

**SECOND FIVE-YEAR REVIEW REPORT FOR
VALMONT TCE SUPERFUND SITE
LUZERNE COUNTY, PENNSYLVANIA**



Prepared by

**U.S. Environmental Protection Agency
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Date

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CSM	conceptual site model
DCE	dichloroethylene
EE/CA	Engineering Evaluations/Cost Anyalysis
EPA	Environmental Protection Agency
FS	Feasibility Study
FYR	Five Year Review
GMUC	Groundwater Migration Under Control
GRPA	Government Performance and Results Act
HI	Hazard Index
HUEC	Human Exposure Under Control
IC	institutional control
ISCO	in-situ chemical oxidation
LTRA	long term remedial action
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	operation and maintenance
PADEP	Pennsylvania Department of Environmental Protection
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
ppm	part per million
RAO	remedial action objective
RI	Remedial Investigation
ROD	Record of Decision
RSL	risk-based screening level
SSC	Superfund State Contract
SSD	subslab depressurization system
SVE	soil vapor extraction
SWRAU	Sitewide Ready for Anticipated Use
TBC	To Be Considered
TCA	trichloroethane
TCE	trichloroethylene
ug/L	microgram per liter
ug/m ³	microgram per cubic meter
VOC	volatile organic compound

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the Valmont TCE Superfund Site (Site). The triggering action for this **statutory** review is the signature of the previous FYR signed on August 10, 2016. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of a single operable unit which is addressed in this FYR.

The FYR was led by an EPA team including Remedial Project Managers (RPMs) Katie Mishkin and Brad White; hydrogeologist Mindi Snoparski; EPA toxicologist Jennifer Hubbard; EPA Biological Technical Assistance Group biologist Katie Matta; EPA community involvement coordinator Angela Ithier; and Pennsylvania Department of Environmental Protection (PADEP) project manager Kevin Walker and hydrologist Donald Rood. The review began on October 7, 2020.

Site Background

The Site is located in Hazle Township and the borough of West Hazleton, Luzerne County, Pennsylvania (see Figure 1). The Site consists of one known source area (the warehouse building), a former upholstery manufacturing warehouse at 423 Jaycee Drive within the Valmont Industrial Park, and contaminated groundwater beneath the warehouse property and in the nearby residential neighborhood. Chromatex, Inc. (Chromatex) vacated the building in 2001 after having operated an upholstery manufacturing and coating business from 1979 to 1993. Chromatex used stain repellants, including Scotchgard™ and Dupont Teflon, which contained trichloroethylene (TCE) and other volatile organic compounds (VOCs), as well as per- and polyfluoroalkyl substances (PFAS). It is the use of these products that led to the subsequent contamination at the Site. The Plant is currently owned by a logistics company that uses the warehouse to store non hazardous goods.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Valmont TCE Superfund Site		
EPA ID: PAD982363970		
Region: 3	State: PA	City/County: Luzerne County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Brad White		
Author affiliation: EPA Region 3		
Review period: 10/7/2020 - 8/10/2021		
Date of site inspection: 11/4/2020		
Type of review: Statutory		
Review number: 2		
Triggering action date: 8/10/2016		
Due date (five years after triggering action date): 8/10/2021		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The following organic and inorganic compounds were identified as contaminants of concern in the 2011 Record of Decision (ROD):

Groundwater

- TCE
- cis-1,2-Dichloroethylene (cis-1,2-DCE)
- 1,1,1-Trichloroethane (TCA)
- Vinyl chloride

Indoor Air

- TCE
- 1,1-DCE
- 1,1,1-TCA

Groundwater and subslab vapor are the remaining contaminated media at the Site. Exposure to contaminated groundwater through the ingestion and inhalation pathway has been mitigated with the installation of public water supply lines but the expectation to restore groundwater to beneficial future use remains. Exposure to contaminated vapors has been mitigated through the installation of residential subslab depressurization systems (SSDs) but this remains a potential exposure pathway.

Response Actions

After the discovery of TCE and other chlorinated solvents in residential wells adjacent to the warehouse property, bottled water and carbon filters were provided to affected homes under an EPA removal action in 1987. EPA extended public water supply lines into the neighborhood in 1987 to provide residents with a permanent source of clean potable water. Water service is provided by Hazleton City Water Authority, which draws water from a network of wells and surface water bodies outside of the Site area.

EPA completed a hazard ranking of the Site in May 2001 and placed the Site on the NPL in September 2001.

Based on the results of indoor air samples collected as part of the remedial investigation (RI), EPA conducted a removal action to address contaminated indoor air. Eight homes were supplied with temporary air filtration units and three additional homes were provided with custom-made sump covers between 2003 and 2004.

