	J	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	64600		NA	NA	NA	NA	NA	NA
Lead	-	NA	NA	0.11	U	NA	NA	NA	NA	NA	NA
Magnesium	-	NA	NA	17300		NA	NA	NA	NA	NA	NA
Manganese	50	NA	NA	5470		NA	NA	NA	NA	NA	NA
Nickel	-	NA	NA	3.2		NA	NA	NA	NA	NA	NA

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		OTHER SITE WELLS											
Sample ID:	Remediation	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-CW24D	HAV-LTR-CW26D	HAV-LTR-CW27D	HAV-LTR-CW27X	HAV-LTR-CW28D	HAV-LTR-CW2D				
Sample Date:	Goals for	3/27/2018	3/27/2018	3/26/2018	3/26/2018	3/20/2018	3/20/2018	3/19/2018	3/19/2018				
Duplicate of:	Groundwater							HAV-LTR-CW27D					
		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	NA	7090		NA	NA	NA	NA	NA	NA	NA	NA
Selenium	-	NA	NA	0.5	U	NA	NA	NA	NA	NA	NA	NA	NA
Silver	-	NA	NA	0.15	U	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	-	NA	NA	43700		NA	NA	NA	NA	NA	NA	NA	NA
Thallium	-	NA	NA	0.12	U	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	3.1	NA	NA	0.21	U	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	-	NA	NA	12.2	J	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I		HAV-LTR-CW3D		HAV-LTR-CW4D		HAV-LTR-CW4I		HAV-LTR-CW4S		HAV-LTR-CW5D		HAV-LTR-CW5S		HAV-LTR-HAV04	
Sample Date:	Goals for	3/19/2018		3/28/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	5.2		0.1	U	0.1	U	0.1	U	0.1	U	42	
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	0.3	J	0.1	U	0.1	U	0.1	U	0.1	U	0.7	
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	4.2	J
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	3	U	3	U	3	U	20	
Benzene	5	0.1	U	0.1	U	2		9.2		0.1	U	0.1	U	0.1	U	2	
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.8		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	49		0.6		0.1	U	0.4	J	0.1	U	0.1	U	0.1	U	0.1	J
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.2	J	0.5		0.1	U	0.1	U	0.1	U	0.1	J
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I		HAV-LTR-CW3D		HAV-LTR-CW4D		HAV-LTR-CW4I		HAV-LTR-CW4S		HAV-LTR-CW5D		HAV-LTR-CW5S		HAV-LTR-HAV04	
Sample Date:	Goals for	3/19/2018		3/28/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.6		0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	15		1		0.1	U	0.1	U	0.1	U	1	
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	8		5.3		0.1	U	0.1	U	0.1	U	2	
m+p-Xylene	-	0.1	U	0.1	U	1.4		0.4	J	0.1	U	0.1	U	0.1	U	2.3	
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	J	0.2	J	0.1	J	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U
Methylcyclohexane	-	0.1	U	0.1	U	0.8		0.4	J	0.1	U	0.1	U	0.1	U	0.5	J
Methylene Chloride	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	0.1	U	0.1	U	4.1		0.3	J	0.1	U	0.1	U	0.1	U	15	
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J
Toluene	1000	0.1	J	0.1	U	0.3	J	0.1	J	0.1	J	0.1	U	0.1	U	0.2	J
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.1	U	0.1	U	0.2	J	0.5	J	0.1	U	0.1	U	0.1	U	0.9	
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	0.5	U	2		3		15		0.5	U	0.5	U	0.5	U	62	
2,4,5-Trichlorophenol	-	0.5	U	1	J	0.5	U	1		0.5	U	0.5	U	0.5	U	11	
2,4,6-Trichlorophenol	-	0.5	U	0.6	J	0.9	J	2		0.5	U	0.5	U	0.5	U	1	
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2	
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	
2,4-Dinitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	11	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I		HAV-LTR-CW3D		HAV-LTR-CW4D		HAV-LTR-CW4I		HAV-LTR-CW4S		HAV-LTR-CW5D		HAV-LTR-CW5S		HAV-LTR-HAV04	
Sample Date:	Goals for	3/19/2018		3/28/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2	
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	10	U	10	U	10	U	10	U	10	U	10	U	10	U	11	U
Acenaphthene	-	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	0.5	U	0.7	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I		HAV-LTR-CW3D		HAV-LTR-CW4D		HAV-LTR-CW4I		HAV-LTR-CW4S		HAV-LTR-CW5D		HAV-LTR-CW5S		HAV-LTR-HAV04	
Sample Date:	Goals for	3/19/2018		3/28/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/26/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.5	J
Fluorene	-	0.1	U	1		0.8		0.4	J	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	1	
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	1	J	170		54		330		1	U	1	U	1	U	990	
Phenanthrene	41	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Phenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	2	
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	NA		NA		NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	NA		NA		NA		NA		NA		NA		NA		NA	

ANALYTICAL DATA
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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I	HAV-LTR-CW3D	HAV-LTR-CW4D	HAV-LTR-CW4I	HAV-LTR-CW4S	HAV-LTR-CW5D	HAV-LTR-CW5S	HAV-LTR-HAV04
Sample Date:	Goals for	3/19/2018	3/28/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/28/2018
Duplicate of:	Groundwater								
		Result	Result	Result	Result	Result	Result	Result	Result
123789-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
12378-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
234678-HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
23478-PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
2378-TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDD	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDF	-	NA	NA	NA	NA	NA	NA	NA	NA
METALS	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	200	NA	NA	NA	408		NA	NA	NA
Antimony	-	NA	NA	NA	0.45	U	NA	NA	NA
Arsenic	10	NA	NA	NA	31		NA	NA	NA
Barium	2000	NA	NA	NA	123		NA	NA	NA
Beryllium	-	NA	NA	NA	0.071	U	NA	NA	NA
Cadmium	-	NA	NA	NA	0.23	J	NA	NA	NA
Calcium	-	NA	NA	NA	26900		NA	NA	NA
Chromium	-	NA	NA	NA	7.6		NA	NA	NA
Cobalt	-	NA	NA	NA	59.8		NA	NA	NA
Copper	-	NA	NA	NA	2.5		NA	NA	NA
Iron	300	NA	NA	NA	23100		NA	NA	NA
Lead	-	NA	NA	NA	0.39	J	NA	NA	NA
Magnesium	-	NA	NA	NA	14500		NA	NA	NA
Manganese	50	NA	NA	NA	10000		NA	NA	NA
Nickel	-	NA	NA	NA	18.7		NA	NA	NA

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-CW2I	HAV-LTR-CW3D	HAV-LTR-CW4D	HAV-LTR-CW4I	HAV-LTR-CW4S	HAV-LTR-CW5D	HAV-LTR-CW5S	HAV-LTR-HAV04
Sample Date:	Goals for	3/19/2018	3/28/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/26/2018	3/28/2018
Duplicate of:	Groundwater								
		Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	NA	NA	6410		NA	NA	NA
Selenium	-	NA	NA	NA	0.5	U	NA	NA	NA
Silver	-	NA	NA	NA	0.15	U	NA	NA	NA
Sodium	-	NA	NA	NA	56700		NA	NA	NA
Thallium	-	NA	NA	NA	0.12	U	NA	NA	NA
Vanadium	3.1	NA	NA	NA	1.8		NA	NA	NA
Zinc	-	NA	NA	NA	17.4		NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05		HAV-LTR-IW1		HAV-LTR-IW2		HAV-LTR-IW4		HAV-LTR-IW5		HAV-LTR-MW1		HAV-LTR-MW2		HAV-LTR-MW3	
Sample Date:	Goals for	3/28/2018		3/20/2018		3/20/2018		3/28/2018		3/28/2018		3/27/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	13		0.1	U	3.2		0.1	J	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	1.6		0.1	U	0.7		0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1.6	J	1	U	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	10		3	U	3	U	3	U	3	U	3	U
Benzene	5	0.8		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.5	J
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.6		0.1	U	3.8		5.3		0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.5	J	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.1	U	26		0.9		54		70		0.4	J	0.1	U	0.1	U
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.1	J	0.1	U	3.1	
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05		HAV-LTR-IW1		HAV-LTR-IW2		HAV-LTR-IW4		HAV-LTR-IW5		HAV-LTR-MW1		HAV-LTR-MW2		HAV-LTR-MW3	
Sample Date:	Goals for	3/28/2018		3/20/2018		3/20/2018		3/28/2018		3/28/2018		3/27/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	3.4		0.1	U	0.6		0.1	U	0.1	U	0.1	U	0.1	U	0.6	
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	1.5		0.1	U	0.5	J	0.1	U	0.1	U	0.1	U	0.1	U	0.8	
m+p-Xylene	-	1.1		0.1	U	0.8		0.1	U	0.1	U	0.1	U	0.1	U	0.3	J
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	1.5	
Methylcyclohexane	-	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methylene Chloride	-	0.2	U	0.2	U	0.4	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	8.3		0.1	U	3.4		0.1	U	0.1	U	0.1	U	0.1	U	0.6	
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Toluene	1000	0.2	J	0.1	U	0.7		0.1	J	0.1	U	0.1	U	0.1	U	0.4	J
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.3	J	0.1	U	0.3	J	0.1	U	0.1	U	0.1	J	0.1	U	0.9	
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	2	
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	8		0.5	U	120		0.6	U	0.5	U	0.5	U	0.5	U	4	
2,4,5-Trichlorophenol	-	6		0.5	U	8		0.6	U	0.5	U	0.5	U	0.5	U	1	
2,4,6-Trichlorophenol	-	0.8	J	0.5	U	3		0.6	U	0.5	U	0.5	U	0.5	U	0.9	J
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	10	U	11	U	11	U	11	U	10	U	11	U	11	U	11	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.5	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05		HAV-LTR-IW1		HAV-LTR-IW2		HAV-LTR-IW4		HAV-LTR-IW5		HAV-LTR-MW1		HAV-LTR-MW2		HAV-LTR-MW3	
Sample Date:	Goals for	3/28/2018		3/20/2018		3/20/2018		3/28/2018		3/28/2018		3/27/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.8	J	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	6	U	5	U	5	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	2		0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Nitrophenol	-	10	U	11	U	11	U	11	U	10	U	11	U	11	U	11	U
Acenaphthene	-	0.7		0.1	U	0.9		0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.5	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.2	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	6	U	5	U	5	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Chrysene	-	0.1	U	0.1	U	0.4	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.8	J
Diethylphthalate	-	2	U	2	U	52		2	U	2	U	2	U	2	U	2	U

ANALYTICAL DATA
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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05		HAV-LTR-IW1		HAV-LTR-IW2		HAV-LTR-IW4		HAV-LTR-IW5		HAV-LTR-MW1		HAV-LTR-MW2		HAV-LTR-MW3	
Sample Date:	Goals for	3/28/2018		3/20/2018		3/20/2018		3/28/2018		3/28/2018		3/27/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	J	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	1		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Fluorene	-	0.8		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	2	
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	6	U	5	U	5	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	3	3		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Pentachlorophenol	1	200		1	U	2500		1	U	1	U	1	U	1	U	510	
Phenanthrene	41	0.1	U	0.1	U	0.6		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Phenol	-	0.5	U	0.5	U	2		0.6	U	0.5	U	0.5	U	0.5	U	0.5	U
Pyrene	-	0.3	J	0.1	U	3		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	1800		NA		NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	549		NA		NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	34.2		NA		NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	1.28	J	NA		NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	10.6	J	NA		NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	52.3		NA		NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	4.42	J	NA		NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	5.83	J	NA		NA		NA		NA		NA		NA		NA	

ANALYTICAL DATA
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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05		HAV-LTR-IW1		HAV-LTR-IW2		HAV-LTR-IW4		HAV-LTR-IW5		HAV-LTR-MW1		HAV-LTR-MW2		HAV-LTR-MW3	
Sample Date:	Goals for	3/28/2018		3/20/2018		3/20/2018		3/28/2018		3/28/2018		3/27/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater																
		Result		Result		Result		Result		Result		Result		Result		Result	
123789-HxCDF	-	3.78	J	NA		NA		NA		NA		NA		NA		NA	
12378-PeCDD	-	0.527	J	NA		NA		NA		NA		NA		NA		NA	
12378-PeCDF	-	1.7	J	NA		NA		NA		NA		NA		NA		NA	
234678-HxCDF	-	4.81	J	NA		NA		NA		NA		NA		NA		NA	
23478-PeCDF	-	1.59	J	NA		NA		NA		NA		NA		NA		NA	
2378-TCDD	-	0.127	U	NA		NA		NA		NA		NA		NA		NA	
2378-TCDF	-	0.391	J	NA		NA		NA		NA		NA		NA		NA	
OCDD	-	12600		NA		NA		NA		NA		NA		NA		NA	
OCDF	-	4480		NA		NA		NA		NA		NA		NA		NA	
TEQ WHO 2005 - EDLx0.0	30	35.6		NA		NA		NA		NA		NA		NA		NA	
Total HpCDD	-	2690		NA		NA		NA		NA		NA		NA		NA	
Total HpCDF	-	3030		NA		NA		NA		NA		NA		NA		NA	
Total HxCDD	-	136		NA		NA		NA		NA		NA		NA		NA	
Total HxCDF	-	43.4		NA		NA		NA		NA		NA		NA		NA	
Total PeCDD	-	4.8	J	NA		NA		NA		NA		NA		NA		NA	
Total PeCDF	-	30.3		NA		NA		NA		NA		NA		NA		NA	
Total TCDD	-	2.42		NA		NA		NA		NA		NA		NA		NA	
Total TCDF	-	16		NA		NA		NA		NA		NA		NA		NA	
METALS	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Aluminum	200	NA		149		53	J	21.5	U	NA		NA		NA		NA	
Antimony	-	NA		0.45	U	0.45	U	0.45	U	NA		NA		NA		NA	
Arsenic	10	NA		1.1	J	5.3		0.72	U	NA		NA		NA		NA	
Barium	2000	NA		27.7		183		7.1		NA		NA		NA		NA	
Beryllium	-	NA		0.19	J	0.24	J	0.071	U	NA		NA		NA		NA	
Cadmium	-	NA		0.15	U	0.15	U	0.15	U	NA		NA		NA		NA	
Calcium	-	NA		36600		53800		40800		NA		NA		NA		NA	
Chromium	-	NA		394		5.4		0.87	U	NA		NA		NA		NA	
Cobalt	-	NA		8.1		20		0.19	J	NA		NA		NA		NA	
Copper	-	NA		22.6		1.6	J	1.3	J	NA		NA		NA		NA	
Iron	300	NA		4700		51300		483		NA		NA		NA		NA	
Lead	-	NA		0.23	J	0.27	J	0.11	U	NA		NA		NA		NA	
Magnesium	-	NA		17400		23100		21300		NA		NA		NA		NA	
Manganese	50	NA		266		6900		27.3		NA		NA		NA		NA	
Nickel	-	NA		442		5.7		1.9	J	NA		NA		NA		NA	

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-HAV05	HAV-LTR-IW1	HAV-LTR-IW2	HAV-LTR-IW4	HAV-LTR-IW5	HAV-LTR-MW1	HAV-LTR-MW2	HAV-LTR-MW3
Sample Date:	Goals for	3/28/2018	3/20/2018	3/20/2018	3/28/2018	3/28/2018	3/27/2018	3/27/2018	3/28/2018
Duplicate of:	Groundwater								
		Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	8440	9090	8230	NA	NA	NA	NA
Selenium	-	NA	0.5 U	0.5 U	0.5 U	NA	NA	NA	NA
Silver	-	NA	0.15 U	0.15 U	0.15 U	NA	NA	NA	NA
Sodium	-	NA	180000	153000	244000	NA	NA	NA	NA
Thallium	-	NA	0.13 J	0.12 U	0.12 U	NA	NA	NA	NA
Vanadium	3.1	NA	1.9	3.6	0.35 J	NA	NA	NA	NA
Zinc	-	NA	12.4 J	18.2	3.9 U	NA	NA	NA	NA

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-NW01		HAV-LTR-NW06		HAV-LTR-RW3		HAV-LTR-RW5		HAV-LTR-RW5X		HAV-LTR-RW6		HAV-LTR-RW7		HAV-LTR-FB01	
Sample Date:	Goals for	3/20/2018		3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/27/2018		3/27/2018		3/19/2018	
Duplicate of:	Groundwater									HAV-LTR-RW5							
		Result		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	J	0.1	J	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	51		14		13		0.1	U	13		0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.4	J	0.1	U	0.1	U	0.1	U	0.2	J	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.2	J	0.2	J	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	14		2.8		2.7		0.1	U	2.1		0.1	U
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Benzene	5	0.1	U	0.1	U	0.2	J	7		7.2		0.8		0.8		0.1	U
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.6		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	9		0.1	U	2.1		0.6		0.6		0.1	U	0.7		0.1	U
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.3	J	8.9		8.5		1.1		2.7		0.1	U
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

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Sample ID:	Remediation	HAV-LTR-NW01		HAV-LTR-NW06		HAV-LTR-RW3		HAV-LTR-RW5		HAV-LTR-RW5X		HAV-LTR-RW6		HAV-LTR-RW7		HAV-LTR-FB01	
Sample Date:	Goals for	3/20/2018		3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/27/2018		3/27/2018		3/19/2018	
Duplicate of:	Groundwater									HAV-LTR-RW5							
		Result		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	U	0.2	J	0.6		0.7		0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	7.4		9.5		9.3		0.1	U	1.7		0.1	U
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	4.8		3.9		3.8		0.8		3.3		0.1	U
m+p-Xylene	-	0.1	U	0.1	U	7.5		7.3		7.1		0.1	U	1.6		0.1	U
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	U	0.1	J	0.5		0.5		0.4	J	0.3	J	0.1	U
Methylcyclohexane	-	0.1	U	0.1	U	0.6		0.9		0.9		0.1	U	0.1	J	0.1	U
Methylene Chloride	-	0.2	U	0.2	U	0.5		0.2	J	0.2	J	0.2	U	0.3	J	0.3	J
o-Xylene	-	0.1	U	0.1	U	27		19		18		0.1	U	8.4		0.1	U
Styrene	-	0.1	U	0.1	U	0.9		0.6		0.6		0.1	U	0.3	J	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	J	0.1	J	0.1	J	0.1	U	0.1	U	0.1	U
Toluene	1000	0.1	U	0.1	U	2.2		1.8		1.8		0.3	J	0.6		0.1	U
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	J	0.2	J	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.1	U	0.2	J	0.6		6.6		6.3		0.6		1.4		0.1	U
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.7		0.7		0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	3		12		12		0.6	U	3		0.5	U
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2,3,4,6-Tetrachlorophenol	-	0.5	U	66		120		37		37		3		15		0.5	U
2,4,5-Trichlorophenol	-	0.5	U	0.5	U	20		5		6		0.9	J	11		0.5	U
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	2		1		1		0.6	U	0.7	J	0.5	U
2,4-Dichlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2,4-Dimethylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2,4-Dinitrophenol	-	11	U	10	U	11	U	10	U	10	U	11	U	10	U	11	U
2,4-Dinitrotoluene	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,6-Dinitrotoluene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2-Chloronaphthalene	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
2-Chlorophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U

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Sample ID:	Remediation	HAV-LTR-NW01		HAV-LTR-NW06		HAV-LTR-RW3		HAV-LTR-RW5		HAV-LTR-RW5X		HAV-LTR-RW6		HAV-LTR-RW7		HAV-LTR-FB01	
Sample Date:	Goals for	3/20/2018		3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/27/2018		3/27/2018		3/19/2018	
Duplicate of:	Groundwater									HAV-LTR-RW5							
		Result		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	U	4		3		4		0.1	U	0.4	J	0.1	U
2-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
2-Nitrophenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
3,3'-Dichlorobenzidine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
3-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	5	U	5	U	5	U	6	U	5	U	5	U
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4-Chloroaniline	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4-Methylphenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4-Nitroaniline	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
4-Nitrophenol	-	11	U	10	U	11	U	10	U	10	U	11	U	10	U	11	U
Acenaphthene	-	0.1	U	0.1	U	4		3		3		0.1	U	2		0.1	U
Acenaphthylene	-	0.1	U	0.1	U	0.1	U	0.9		1		0.1	U	0.1	U	0.1	U
Acetophenone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
Anthracene	-	0.1	U	0.1	U	0.7		1		1		0.1	U	0.7		0.1	U
Atrazine	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Benzaldehyde	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Benzo(a)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(a)pyrene	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(b)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Benzo(k)fluoranthene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Butylbenzylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Caprolactam	-	5	U	5	U	5	U	5	U	5	U	6	U	5	U	5	U
Carbazole	-	0.5	U	0.5	U	0.8	J	0.5	U	0.6	J	0.6	U	0.5	J	0.5	U
Chrysene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibenzofuran	4	0.5	U	0.5	U	2		4		4		0.6	J	3		0.5	U
Diethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U

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Sample ID:	Remediation	HAV-LTR-NW01		HAV-LTR-NW06		HAV-LTR-RW3		HAV-LTR-RW5		HAV-LTR-RW5X		HAV-LTR-RW6		HAV-LTR-RW7		HAV-LTR-FB01	
Sample Date:	Goals for	3/20/2018		3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/27/2018		3/27/2018		3/19/2018	
Duplicate of:	Groundwater									HAV-LTR-RW5							
		Result		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-butylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Di-n-octylphthalate	-	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluoranthene	-	0.1	U	0.1	U	0.1	U	0.4	J	0.7		0.1	U	0.3	J	0.1	U
Fluorene	-	0.1	U	0.1	U	6		9		9		2		8		0.1	U
Hexachlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Hexachlorobutadiene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	-	5	U	5	U	5	U	5	U	5	U	6	U	5	U	5	U
Hexachloroethane	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Isophorone	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
Naphthalene	3	0.1	U	0.1	U	49		21		29		0.1	U	11		0.1	U
Nitrobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.9	J	0.5	U
Pentachlorophenol	1	1	U	1200		1300		800		760		200		960		1	U
Phenanthrene	41	0.1	U	0.1	U	4		8		9		0.1	U	3		0.1	U
Phenol	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.6	U	0.5	U	0.5	U
Pyrene	-	0.1	U	0.1	U	0.1	U	0.5	J	0.8		0.1	U	0.4	J	0.1	U
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA		0.028	U
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA		0.0048	U
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	2260		NA		NA		45.4		44.6		NA		NA		NA	
1234678-HpCDF	-	716		NA		NA		14.2		14.5		NA		NA		NA	
1234789-HpCDF	-	24.2		NA		NA		4.19	J	1.24	J	NA		NA		NA	
123478-HxCDD	-	1.27	J	NA		NA		0.332	J	0.32	J	NA		NA		NA	
123478-HxCDF	-	4.33	J	NA		NA		0.426	J	0.38	J	NA		NA		NA	
123678-HxCDD	-	56		NA		NA		2.03	J	1.91	J	NA		NA		NA	
123678-HxCDF	-	4.03	J	NA		NA		0.344	J	0.494	J	NA		NA		NA	
123789-HxCDD	-	4.29	J	NA		NA		0.523	J	0.576	J	NA		NA		NA	

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Sample ID:	Remediation	HAV-LTR-NW01		HAV-LTR-NW06		HAV-LTR-RW3		HAV-LTR-RW5		HAV-LTR-RW5X		HAV-LTR-RW6		HAV-LTR-RW7		HAV-LTR-FB01	
Sample Date:	Goals for	3/20/2018		3/27/2018		3/27/2018		3/26/2018		3/26/2018		3/27/2018		3/27/2018		3/19/2018	
Duplicate of:	Groundwater									HAV-LTR-RW5							
		Result		Result		Result		Result		Result		Result		Result		Result	
123789-HxCDF	-	0.839	J	NA		NA		0.867	J	0.75	J	NA		NA		NA	
12378-PeCDD	-	0.348	J	NA		NA		0.097	U	0.279	J	NA		NA		NA	
12378-PeCDF	-	0.578	J	NA		NA		0.474	J	0.504	J	NA		NA		NA	
234678-HxCDF	-	3.31	J	NA		NA		0.415	J	0.427	J	NA		NA		NA	
23478-PeCDF	-	0.22	J	NA		NA		0.205	J	0.295	J	NA		NA		NA	
2378-TCDD	-	0.22	J	NA		NA		0.0703	U	0.168	J	NA		NA		NA	
2378-TCDF	-	0.168	J	NA		NA		0.111	J	0.238	J	NA		NA		NA	
OCDD	-	18700		NA		NA		278		291		NA		NA		NA	
OCDF	-	7850		NA		NA		96.1		97.2		NA		NA		NA	
TEQ WHO 2005 - EDLx0.0	30	44.9		NA		NA		1.14		0.96		NA		NA		NA	
Total HpCDD	-	3350		NA		NA		67		66.5		NA		NA		NA	
Total HpCDF	-	4410		NA		NA		85.9		79.4		NA		NA		NA	
Total HxCDD	-	125		NA		NA		8.08	J	8.47	J	NA		NA		NA	
Total HxCDF	-	446		NA		NA		16.2		16.3		NA		NA		NA	
Total PeCDD	-	1.82	J	NA		NA		1.93	J	1.14	J	NA		NA		NA	
Total PeCDF	-	23.5		NA		NA		3.49	J	3.57	J	NA		NA		NA	
Total TCDD	-	1.45	J	NA		NA		1.14	J	1.85	J	NA		NA		NA	
Total TCDF	-	4.39		NA		NA		4.79		4.25		NA		NA		NA	
METALS	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Aluminum	200	NA		32.2	J	NA		21.5	U	21.5	U	21.5	U	21.5	U	21.5	U
Antimony	-	NA		0.45	U	NA		0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Arsenic	10	NA		5.6		NA		8.9		8.4		0.72	U	1.6	J	0.72	U
Barium	2000	NA		72.5		NA		78.9		85.9		85.5		74.6		0.72	U
Beryllium	-	NA		0.071	U	NA		0.071	U	0.071	U	0.071	U	0.089	J	0.071	U
Cadmium	-	NA		1.2		NA		0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Calcium	-	NA		53500		NA		28200		28500		54100		34000		94.3	U
Chromium	-	NA		0.87	J	NA		0.87	U	0.87	U	1.3	J	0.87	U	0.87	U
Cobalt	-	NA		18.7		NA		18.6		19.5		7.7		19.7		0.16	U
Copper	-	NA		0.91	J	NA		0.54	U	0.54	U	0.78	J	1.5	J	0.54	U
Iron	300	NA		6960		NA		17300		16600		40300		11400		37.4	U
Lead	-	NA		0.25	J	NA		0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Magnesium	-	NA		16900		NA		16500		15700		12900		15100		10.6	U
Manganese	50	NA		5180		NA		7850		8340		2090		7590		0.9	U
Nickel	-	NA		5.8		NA		2.3		2.1		5.1		6.6		1	U