EPA then completed a number of Engineering Evaluations/Cost Analyses (EE/CAs) in support of non time-critical removal actions to address contamination present in soil, indoor air, and groundwater. Following is a brief summary:

- In August 2004, EPA completed a soil removal action at the Site where more than 18,000 tons of VOC-contaminated soil was excavated and taken off-Site for disposal. A soil vapor extraction (SVE) system was designed and constructed in 2006 to address contaminated soil beneath the Plant warehouse. The SVE system operated from March 2007 through October 2009, during which time the system recovered 234 pounds of TCE from the contaminated soil beneath the slab of the building.
- In support of an EE/CA for Indoor Air, EPA conducted subslab soil gas sampling at residences that overlie the known plume of groundwater contamination. While not all residents granted access for the sampling, EPA was able to assess the majority of properties over the plume. Based on that sampling, EPA identified nine homes, in addition to the original eight homes that already had air filtration devices installed in 2003-2004, that had the potential for vapor intrusion. EPA then initiated a non time-critical removal action to install subslab depressurization systems (which are the same as radon systems) in the 17 homes. Shallow groundwater was encountered beneath the basement slab of the ninth home, and EPA was unable to install a depressurization system. EPA subsequently conducted indoor air sampling inside the home, and found no Site-

related contamination present. A total of 16 homes currently have depressurization systems installed by EPA, as described above.

- EPA completed an EE/CA for contaminated groundwater in May 2006. The EE/CA incorporated groundwater data from the RI, and evaluated multiple alternatives for the cleanup, including groundwater pumping and treatment, and in-situ chemical oxidation. EPA then initiated pilot studies to evaluate the effectiveness of chemical oxidation.

EPA conducted a large scale pilot study in 2009 to evaluate the effectiveness of in-situ chemical oxidation (ISCO) on addressing VOC contaminated groundwater at the Site. A network of six injection wells (E-1 through E-6) were installed throughout the Plant area that consisted of 8-inch diameter boreholes drilled to an average depth of 100 feet into bedrock. EPA then injected a slurry of potassium permanganate, a chemical oxidant known to degrade the Site contaminants, under pressure into discrete water bearing zones. Following the injections, EPA observed significant decreases of Site contaminants in the Plant area, as well as decreased concentrations in monitoring wells located in the residential neighborhood.

Based on the results of the pilot study, EPA issued a ROD for the Site in January 2011 to address the final remedy for groundwater and indoor air contamination. The remedial action objectives (RAOs) of the Selected Remedy are:

RAOs for Groundwater

- Minimize any potential further migration of contaminated groundwater from the Site;
- Protect human health from exposure to chemical constituent concentrations above Federal maximum contaminant levels (MCLs) or Applicable or Relevant and Appropriate Requirements (ARARs); and
- Restore groundwater throughout the Site to beneficial use as a drinking water source.

RAOs for Indoor Air

- Protect human health from exposure to vapor intrusion through the continued operation of the existing subslab depressurization systems in the neighborhood adjacent to the Plant area until subslab vapors meet the performance standards and no longer present unacceptable risk to human health; and
- Monitor the vapor intrusion pathway, as necessary, to ensure the residents remain protected.

Major Components of the Groundwater Remedy:

- In-situ treatment of the entire groundwater plume will be done by conducting batch injections of a chemical oxidant, such as potassium permanganate or sodium permanganate, into the bedrock in the vicinity of the former Chromatex upholstery manufacturing plant (Plant). Injections will initially be a slurry of chemical oxidant into new injection wells, followed by periodic injections of either a slurry or more dilute solution of chemical oxidant.
- Performance monitoring will be conducted during the treatment period. Long-term groundwater monitoring for VOCs and inorganic compounds will be conducted until cleanup criteria have been met.

- Institutional controls (ICs) will be necessary to restrict the potable use of groundwater within the contaminated plume until groundwater cleanup goals are met. Use restrictions selected in this ROD could be implemented with a variety of tools, including local ordinances, orders issued by the Commonwealth of Pennsylvania or environmental covenants. IC’s will also include requirements that the Plant property owner not interfere with the action, or the integrity of equipment for the duration of the remedial action.

Major Components of the Indoor Air Remedy:

- Operation and maintenance (O&M) of the existing subslab depressurization systems that were originally installed in 16 residential structures in the neighborhood adjacent the Plant area will be continued until the performance standards for subslab soil vapor are met. This will include annual system inspections, and monitoring at least once every five years until the cleanup goals are met.

Performance Standards:

Groundwater

1. The following MCLs for the groundwater contaminants of concern (COCs) shall be attained throughout the entire plume:

Maximum Contaminant Levels (MCLs) for Contaminants of Concern in Groundwater	
TCE	5 ug/l
cis-1,2-DCE	70 ug/l
1,1,1-TCA	200 ug/l
Vinyl chloride	2 ug/l

2. Once the above performance standards for groundwater are met for three years, a risk assessment shall be conducted that evaluates the cumulative risk presented by residual Site-related compounds, including any remaining VOCs and/or chemical oxidation breakdown products.
3. The remedial action for groundwater will continue until the MCLs are achieved, as specified above, and the cumulative risk presented by all remaining Site-related compounds, and/or chemical oxidation breakdown products, is below a 10⁻⁴ cancer risk level, and the noncancer HI is equal to or less than 1.

While PFAS, which are considered to be “emerging contaminants” were known to be present in groundwater at the Site, they were not identified as contaminants of concern in the 2011 ROD. Rather, the ROD specified EPA would continue to monitor for them during groundwater sampling events.

Indoor Air

1. The operation of the subslab depressurization systems will continue until the following performance standards for subslab soil vapor have been achieved for four consecutive quarters:

Performance Standards for Contaminants of Concern in Subslab Soil Vapor	
TCE	12 ug/m ³
1,1-DCE	1,050 ug/m ³
1,1,1-TCA	26,500 ug/m ³

2. Once the above performance standards for subslab soil vapor are met, a risk assessment shall be conducted that evaluates the cumulative risk presented by residual Site-related compounds, including any remaining VOCs and/or chemical oxidation breakdown products.
3. O&M of the subslab depressurization systems will then continue until the performance standards for the COCs in subslab soil vapor are met, as described above, and the cumulative risk presented by all remaining Site-related compounds and/or chemical oxidation breakdown products present in subslab soil vapor is below a 10⁻⁶ cancer risk level, and the noncancer HI is equal to or less than 1.

Institutional Controls

The 2011 ROD called for implementing ICs at the Site to achieve the following objectives:

- Groundwater within the plume boundaries shall not be used for drinking water until the groundwater attains the standards set forth within Section 20.3.1 of this ROD. The plume boundaries are defined as the approximate area bounded by Deer Run Road to the north, the southern boundary of the Plant property to the south, Jaycee Drive to the west, and the eastern Plant boundary and Fawn Drive to the east. This area includes the residential streets of Twin Oaks Road, Bent Pine Trail, and Fawn Drive.
- The remedial action, or the integrity of equipment, shall not be interfered with for the duration of the remedial action.

Status of Implementation

This section describes the status of remedy implementation since the 2016 FYR.

Groundwater Remedy:

Between 2011 and 2014, four rounds of ISCO injections were performed. However, as described in the 2016 FYR, by late 2014, following the fourth round of ISCO injections and installation of additional wells inside the warehouse, it became apparent that ISCO injections were not resulting in decreasing groundwater contaminant levels throughout the plume. Also, additional contaminant mass was encountered in bedrock beneath the warehouse that showed high concentrations of TCE, as high as 100 parts per million, that were indicative of dense non-aqueous phase liquid (DNAPL). Additionally, some early research related to PFAS indicated that use of chemical oxidizers may mobilize certain PFAS compounds. For these reasons, and in support of the 2015 Optimization Review and 2016 FYR, EPA

suspended ISCO injections and initiated a Focused Feasibility Study to evaluate groundwater remedial alternatives with a focus of addressing source area contamination.

Indoor Air Remedy:

EPA continues to implement the indoor air component of the Selected Remedy, which includes annual inspections of residential SSD systems and repair/replacement of equipment as necessary. Originally, EPA installed SSD systems in sixteen residences. In support of the 2016 FYR, EPA reached out to homeowners that fell into one of the following categories: a) their home overlies the groundwater plume but historical vapor intrusion sampling had not been conducted (because access was either denied or no response was received), or b) historical sampling was conducted and site-related contaminants were detected below screening levels in place at the time. EPA compared historical data to current/updated screening levels and identified a number of homes where additional sampling was warranted.

As recommended in the 2016 FYR, EPA conducted indoor air and subslab sampling in four homes. Sample results in three of the four homes did not indicate the potential for vapor intrusion. Sample results in one of the four homes did indicate TCE present in subslab vapors and the potential for vapor intrusion. This home had a SSD system installed by the previous homeowner but it was not functioning. EPA repaired this SSD system and has added it to the residential SSD system annual inspection program. A fifth residence was identified for additional sampling and EPA learned a SSD system had also been installed by the previous homeowner. Since this system was operational, EPA also added it to the annual inspection program.