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MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	HAV-LTR-NW01	HAV-LTR-NW06	HAV-LTR-RW3	HAV-LTR-RW5	HAV-LTR-RW5X	HAV-LTR-RW6	HAV-LTR-RW7	HAV-LTR-FB01
Sample Date:	Goals for	3/20/2018	3/27/2018	3/27/2018	3/26/2018	3/26/2018	3/27/2018	3/27/2018	3/19/2018
Duplicate of:	Groundwater					HAV-LTR-RW5			
		Result	Result	Result	Result	Result	Result	Result	Result
Potassium	-	NA	7420	NA	7860	7390	7660	8460	52.5 U
Selenium	-	NA	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver	-	NA	0.15 U	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Sodium	-	NA	39400	NA	144000	132000	33300	163000	50 U
Thallium	-	NA	0.34 J	NA	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Vanadium	3.1	NA	0.21 U	NA	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
Zinc	-	NA	53	NA	3.9 U	3.9 U	3.9 U	50.1	3.9 U

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
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HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC													
Sample ID:	Remediation	HAV-LTR-FB02		HAV-LTR-FB03		HAV-LTR-TB01		HAV-LTR-TB02		HAV-LTR-TB03		HAV-LTR-TB04		HAV-LTR-TB05	
Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
VOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1,1-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2,2-Tetrachloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1,2-Trichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,1-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,3-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2,4-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dibromo-3-chloropropane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dibromoethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,2-Dichloropropane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3,5-Trimethylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,3-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1,4-Dichlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
2-Butanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Hexanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Acetone	-	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Benzene	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromodichloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromoform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Bromomethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Carbon Disulfide	-	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Carbon Tetrachloride	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chlorobenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloroform	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloromethane	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
cis-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
cis-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

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		FIELD QC													
Sample ID:	Remediation	HAV-LTR-FB02		HAV-LTR-FB03		HAV-LTR-TB01		HAV-LTR-TB02		HAV-LTR-TB03		HAV-LTR-TB04		HAV-LTR-TB05	
Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
Cyclohexane	-	0.1	U	0.1	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dibromochloromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Dichlorodifluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Ethylbenzene	700	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Freon 113	-	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
m+p-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methyl Acetate	-	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methyl Tertiary Butyl Ether	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methylcyclohexane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Methylene Chloride	-	0.5		0.4	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
o-Xylene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Styrene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Tetrachloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Toluene	1000	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.2	J
trans-1,2-Dichloroethene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
trans-1,3-Dichloropropene	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichloroethene	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Trichlorofluoromethane	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Vinyl Chloride	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
SEMIVOLATILES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
1,1'-Biphenyl	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
1,2,4,5-Tetrachlorobenzene	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,2'-oxybis(1-Chloropropane)	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,3,4,6-Tetrachlorophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,4,5-Trichlorophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,4,6-Trichlorophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,4-Dichlorophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,4-Dimethylphenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2,4-Dinitrophenol	-	10	U	10	U	NA		NA		NA		NA		NA	
2,4-Dinitrotoluene	-	1	U	1	U	NA		NA		NA		NA		NA	
2,6-Dinitrotoluene	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2-Chloronaphthalene	-	0.4	U	0.4	U	NA		NA		NA		NA		NA	
2-Chlorophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	

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Sample ID:	Remediation	HAV-LTR-FB02		HAV-LTR-FB03		HAV-LTR-TB01		HAV-LTR-TB02		HAV-LTR-TB03		HAV-LTR-TB04		HAV-LTR-TB05	
Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
2-Methylnaphthalene	2	0.1	U	0.1	J	NA		NA		NA		NA		NA	
2-Methylphenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2-Nitroaniline	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
2-Nitrophenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
3,3'-Dichlorobenzidine	-	2	U	2	U	NA		NA		NA		NA		NA	
3-Nitroaniline	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4,6-Dinitro-2-methylphenol	1.7	5	U	5	U	NA		NA		NA		NA		NA	
4-Bromophenyl-phenylether	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4-Chloro-3-methylphenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4-Chloroaniline	-	2	U	2	U	NA		NA		NA		NA		NA	
4-Chlorophenyl-phenylether	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4-Methylphenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4-Nitroaniline	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
4-Nitrophenol	-	10	U	10	U	NA		NA		NA		NA		NA	
Acenaphthene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Acenaphthylene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Acetophenone	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Anthracene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Atrazine	-	2	U	2	U	NA		NA		NA		NA		NA	
Benzaldehyde	-	1	U	1	U	NA		NA		NA		NA		NA	
Benzo(a)anthracene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Benzo(a)pyrene	0.2	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Benzo(g,h,i)perylene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
bis(2-Chloroethyl)ether	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	6	2	U	2	U	NA		NA		NA		NA		NA	
Butylbenzylphthalate	-	2	U	2	U	NA		NA		NA		NA		NA	
Caprolactam	-	5	U	5	U	NA		NA		NA		NA		NA	
Carbazole	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Chrysene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Dibenz(a,h)anthracene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Dibenzofuran	4	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Diethylphthalate	-	2	U	2	U	NA		NA		NA		NA		NA	

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		FIELD QC													
Sample ID:	Remediation	HAV-LTR-FB02		HAV-LTR-FB03		HAV-LTR-TB01		HAV-LTR-TB02		HAV-LTR-TB03		HAV-LTR-TB04		HAV-LTR-TB05	
Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
Dimethylphthalate	-	2	U	2	U	NA		NA		NA		NA		NA	
Di-n-butylphthalate	-	2	U	2	U	NA		NA		NA		NA		NA	
Di-n-octylphthalate	-	2	U	2	U	NA		NA		NA		NA		NA	
Fluoranthene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Fluorene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Hexachlorobenzene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Hexachlorobutadiene	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Hexachlorocyclopentadiene	-	5	U	5	U	NA		NA		NA		NA		NA	
Hexachloroethane	-	1	U	1	U	NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Isophorone	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Naphthalene	3	0.1	U	0.2	J	NA		NA		NA		NA		NA	
Nitrobenzene	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
N-Nitroso-di-n-propylamine	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
N-Nitrosodiphenylamine	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Pentachlorophenol	1	1	U	1	U	NA		NA		NA		NA		NA	
Phenanthrene	41	0.1	U	0.1	U	NA		NA		NA		NA		NA	
Phenol	-	0.5	U	0.5	U	NA		NA		NA		NA		NA	
Pyrene	-	0.1	U	0.1	U	NA		NA		NA		NA		NA	
HERBICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Pentachlorophenol	1	NA		NA		NA		NA		NA		NA		NA	
PESTICIDES	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Dieldrin	0.038	NA		NA		NA		NA		NA		NA		NA	
DIOXINS	pg/l	pg/l		pg/l		pg/l		pg/l		pg/l		pg/l		pg/l	
1234678-HpCDD	-	0.725	J	NA		NA		NA		NA		NA		NA	
1234678-HpCDF	-	0.502	J	NA		NA		NA		NA		NA		NA	
1234789-HpCDF	-	0.262	J	NA		NA		NA		NA		NA		NA	
123478-HxCDD	-	0.162	U	NA		NA		NA		NA		NA		NA	
123478-HxCDF	-	0.207	J	NA		NA		NA		NA		NA		NA	
123678-HxCDD	-	0.161	U	NA		NA		NA		NA		NA		NA	
123678-HxCDF	-	0.388	J	NA		NA		NA		NA		NA		NA	
123789-HxCDD	-	0.166	U	NA		NA		NA		NA		NA		NA	

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Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
123789-HxCDF	-	1.11	J	NA		NA		NA		NA		NA		NA	
12378-PeCDD	-	0.269	U	NA		NA		NA		NA		NA		NA	
12378-PeCDF	-	0.752	J	NA		NA		NA		NA		NA		NA	
234678-HxCDF	-	0.355	J	NA		NA		NA		NA		NA		NA	
23478-PeCDF	-	0.504	J	NA		NA		NA		NA		NA		NA	
2378-TCDD	-	0.148	U	NA		NA		NA		NA		NA		NA	
2378-TCDF	-	0.273	J	NA		NA		NA		NA		NA		NA	
OCDD	-	2.39	J	NA		NA		NA		NA		NA		NA	
OCDF	-	1.06	J	NA		NA		NA		NA		NA		NA	
TEQ WHO 2005 - EDLx0.0	30	0.0276		NA		NA		NA		NA		NA		NA	
Total HpCDD	-	1.04	J	NA		NA		NA		NA		NA		NA	
Total HpCDF	-	1.26	J	NA		NA		NA		NA		NA		NA	
Total HxCDD	-	2.05	J	NA		NA		NA		NA		NA		NA	
Total HxCDF	-	2.41	J	NA		NA		NA		NA		NA		NA	
Total PeCDD	-	2.58	J	NA		NA		NA		NA		NA		NA	
Total PeCDF	-	3.88	J	NA		NA		NA		NA		NA		NA	
Total TCDD	-	0.54	J	NA		NA		NA		NA		NA		NA	
Total TCDF	-	1.23	J	NA		NA		NA		NA		NA		NA	
METALS	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
Aluminum	200	NA		NA		NA		NA		NA		NA		NA	
Antimony	-	NA		NA		NA		NA		NA		NA		NA	
Arsenic	10	NA		NA		NA		NA		NA		NA		NA	
Barium	2000	NA		NA		NA		NA		NA		NA		NA	
Beryllium	-	NA		NA		NA		NA		NA		NA		NA	
Cadmium	-	NA		NA		NA		NA		NA		NA		NA	
Calcium	-	NA		NA		NA		NA		NA		NA		NA	
Chromium	-	NA		NA		NA		NA		NA		NA		NA	
Cobalt	-	NA		NA		NA		NA		NA		NA		NA	
Copper	-	NA		NA		NA		NA		NA		NA		NA	
Iron	300	NA		NA		NA		NA		NA		NA		NA	
Lead	-	NA		NA		NA		NA		NA		NA		NA	
Magnesium	-	NA		NA		NA		NA		NA		NA		NA	
Manganese	50	NA		NA		NA		NA		NA		NA		NA	
Nickel	-	NA		NA		NA		NA		NA		NA		NA	

ANALYTICAL DATA
MARCH 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		FIELD QC													
Sample ID:	Remediation	HAV-LTR-FB02		HAV-LTR-FB03		HAV-LTR-TB01		HAV-LTR-TB02		HAV-LTR-TB03		HAV-LTR-TB04		HAV-LTR-TB05	
Sample Date:	Goals for	3/27/2018		3/26/2018		3/19/2018		3/20/2018		3/26/2018		3/27/2018		3/28/2018	
Duplicate of:	Groundwater														
		Result		Result		Result		Result		Result		Result		Result	
Potassium	-	NA		NA		NA		NA		NA		NA		NA	
Selenium	-	NA		NA		NA		NA		NA		NA		NA	
Silver	-	NA		NA		NA		NA		NA		NA		NA	
Sodium	-	NA		NA		NA		NA		NA		NA		NA	
Thallium	-	NA		NA		NA		NA		NA		NA		NA	
Vanadium	3.1	NA		NA		NA		NA		NA		NA		NA	
Zinc	-	NA		NA		NA		NA		NA		NA		NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

pg/L - Picograms per Liter

J - Estimated Value

P - Concentration difference between the primary

U - Not Detected Above Laboratory Quantitation L

5.5 - Exceeds Remediation Goal for GW

A-4 JUNE 2018 GROUNDWATER DATA

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	SITE WELLS					
		HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01	
Sample Date:	Goals for	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018	
Duplicate of:	Groundwater						
		Result	Result	Result	Result	Result	
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
1,1,1-TRICHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,1,2,2-TETRACHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,1,2-TRICHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,1-DICHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,1-DICHLOROETHENE	-	1 U	1 U	1 U	1 U	1 U	
1,2,3-TRICHLOROBENZENE	-	2 U	2 U	2 U	2 U	2 U	
1,2,4-TRICHLOROBENZENE	-	2 U	2 U	2 U	2 U	2 U	
1,2-DIBROMO-3-CHLOROPROPANE	-	7 U	7 U	7 U	7 U	7 U	
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	-	1 U	1 U	1 U	1 U	1 U	
1,2-DICHLOROBENZENE	-	1 U	1 U	1 U	1 U	1 U	
1,2-DICHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
1,2-DICHLOROPROPANE	-	1 U	1 U	1 U	1 U	1 U	
1,3-DICHLOROBENZENE	-	1 U	1 U	1 U	1 U	1 U	
1,4-DICHLOROBENZENE	-	1 U	1 U	1 U	1 U	1 U	
1,4-DIOXANE (P-DIOXANE)	-	320 U	320 U	320 U	320 U	320 U	
2-HEXANONE	-	5 U	5 U	5 U	5 U	5 U	
ACETONE	-	13.4	17	10 U	14.3	13	
BENZENE	5	1 U	1 U	1 U	1 U	1 U	
BROMOCHLOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	
BROMODICHLOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	
BROMOFORM	-	1 U	1 U	1 U	1 U	1 U	
BROMOMETHANE	-	1 U	1 U	1 U	1 U	1 U	
CARBON DISULFIDE	-	1 U	1 U	1 U	1 U	1 U	
CARBON TETRACHLORIDE	-	1 U	1 U	1 U	1 U	1 U	
CHLOROBENZENE	-	1 U	1 U	1 U	1 U	1 U	
CHLOROETHANE	-	1 U	1 U	1 U	1 U	1 U	
CHLOROFORM	-	1 U	0.45 J	1 U	0.33 J	0.28 J	
CHLOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	
CIS-1,2-DICHLOROETHYLENE	-	2.9	7.7	1 U	1 U	1 U	
CIS-1,3-DICHLOROPROPENE	-	1 U	1 U	1 U	1 U	1 U	
CYCLOHEXANE	-	1 U	1 U	1 U	1 U	1 U	
DIBROMOCHLOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		SITE WELLS					
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01	
Sample Date:	Goals for	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018	
Duplicate of:	Groundwater						
		Result	Result	Result	Result	Result	
DICHLORODIFLUOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	
DIMETHYL BENZENE/ XYLENES, TOTAL	-	3 U	3 U	3 U	3 U	3 U	
ETHYLBENZENE	700	1 U	1 U	1 U	1 U	1 U	
ISOPROPYLBENZENE (CUMENE)	-	1 U	1 U	1 U	1 U	1 U	
M, P XYLENES	-	2 U	2 U	2 U	2 U	2 U	
METHYL ACETATE	-	2 U	2 U	2 U	2 U	2 U	
METHYL ETHYL KETONE (2-BUTANONE)	-	10 U	10 U	10 U	10 U	10 U	
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	-	5 U	5 U	5 U	5 U	5 U	
METHYLCYCLOHEXANE	-	1 U	1 U	1 U	1 U	1 U	
METHYLENE CHLORIDE	-	1 U	1 U	1 U	1 U	1 U	
O-XYLENE (1,2-DIMETHYLBENZENE)	-	1 U	1 U	1 U	1 U	1 U	
STYRENE	-	1 U	1 U	1 U	1 U	1 U	
TERT-BUTYL METHYL ETHER	-	1 U	1 U	1 U	1 U	1 U	
TETRACHLOROETHYLENE(PCE)	-	1 U	1 U	1 U	1 U	1 U	
TOLUENE	1000	1 U	1 U	1 U	1 U	1 U	
TRANS-1,2-DICHLOROETHENE	-	1 U	1 U	1 U	1 U	1 U	
TRANS-1,3-DICHLOROPROPENE	-	1 U	1 U	1 U	1 U	1 U	
TRICHLOROETHYLENE (TCE)	5	1 U	3.6	1 U	1 U	1 U	
TRICHLOROFLUOROMETHANE	-	1 U	1 U	1 U	1 U	1 U	
VINYL CHLORIDE	5	1 U	1 U	1 U	1 U	1 U	
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
1,2,4,5-TETRACHLOROBENZENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
1,4-DIOXANE (P-DIOXANE)	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,3,4,6-TETRACHLOROPHENOL	-	0.73 J	3 U	3.2 U	2.8 U	3.2 U	
2,4,5-TRICHLOROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,4,6-TRICHLOROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,4-DICHLOROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,4-DIMETHYLPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,4-DINITROPHENOL	-	6.2 U	6.1 U	6.3 U	5.7 U	6.3 U	
2,4-DINITROTOLUENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2,6-DINITROTOLUENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2-CHLORONAPHTHALENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2-CHLOROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
2-METHYLNAPHTHALENE	2	0.35 J	1.5 U	1.6 U	1.4 U	1.6 U	

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	SITE WELLS									
		HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01					
Sample Date:	Goals for	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018					
Duplicate of:	Groundwater										
		Result	Result	Result	Result	Result					
2-METHYLPHENOL (O-CRESOL)	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
2-NITROANILINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
2-NITROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
3,3'-DICHLOROBENZIDINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
3-NITROANILINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4,6-DINITRO-2-METHYLPHENOL	1.7	6.2 U	6.1 U	6.3 U	5.7 U	6.3 U					
4-BROMOPHENYL PHENYL ETHER	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4-CHLORO-3-METHYLPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4-CHLOROANILINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4-CHLOROPHENYL PHENYL ETHER	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4-NITROANILINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
4-NITROPHENOL	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
ACENAPHTHENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
ACENAPHTHYLENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
ACETOPHENONE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
ANTHRACENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
ATRAZINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BENZALDEHYDE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BENZO(A)ANTHRACENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
BENZO(A)PYRENE	0.2	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
BENZO(B)FLUORANTHENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
BENZO(G,H,I)PERYLENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
BENZO(K)FLUORANTHENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
BENZYL BUTYL PHTHALATE	-	0.18 J	3 U	3.2 U	2.8 U	3.2 U					
BIPHENYL (DIPHENYL)	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BIS(2-CHLOROETHOXY) METHANE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BIS(2-CHLOROISOPROPYL) ETHER	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
BIS(2-ETHYLHEXYL) PHTHALATE	6	3.1 U	0.28 J	3.2 U	2.8 U	3.2 U					
CAPROLACTAM	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
CARBAZOLE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
CHRYSENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
CRESOLS, M & P	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U					
DIBENZ(A,H)ANTHRACENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U					
DIBENZOFURAN	4	3.1 U	3 U	3.2 U	2.8 U	3.2 U					

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

Sample ID:	Remediation	SITE WELLS					
		HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01	
Sample Date:	Goals for	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018	
Duplicate of:	Groundwater						
		Result	Result	Result	Result	Result	
DIETHYL PHTHALATE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
DIMETHYL PHTHALATE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
DI-N-BUTYL PHTHALATE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
DI-N-OCTYLPHTHALATE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
FLUORANTHENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U	
FLUORENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U	
HEXACHLOROBENZENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
HEXACHLOROBUTADIENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
HEXACHLOROCYCLOPENTADIENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
HEXACHLOROETHANE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
INDENO(1,2,3-C,D)PYRENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U	
ISOPHORONE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
NAPHTHALENE	3	1.3 J	1.5 U	1.6 U	1.4 U	1.6 U	
NITROBENZENE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
N-NITROSODI-N-PROPYLAMINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
N-NITROSODIPHENYLAMINE	-	3.1 U	3 U	3.2 U	2.8 U	3.2 U	
PENTACHLOROPHENOL	1	17.4	6.1 U	6.3 U	5.7 U	2.6 J	
PHENANTHRENE	41	0.14 J	1.5 U	1.6 U	1.4 U	1.6 U	
PHENOL	-	8.2 U	8.1 U	8.4 U	7.6 U	8.4 U	
PYRENE	-	1.5 U	1.5 U	1.6 U	1.4 U	1.6 U	
SEMIVOLATILES SIM	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
ACENAPHTHENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
ACENAPHTHYLENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
ANTHRACENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
BENZO(A)ANTHRACENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
BENZO(A)PYRENE	0.2	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
BENZO(B)FLUORANTHENE	-	0.1 U	0.1 U	0.11 U	0.02 J	0.11 U	
BENZO(G,H,I)PERYLENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
BENZO(K)FLUORANTHENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
CHRYSENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
DIBENZ(A,H)ANTHRACENE	-	0.072 U	0.071 U	0.074 U	0.066 U	0.074 U	
FLUORANTHENE	-	0.1 U	0.023 J	0.026 J	0.022 J	0.11 U	
FLUORENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
INDENO(1,2,3-C,D)PYRENE	-	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

		SITE WELLS					
Sample ID:	Remediation	HAV-LTR-CW12D	HAV-LTR-CW13D	HAV-LTR-CW22D	HAV-LTR-CW22S	HAV-LTR-MW01	
Sample Date:	Goals for	6/12/2018	6/12/2018	6/13/2018	6/13/2018	6/13/2018	
Duplicate of:	Groundwater						
		Result		Result		Result	
NAPHTHALENE	3	0.1 U	0.1 U	0.11 U	0.095 U	0.049 J	
PHENANTHRENE	41	0.1 U	0.1 U	0.11 U	0.095 U	0.11 U	
PYRENE	-	0.1 U	0.1 U	0.017 J	0.018 J	0.11 U	
DIOXINS	pg/l	pg/l	pg/l	pg/l	pg/l	pg/l	
TEQ WHO 2005 - EDLx0.0	30	NA	NA	NA	NA	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

						FIELD QC	
Sample ID:	Remediation	HAV-LTR-MW02	HAV-LTR-R2	HAV-LTR-DUP01	HAV-LTR-FB01	HAV-LTR-TB01	
Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018	
Duplicate of:	Groundwater			HAV-LTR-R2			
		Result	Result	Result	Result	Result	
VOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
1,1,1-TRICHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,1,2,2-TETRACHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,1,2-TRICHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,1-DICHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,1-DICHLOROETHENE	-	1 U	5 U	5 U	1 U	1 U	
1,2,3-TRICHLOROBENZENE	-	2 U	10 U	10 U	2 U	2 U	
1,2,4-TRICHLOROBENZENE	-	2 U	10 U	10 U	2 U	2 U	
1,2-DIBROMO-3-CHLOROPROPANE	-	7 U	35 U	35 U	7 U	7 U	
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	-	1 U	5 U	5 U	1 U	1 U	
1,2-DICHLOROBENZENE	-	1 U	5 U	5 U	1 U	1 U	
1,2-DICHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
1,2-DICHLOROPROPANE	-	1 U	5 U	5 U	1 U	1 U	
1,3-DICHLOROBENZENE	-	1 U	5 U	5 U	1 U	1 U	
1,4-DICHLOROBENZENE	-	1 U	5 U	5 U	1 U	1 U	
1,4-DIOXANE (P-DIOXANE)	-	320 U	1600 U	1600 U	320 U	320 U	
2-HEXANONE	-	5 U	25 U	25 U	5 U	5 U	
ACETONE	-	14.7	27.1 J	23.1 J	25.9	26.3	
BENZENE	5	1 U	5 U	5 U	1 U	1 U	
BROMOCHLOROMETHANE	-	1 U	5 U	5 U	1 U	1 U	
BROMODICHLOROMETHANE	-	1 U	5 U	5 U	1 U	1 U	
BROMOFORM	-	1 U	5 U	5 U	1 U	1 U	
BROMOMETHANE	-	1 U	5 U	5 U	1 U	1 U	
CARBON DISULFIDE	-	1 U	5 U	5 U	1 U	1 U	
CARBON TETRACHLORIDE	-	1 U	5 U	5 U	1 U	1 U	
CHLOROBENZENE	-	1 U	5 U	5 U	1 U	1 U	
CHLOROETHANE	-	1 U	5 U	5 U	1 U	1 U	
CHLOROFORM	-	1 U	4.3 J	4 J	1 U	1 U	
CHLOROMETHANE	-	1 U	5 U	5 U	1 U	1 U	
CIS-1,2-DICHLOROETHYLENE	-	1 U	5 U	5 U	1 U	1 U	
CIS-1,3-DICHLOROPROPENE	-	1 U	5 U	5 U	1 U	1 U	
CYCLOHEXANE	-	1 U	5 U	5 U	1 U	1 U	
DIBROMOCHLOROMETHANE	-	1 U	5 U	5 U	1 U	1 U	