To date, there are a total of 18 residential SSD systems in operation at the Site. These systems were inspected annually over the last five years. In 2020 EPA also conducted pressure field extension testing at each residence during the annual inspection of the SSD systems. When the systems were originally installed, testing was done at multiple locations across each basement slab to demonstrate sufficient vacuum was present. This testing was conducted again in 2020 to ensure conditions had not changed. Up to three holes were drilled in each slab and at each hole the vacuum induced by the SSD system was measured. A vacuum reading of $-.04''$ of water or greater was used to demonstrate sufficient vacuum. In most cases, pressure field extension testing indicated sufficient vacuum. At several residences, insufficient vacuum was recorded and steps were taken to make improvements, including replacing the SSD fan with a stronger unit, and/or sealing cracks or holes in the slab. Where sufficient vacuum was established, no additional actions were necessary.

In four locations, sufficient vacuum was not established across the entire slab (though it was established in a portion of the slab). In these instances, EPA collected indoor air samples to assess whether or not vapor intrusion of Site-related contaminants was occurring. All test results indicated that vapor intrusion was not occurring above levels of concern and no additional action, beyond annual monitoring, was deemed necessary.

EPA additionally conducted sampling events in the warehouse to ensure that warehouse workers are not being exposed to vapors present in the subslab underlying the building. Following is a record of sampling events that took place in the warehouse:

- May 4, 2016: Indoor air and subslab
- May 19, 2016: Indoor air
- December 1, 2016: Indoor air

- August 30, 2017: Indoor air
- February 11, 2019: Indoor air
- November 4, 2020: Indoor air
- February 4, 2021: Indoor air and subslab

During this monitoring period, Site-related contaminant concentrations detected in indoor air in the warehouse remained below levels of the concern for occupational exposure. The data are described later in this report.

Data collected during the sampling events described above is discussed in the Data Review section of this FYR.

Institutional Controls

All ICs specified in the ROD are in place and effective in the form of local municipal ordinances (groundwater use restrictions) and informational ICs (for notification to EPA in the event a property owner applies for a well drilling permit, and continued access and protection of remedial components). The local ordinance in place within the Borough of West Hazleton prohibits the drilling or use of private water wells within a certain geographical area that includes a portion of the Site. The local ordinance in place for Hazle Township is a township-wide ordinance that was not enacted specifically for the Site, but the ordinance meets the intent of the groundwater use restrictions identified in the 2011 ROD. The local ordinance for Hazle Township requires all owners of improved properties within 150 feet of the public water line to connect to the water line. At the time of this FYR, there do not appear to be any improved properties overlying the groundwater plume that fall outside of the 150 foot distance that are not already connected to public water. The ordinance does allow for exceptions to the connection requirement upon application and review by township supervisors. However, EPA issued a letter to Hazle Township on July 21, 2014 that requests notification to EPA in the event anyone overlying the groundwater plume seeks a permit to drill a well. EPA resubmitted the letter to Hazle Township on May 13, 2021 as a reminder of notification procedures in the event a property owner submitted a petition for installation of a private well. Hazle Township indicated they would keep the re-issued letter on file and contact EPA in the event of a well being petitioned. To date, no petitions had been received for installation of private wells.

All residential properties, and the warehouse, are currently connected to the public water supply.

Table 1: IC Summary Table

Summary of Planned and/or Implemented ICs					
Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Entire Site	Prevent the potable use of groundwater	Local ordinance, Borough of West Hazleton – July 2012 Informational IC (letter) – Hazle Township, July 2014 Local Ordinance, Hazle Township, January 2015
Access	Yes	Yes	Plant area	Continued access, protection of remedial equipment	Superfund Comfort Letter, signed June 8, 2016

Systems Operations/Operation & Maintenance

The residential SSD systems were inspected annually over the last five years, and pressure field extension testing was completed on the systems in 2020, as described earlier in this FYR.

There are no significant operation and maintenance activities associated with the groundwater remedy because ISCO injections have been suspended and the remedy is being re-evaluated.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determination and statement from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 2: Protectiveness Determination/Statement from the 2016 FYR

OU#	Protectiveness Determination	Protectiveness Statement
01	Short-term Protective	The remedy is considered protective in the short term because the residential subslab depressurization units are operational and ICs are in place, and therefore there is no current or potential exposure. Follow-up actions are necessary to address long-term protectiveness because RAOs are not expected to be met within the timeframe estimated in the ROD. These include implementation of optimization review recommendations; analysis of possible remedy modifications to address both the remaining VOC contamination and PFAS; and pursuing access to some residences to perform additional vapor intrusion sampling.