ANALYTICAL DATA
JUNE 2018 GROUNDWATER DATA
HAVERTOWN PCP SITE, HAVERTOWN, PENNSYLVANIA

						FIELD QC			
Sample ID:	Remediation	HAV-LTR-MW02	HAV-LTR-R2	HAV-LTR-DUP01	HAV-LTR-FB01	HAV-LTR-TB01			
Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018			
Duplicate of:	Groundwater								
		Result	Result	Result	Result	Result			
DICHLORODIFLUOROMETHANE	-	1 U	5 U	5 U	1 U	1 U			
DIMETHYL BENZENE/ XYLENES, TOTAL	-	3 U	89.8	91.2	3 U	3 U			
ETHYLBENZENE	700	1 U	13.7	13.4	1 U	1 U			
ISOPROPYLBENZENE (CUMENE)	-	1 U	6.7	6.9	1 U	1 U			
M, P XYLENES	-	2 U	25.6	25.9	2 U	2 U			
METHYL ACETATE	-	2 U	10 U	10 U	2 U	2 U			
METHYL ETHYL KETONE (2-BUTANONE)	-	10 U	50 U	50 U	2 J	10 U			
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	-	5 U	25 U	25 U	5 U	5 U			
METHYLCYCLOHEXANE	-	1 U	5 U	5 U	1 U	1 U			
METHYLENE CHLORIDE	-	1 U	5 U	5 U	1 U	1 U			
O-XYLENE (1,2-DIMETHYLBENZENE)	-	1 U	64.2	65.3	1 U	1 U			
STYRENE	-	1 U	5 U	5 U	1 U	1 U			
TERT-BUTYL METHYL ETHER	-	1 U	5 U	5 U	1 U	1 U			
TETRACHLOROETHYLENE(PCE)	-	1 U	5 U	5 U	1 U	1 U			
TOLUENE	1000	1 U	4.9 J	4.8 J	1 U	1 U			
TRANS-1,2-DICHLOROETHENE	-	1 U	5 U	5 U	1 U	1 U			
TRANS-1,3-DICHLOROPROPENE	-	1 U	5 U	5 U	1 U	1 U			
TRICHLOROETHYLENE (TCE)	5	1 U	5 U	5 U	1 U	1 U			
TRICHLOROFLUOROMETHANE	-	1 U	5 U	5 U	1 U	1 U			
VINYL CHLORIDE	5	1 U	5 U	5 U	1 U	1 U			
SEMIVOLATILES	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
1,2,4,5-TETRACHLOROBENZENE	-	2.8 U	297 U	2.9 U	2.9 U	NA			
1,4-DIOXANE (P-DIOXANE)	-	2.8 U	297 U	2.9 U	2.9 U	NA			
2,3,4,6-TETRACHLOROPHENOL	-	2.4 J	300	317	2.9 U	NA			
2,4,5-TRICHLOROPHENOL	-	2.8 U	297 U	2.4 J	2.9 U	NA			
2,4,6-TRICHLOROPHENOL	-	2.8 U	297 U	1.4 J	2.9 U	NA			
2,4-DICHLOROPHENOL	-	2.8 U	297 U	2.5 J	2.9 U	NA			
2,4-DIMETHYLPHENOL	-	2.8 U	297 U	2.9 U	2.9 U	NA			
2,4-DINITROPHENOL	-	5.6 U	594 U	5.8 U	5.7 U	NA			
2,4-DINITROTOLUENE	-	2.8 U	297 U	2.9 U	2.9 U	NA			
2,6-DINITROTOLUENE	-	2.8 U	297 U	2.9 U	2.9 U	NA			
2-CHLORONAPHTHALENE	-	2.8 U	297 U	2.9 U	2.9 U	NA			
2-CHLOROPHENOL	-	2.8 U	297 U	0.89 J	2.9 U	NA			
2-METHYLNAPHTHALENE	2	1.4 U	191	213	1.4 U	NA			

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Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018	
Duplicate of:	Groundwater						
		Result	Result	Result	Result	Result	
2-METHYLPHENOL (O-CRESOL)	-	2.8 U	297 U	2.9 U	2.9 U	NA	
2-NITROANILINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
2-NITROPHENOL	-	2.8 U	297 U	2.9 U	2.9 U	NA	
3,3'-DICHLOROBENZIDINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
3-NITROANILINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4,6-DINITRO-2-METHYLPHENOL	1.7	5.6 U	594 U	5.8 U	5.7 U	NA	
4-BROMOPHENYL PHENYL ETHER	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4-CHLORO-3-METHYLPHENOL	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4-CHLOROANILINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4-CHLOROPHENYL PHENYL ETHER	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4-NITROANILINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
4-NITROPHENOL	-	2.8 U	297 U	2.9 U	2.9 U	NA	
ACENAPHTHENE	-	1.4 U	149 U	9	1.4 U	NA	
ACENAPHTHYLENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
ACETOPHENONE	-	2.8 U	297 U	2.9 U	0.27 J	NA	
ANTHRACENE	-	1.4 U	149 U	1.4 J	1.4 U	NA	
ATRAZINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BENZALDEHYDE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BENZO(A)ANTHRACENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
BENZO(A)PYRENE	0.2	1.4 U	149 U	1.5 U	1.4 U	NA	
BENZO(B)FLUORANTHENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
BENZO(G,H,I)PERYLENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
BENZO(K)FLUORANTHENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
BENZYL BUTYL PHTHALATE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BIPHENYL (DIPHENYL)	-	2.8 U	297 U	10	2.9 U	NA	
BIS(2-CHLOROETHOXY) METHANE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BIS(2-CHLOROISOPROPYL) ETHER	-	2.8 U	297 U	2.9 U	2.9 U	NA	
BIS(2-ETHYLHEXYL) PHTHALATE	6	2.8 U	297 U	2.9 U	2.9 U	NA	
CAPROLACTAM	-	2.8 U	297 U	2.9 U	2.9 U	NA	
CARBAZOLE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
CHRYSENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
CRESOLS, M & P	-	2.8 U	297 U	2.9 U	2.9 U	NA	
DIBENZ(A,H)ANTHRACENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
DIBENZOFURAN	4	2.8 U	297 U	4.6	2.9 U	NA	

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Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018	
Duplicate of:	Groundwater						
		Result	Result	Result	Result	Result	
DIETHYL PHTHALATE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
DIMETHYL PHTHALATE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
DI-N-BUTYL PHTHALATE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
DI-N-OCTYLPHTHALATE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
FLUORANTHENE	-	1.4 U	149 U	0.31 J	1.4 U	NA	
FLUORENE	-	1.4 U	149 U	11.2	1.4 U	NA	
HEXACHLOROBENZENE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
HEXACHLOROBUTADIENE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
HEXACHLOROCYCLOPENTADIENE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
HEXACHLOROETHANE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
INDENO(1,2,3-C,D)PYRENE	-	1.4 U	149 U	1.5 U	1.4 U	NA	
ISOPHORONE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
NAPHTHALENE	3	1.4 U	715	803	1.4 U	NA	
NITROBENZENE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
N-NITROSODI-N-PROPYLAMINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
N-NITROSODIPHENYLAMINE	-	2.8 U	297 U	2.9 U	2.9 U	NA	
PENTACHLOROPHENOL	1	44	7410	7960	5.7 U	NA	
PHENANTHRENE	41	1.4 U	149 U	12.7	1.4 U	NA	
PHENOL	-	7.5 U	792 U	7.8 U	7.6 U	NA	
PYRENE	-	1.4 U	149 U	0.56 J	1.4 U	NA	
SEMIVOLATILES SIM	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
ACENAPHTHENE	-	0.094 U	11.8	9	0.095 U	NA	
ACENAPHTHYLENE	-	0.094 U	2.9	2.2	0.095 U	NA	
ANTHRACENE	-	0.094 U	1	0.97	0.095 U	NA	
BENZO(A)ANTHRACENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	
BENZO(A)PYRENE	0.2	0.094 U	0.099 U	0.097 U	0.095 U	NA	
BENZO(B)FLUORANTHENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	
BENZO(G,H,I)PERYLENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	
BENZO(K)FLUORANTHENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	
CHRYSENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	
DIBENZ(A,H)ANTHRACENE	-	0.066 U	0.069 U	0.068 U	0.067 U	NA	
FLUORANTHENE	-	0.094 U	0.18	0.16	0.095 U	NA	
FLUORENE	-	0.094 U	15.8	12.2	0.095 U	NA	
INDENO(1,2,3-C,D)PYRENE	-	0.094 U	0.099 U	0.097 U	0.095 U	NA	

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Sample Date:	Goals for	6/13/2018	6/13/2018	6/13/2018	6/12/2018	6/12/2018	
Duplicate of:	Groundwater						
		Result		Result		Result	
NAPHTHALENE	3	0.094 U	149	160	0.095 U	NA	
PHENANTHRENE	41	0.094 U	8.3	7.9	0.095 U	NA	
PYRENE	-	0.094 U	0.38	0.29	0.095 U	NA	
DIOXINS	pg/l	pg/l	pg/l	pg/l	pg/l	pg/l	
TEQ WHO 2005 - EDLx0.0	30	NA	26	NA	NA	NA	

NA - Not Analyzed

µg/L - Micrograms per Liter

J - Estimated Value

B - Detection in the Blank

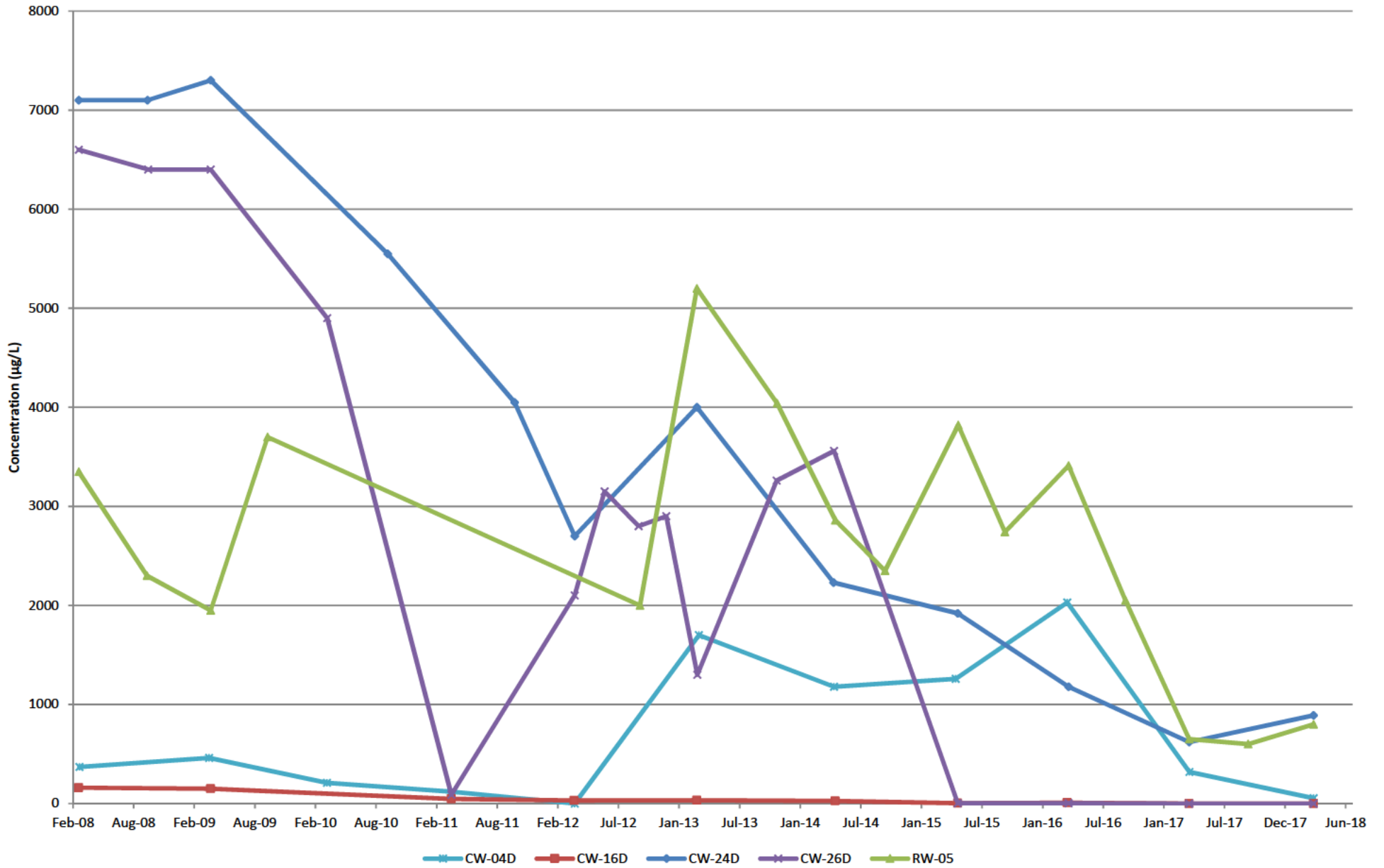
U - Not Detected Above Laboratory Quantitation Limit

5.5 - Exceeds Remediation Goal for GW

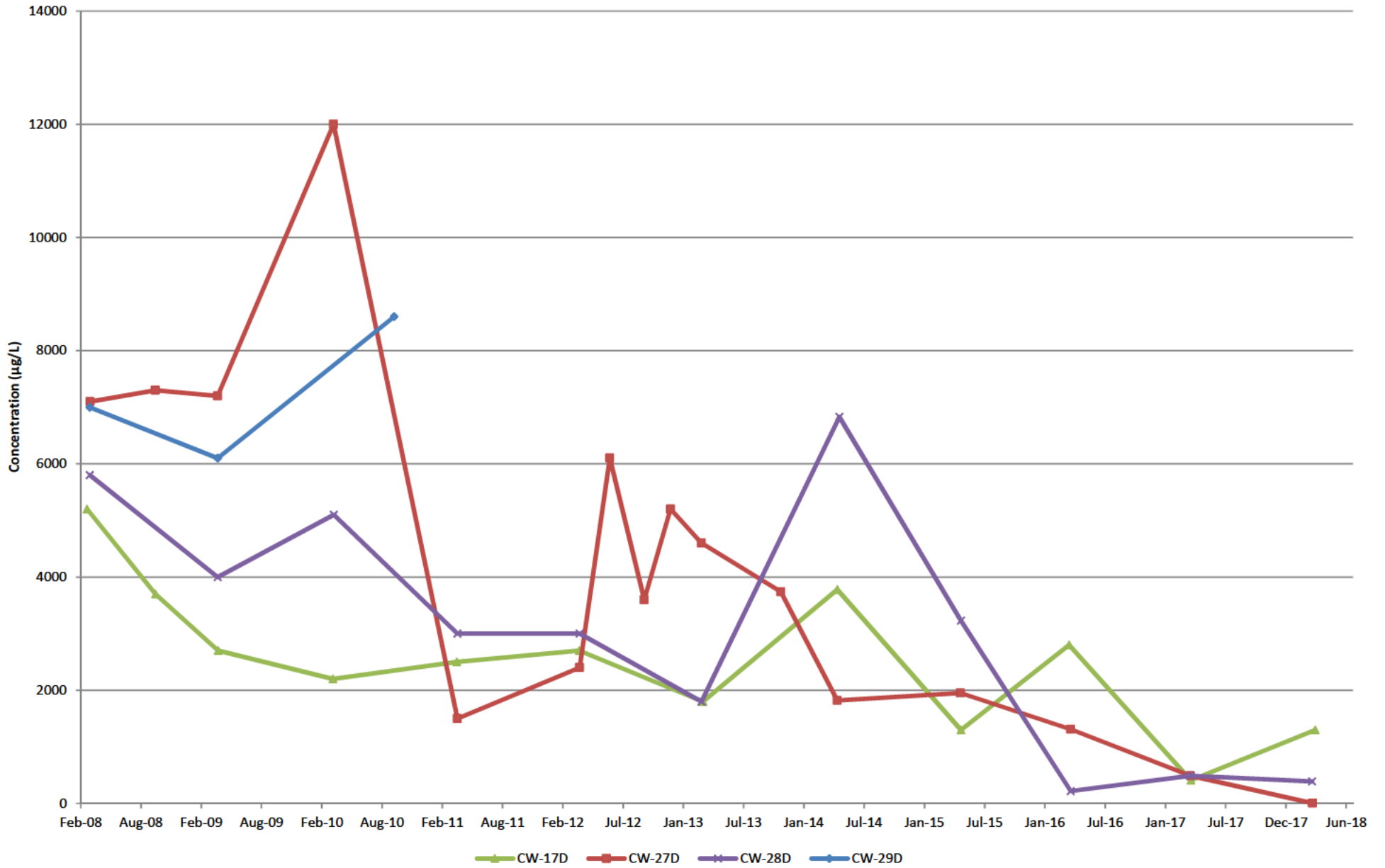
APPENDIX B

GRAPHS OF HISTORICAL CONTAMINANT CONCENTRATIONS IN MONITORING WELLS

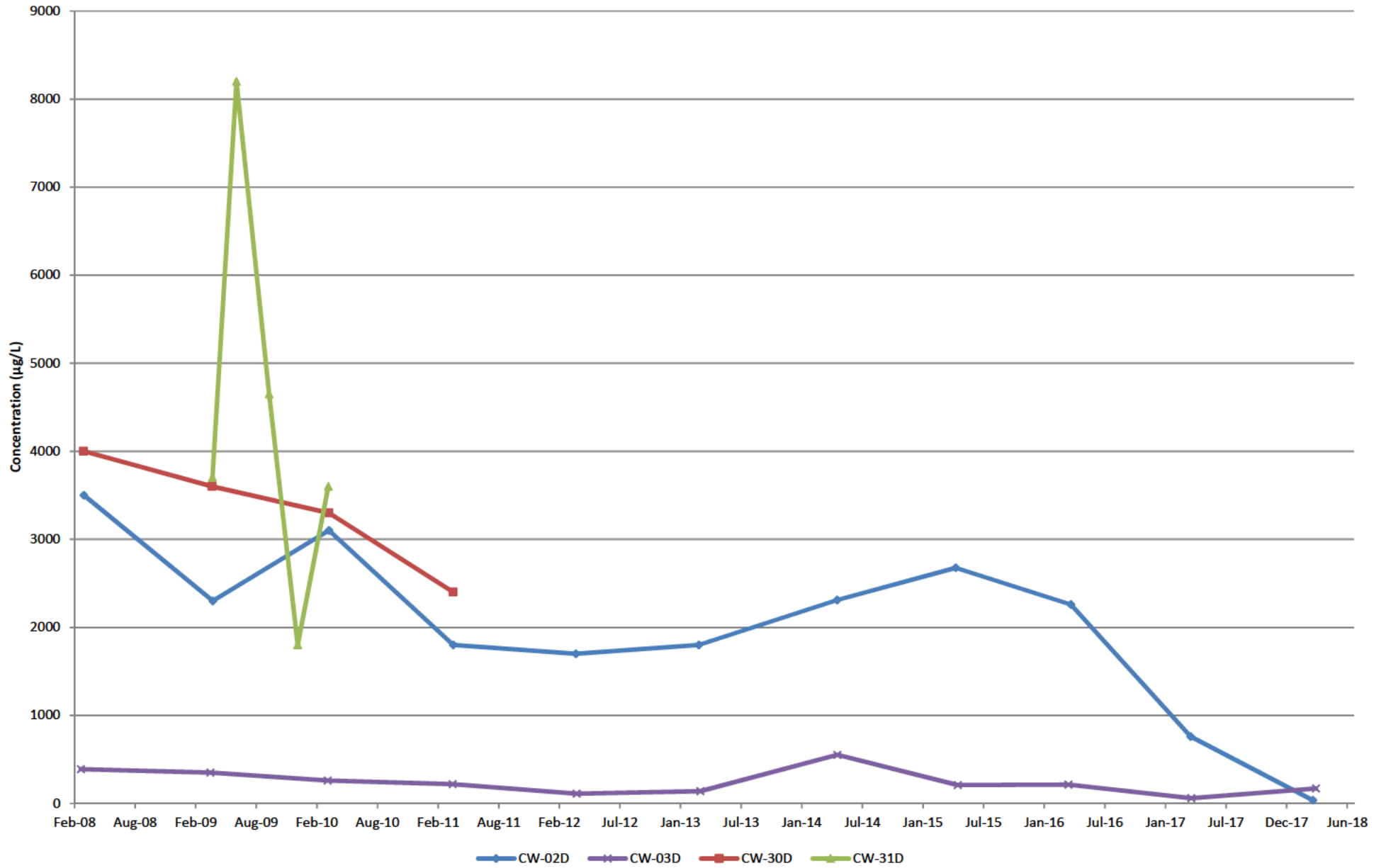
PCP Concentrations at Source Wells CW-04D, CW-16D, CW-24D, CW-26D, and RW-05



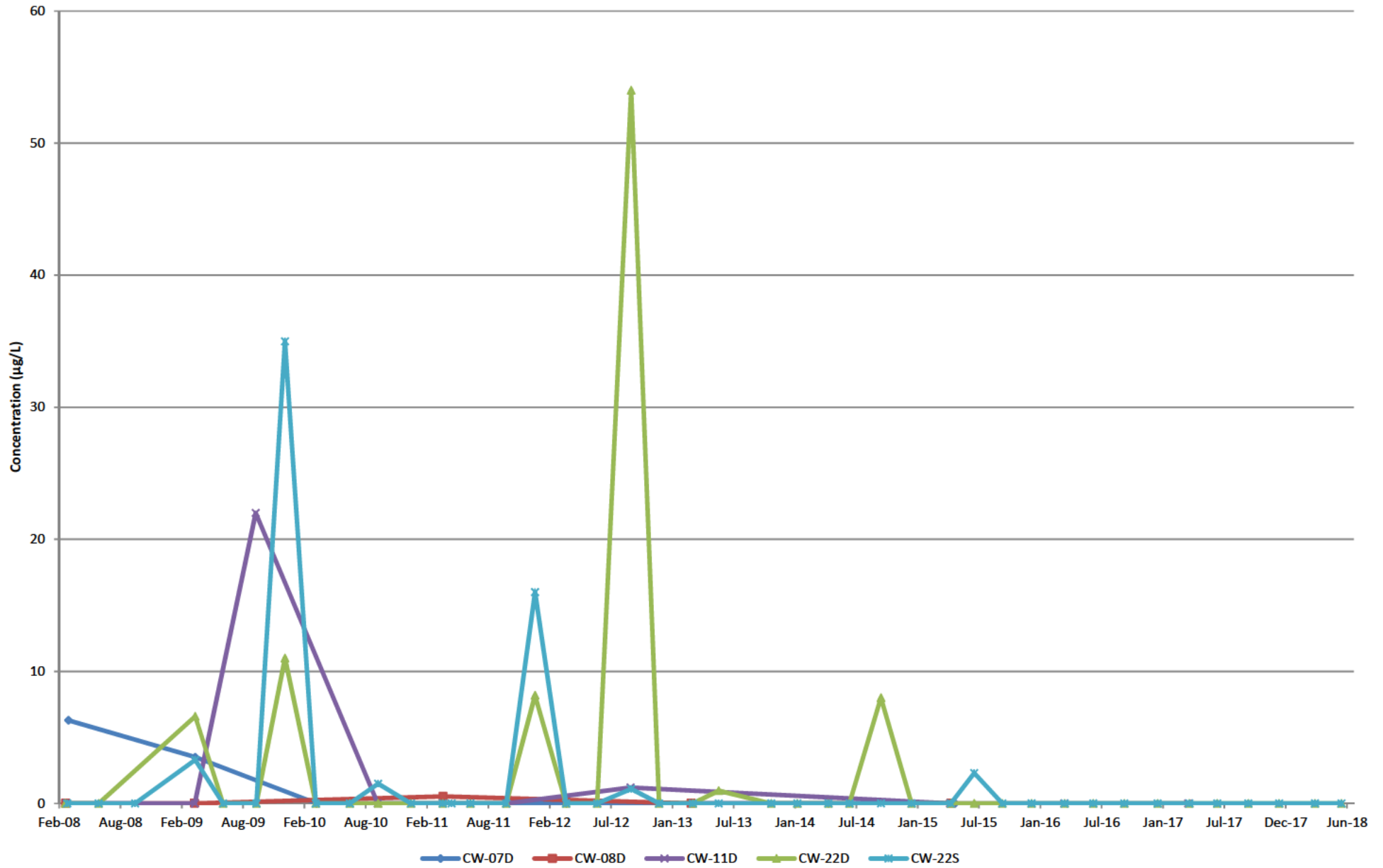
PCP Concentrations at Source Wells CW-17D, CW-27D, CW-28D, and CW-29D



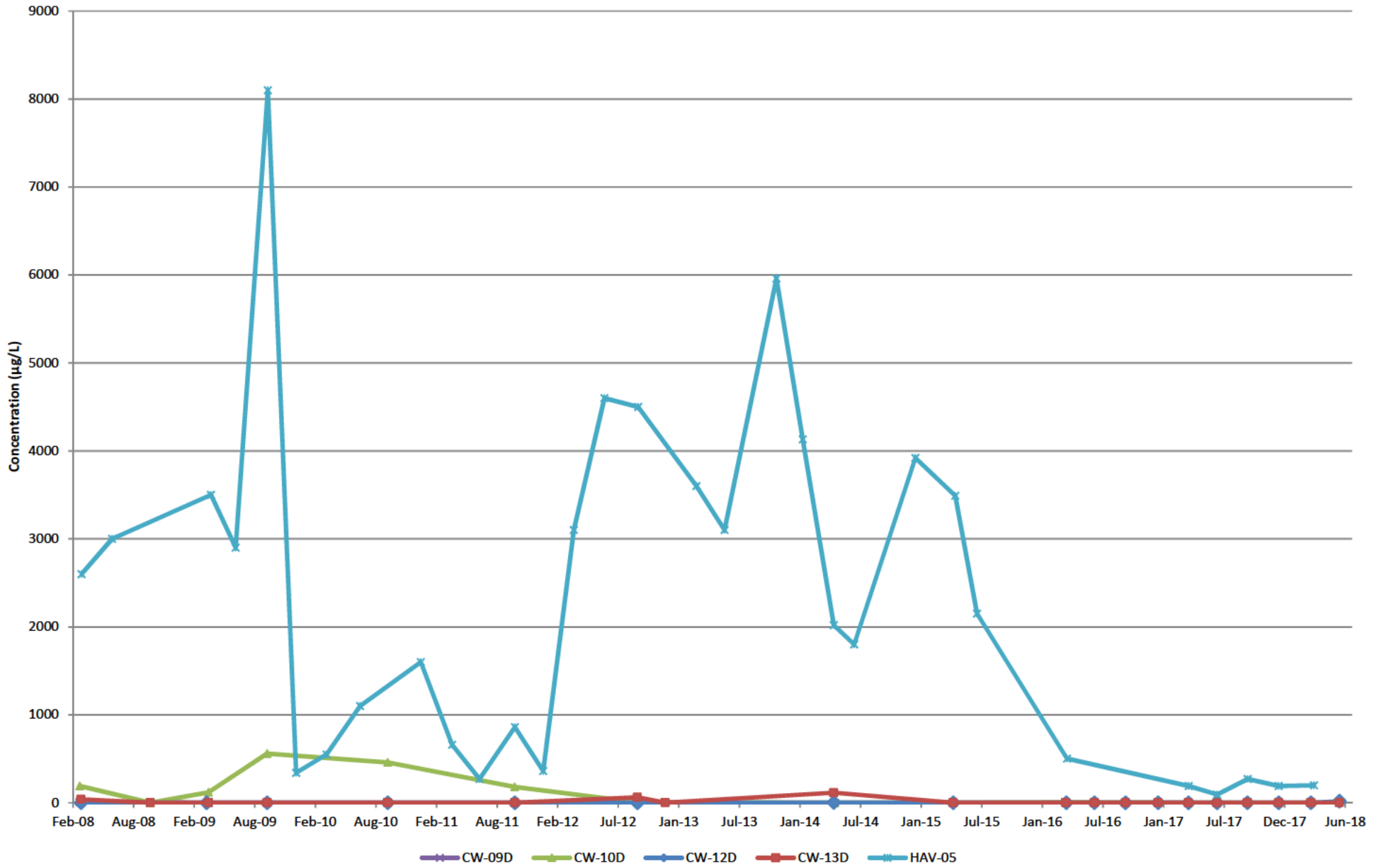
PCP Concentrations at Source Wells CW-02D, CW-03D, CW-30D, and CW-31D



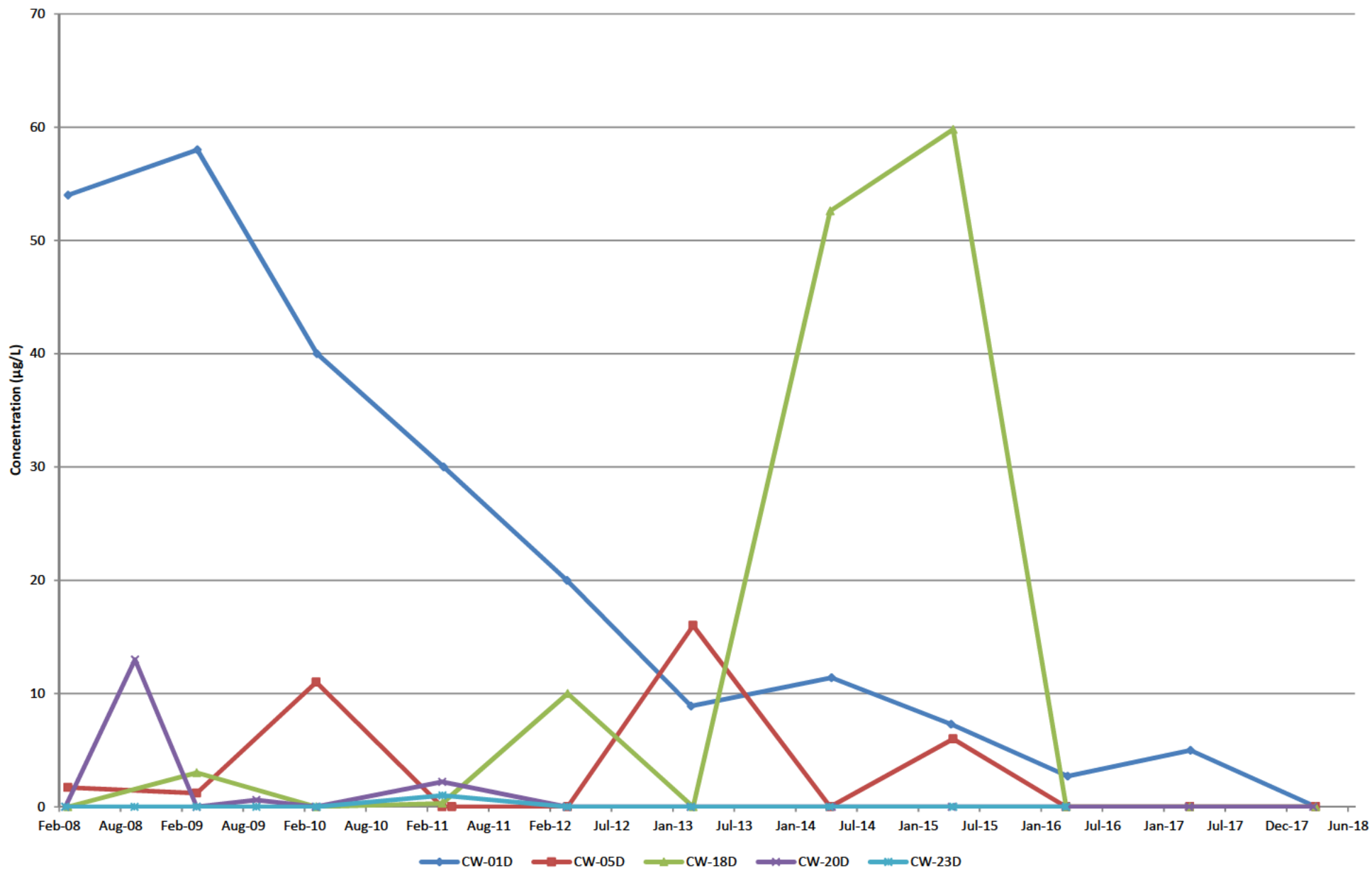
PCP Concentrations at Perimeter Wells CW-07D, CW-08D, CW-11D, CW-22S, and CW-22D



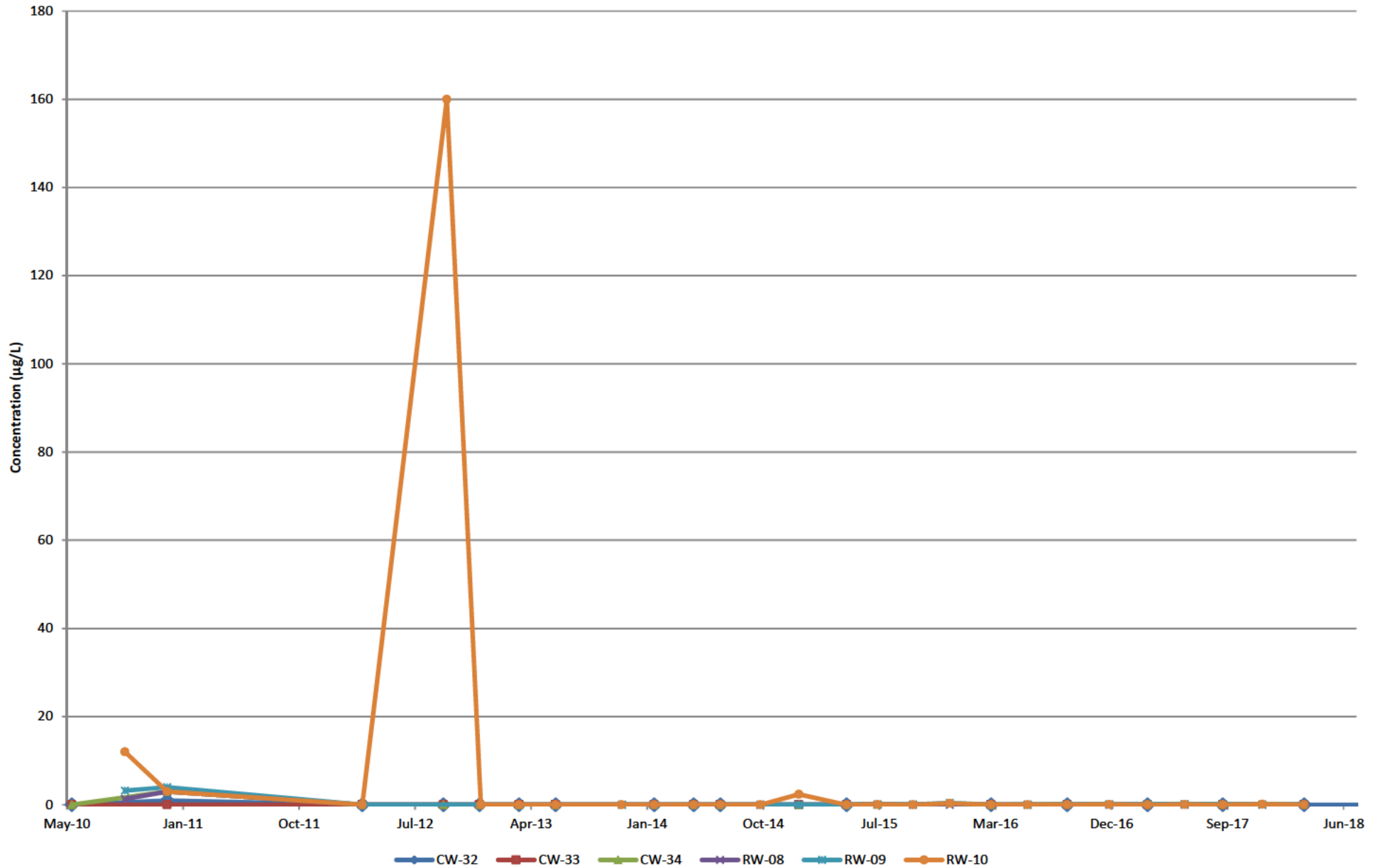
PCP Concentrations at Perimeter Wells CW-09D, CW-10D, CW-12D, CW-13D, and HAV-05



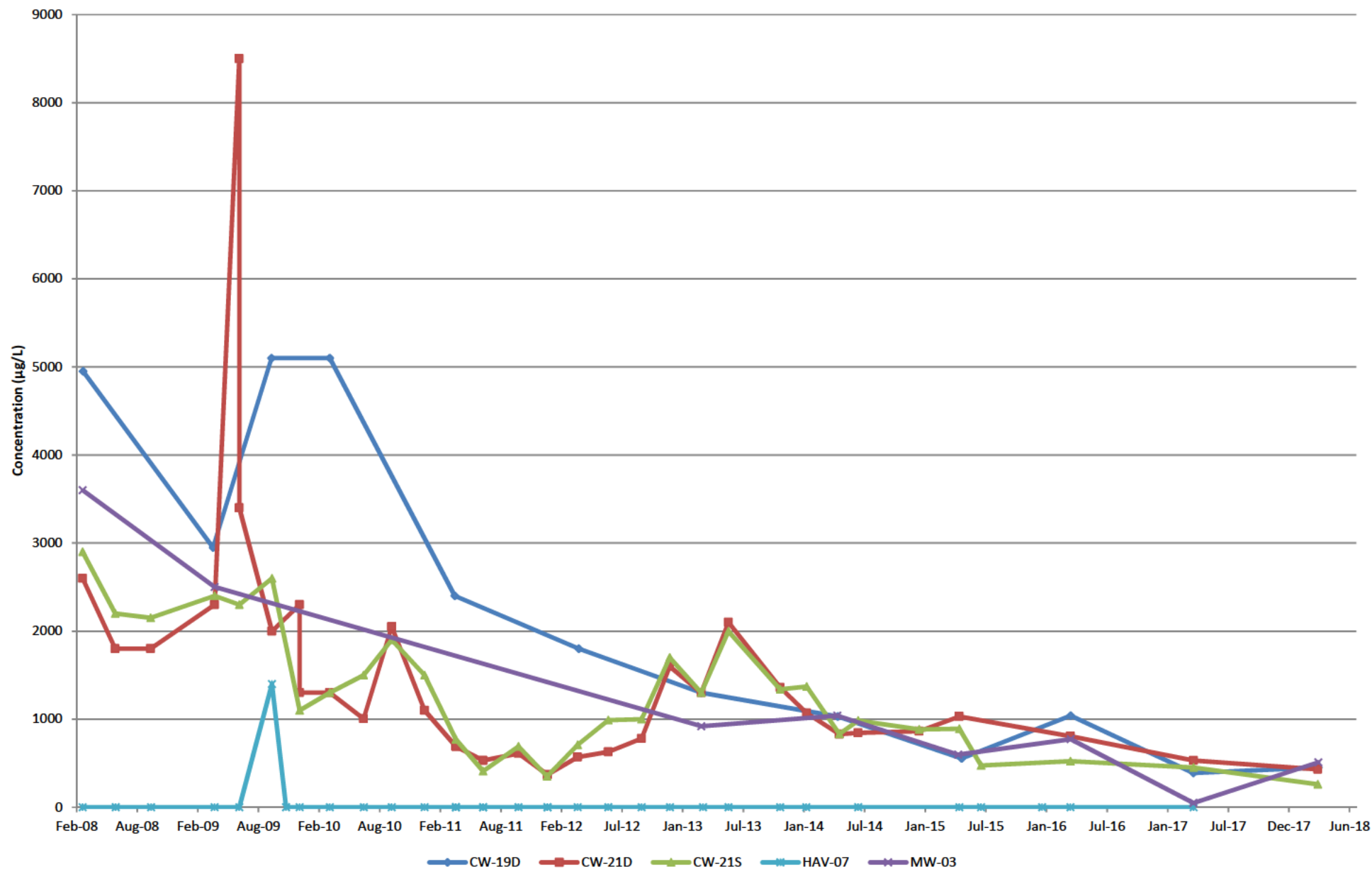
PCP Concentrations at Perimeter Wells CW-01D, CW-05D, CW-18D, CW-20D, and CW-23D



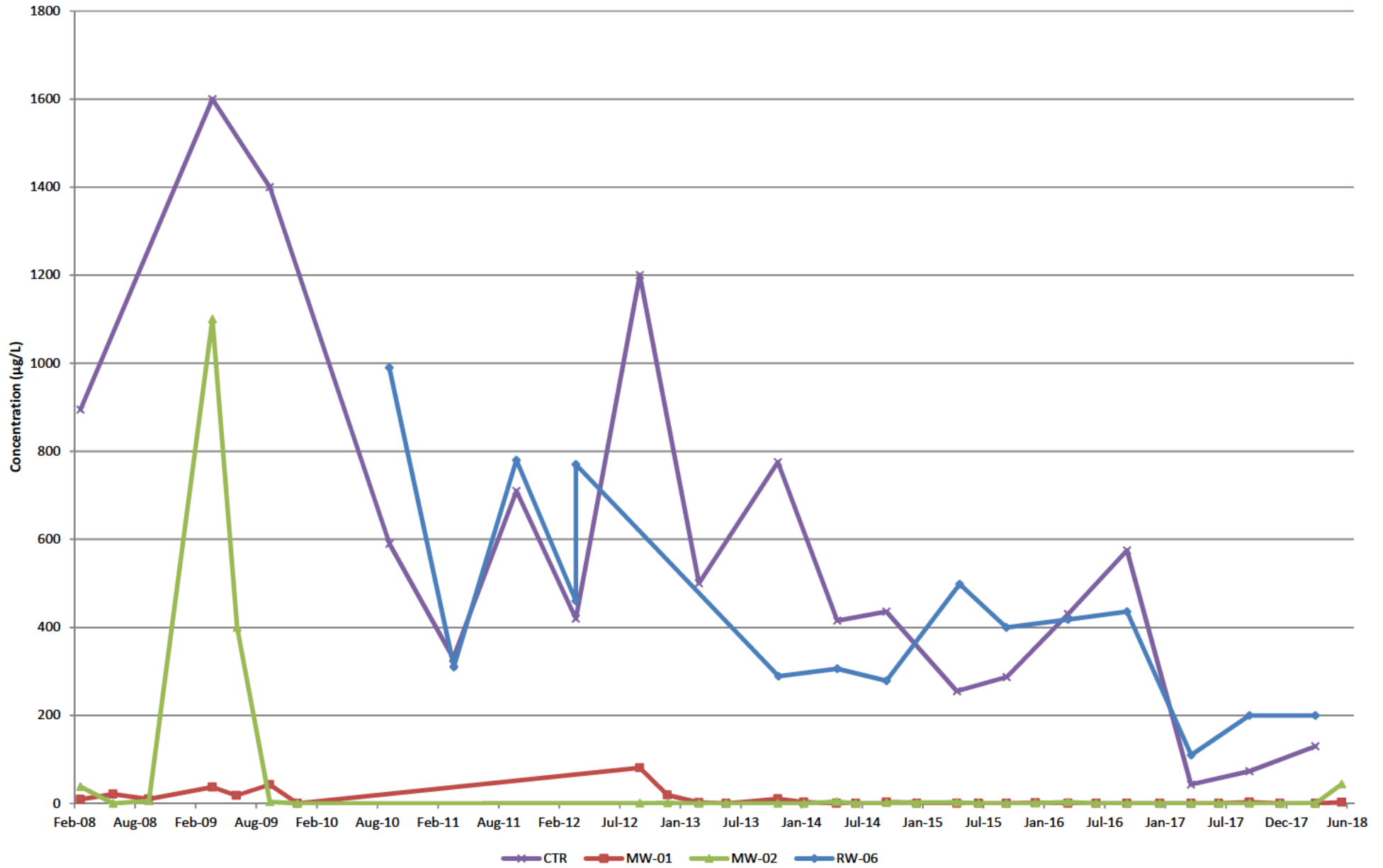
PCP Concentrations at Recovery Wells CW-32, CW-33, CW-34, RW-08, RW-09, and RW-10



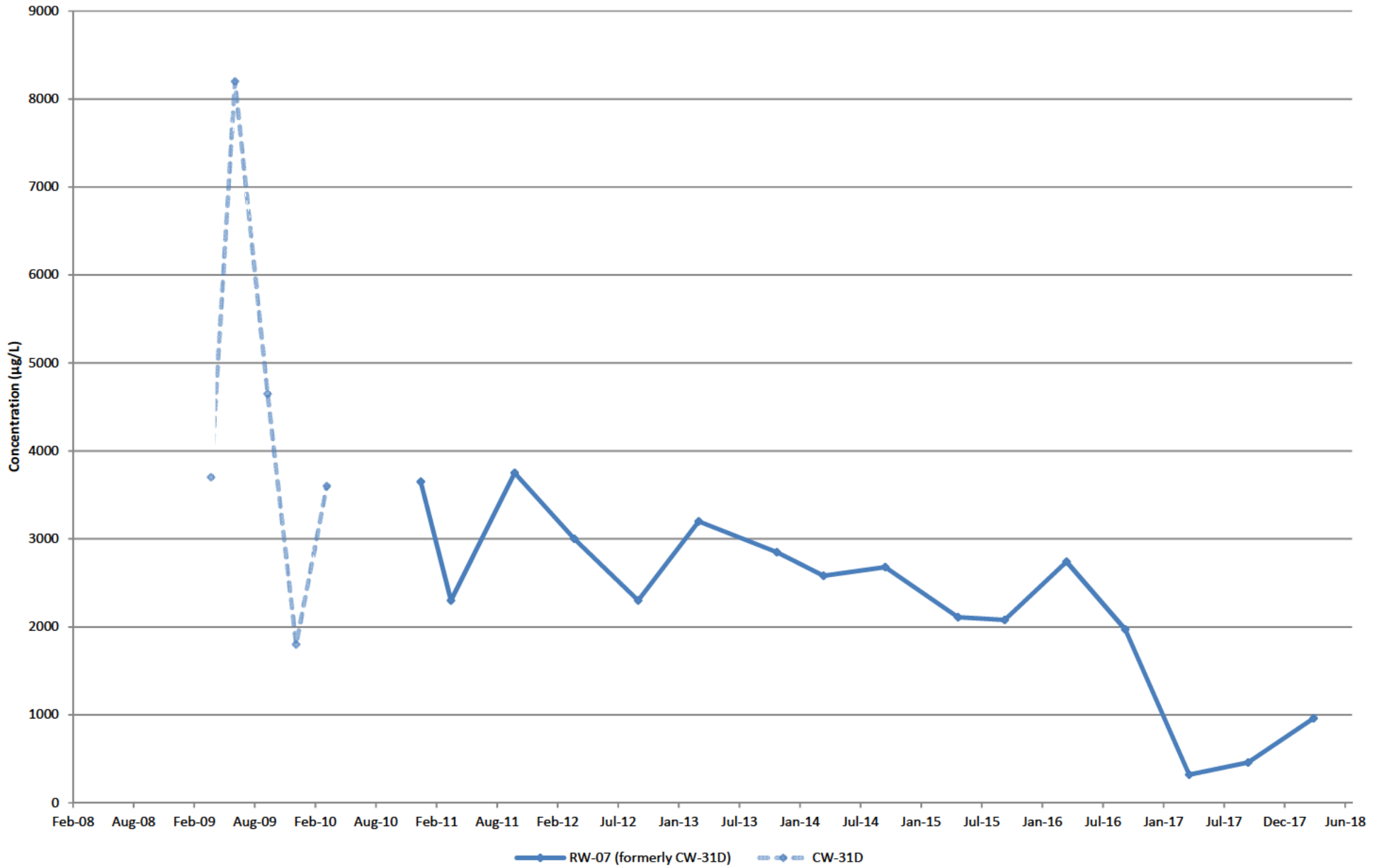
PCP Concentrations at Recovery Wells CW-19D, CW-21D, CW-21S, HAV-07, and MW-03



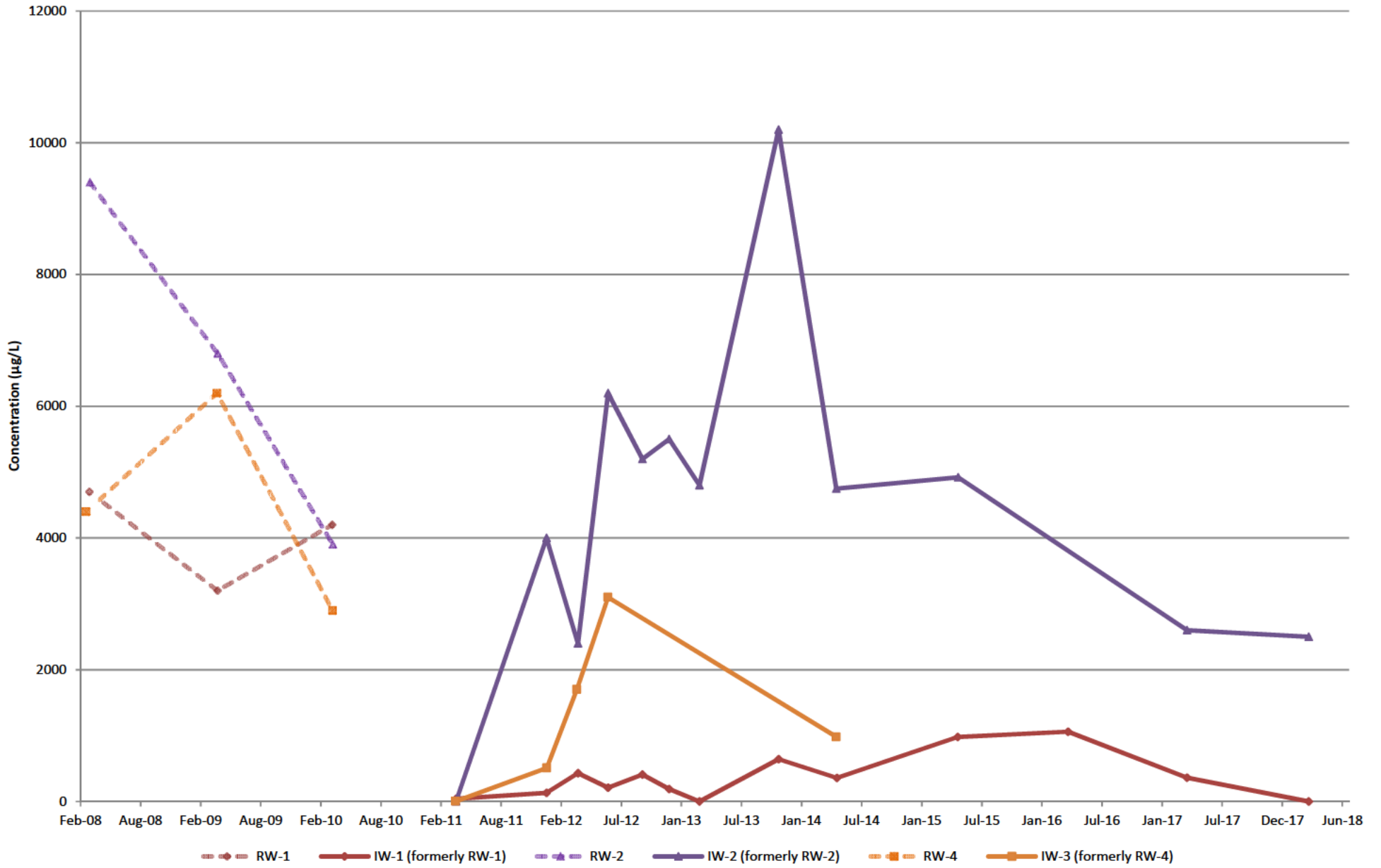
PCP Concentrations at Recovery Wells Collection Trench (CTR), MW-01, MW-02, and RW-06



PCP Concentrations at Recovery Well RW-07 (formerly CW-31D)



PCP Concentrations at Injection Wells IW-1, IW-2, and IW-3



PCP Concentrations at Injection Wells IW-4 and IW-5