Table 3: Status of Recommendations from the 2016 FYR

OU#	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date
01	The groundwater remedy is not progressing toward achievement of the cleanup goals in the expected timeframe.	Implement remaining Optimization Review recommendations and evaluate modifications to the current remedy; issue appropriate remedy decision document.	Ongoing	Focused Feasibility Study completed. EPA has issued a Proposed Plan for an Interim Source Area Remedial Action. ROD will be issued in the coming months.	NA
01	PFAS are present in groundwater and may be above EPA's risk-based screening levels.	Evaluate whether the presence of PFAS necessitates modification of the decision document and whether additional actions are warranted to address them.	Ongoing	Following implementation of the Interim Source Area Remedial Action, EPA will evaluate alternatives to address remaining site-wide contamination for all contaminants and issue a Proposed Plan to amend the final groundwater remedy.	NA
01	Vapor intrusion sampling has not been conducted in some residences that overlie the plume.	Request access to conduct vapor intrusion sampling.	Complete	Additional homes were sampled where access was granted	11/16/2016

Following up on the recommendation from the Optimization Study to focus on the source area before treating the downgradient plume, a Focused Feasibility Study (FFS) was completed in April 2020. The purpose of the FFS was to evaluate remedial alternatives that would address contamination present in the source area. Following the completion of this document, EPA issued an interim Proposed Remedial Action Plan (Proposed Plan) in January 2021 that identifies a Preferred Alternative to treat source area contamination. Specifically, EPA recommends implementing In Situ Thermal Remediation (ISTR) at source areas combined with Groundwater Extraction, Treatment, and discharge. This remedy would directly address VOC source contamination present in the form of Dense Non-Aqueous Phase Liquid (DNAPL), which continues to act as a source to groundwater contamination. Indirectly, the Preferred Alternative will address PFAS contamination in the source areas by reducing contaminant mass through groundwater extraction and treatment. EPA intends to release the Interim ROD for addressing the source area contamination in the coming months.

PFAS are known Site-related contaminants that are present in groundwater at the Site above the current EPA health advisory level of 70 parts per trillion. Groundwater sampling was conducted in May 2016 and March 2020. In May 2016, groundwater was analyzed for PFAS compounds and VOCs and in March 2020, groundwater was analyzed for PFAS compounds, VOCs, and metals. The March 2020 sampling event represents the most comprehensive round of PFAS data collected at the Site to date, with a total of 54 monitoring wells sampled for PFAS compounds. Data collected from these events is discussed in the Data Review. USGS is providing assistance to EPA via an interagency agreement incorporating recent data as well as data collected from the activities described above in order to update

the CSM. Following implementation of the Interim Remedy, EPA will evaluate alternatives to address remaining site-wide groundwater contamination, including PFAS, and issue a Proposed Plan to amend the 2011 ROD for a final groundwater remedy.

An issue that was identified in the 2016 FYR was vapor intrusion sampling had not been conducted in some residential homes overlying the groundwater contaminant plume. EPA addressed this concern in 2016 and reached out to homeowners who had previously not granted access. As a result of vapor intrusion sampling and home assessment, EPA added two additional homes to the SSD annual inspection program for a total of 18 SSD units.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was placed in the Hazleton Standard Speaker on February 11, 2021 announcing the FYR and inviting the public to submit any comments to EPA. The results of the review and the report will be made available at the following information repositories:

Hazleton Area Public Library
55 N. Church Street
Hazleton, PA 18201
Hours: Monday - Thursday 8:30 am to 9pm
Friday - Saturday 8:30 am to 5pm
Sunday closed

EPA Administrative Records Room,
Attention: Administrative Coordinator
1650 Arch Street
Philadelphia, PA
(215) 814-3157
Hours: Monday through Friday, 8:00 am to 4:30 pm; by appointment only.

During the FYR process, EPA spoke with residents to document any perceived problems or concerns they have with the ongoing operation of the SSD systems in the neighborhood. EPA also spoke with new homeowners in the community to inform them about the Site. In some cases, residents new to the neighborhood were not familiar with the Site so EPA provided information regarding the history of the Site, activities conducted in the neighborhood, and how to contact EPA with any follow-up questions. EPA also communicated with the Greater Hazleton Joint Sewer Authority (GHJSA) regarding the status of the Site and the Proposed Plan for an interim remedial action, and explained that treated groundwater would be discharged through the sanitary sewer to the GHJSA.

Document Review

A list of documents reviewed in support of the FYR is provided at the end of this report.

Data Review

The data review for this FYR focuses on the current status of groundwater contamination, specifically the nature and extent of TCE and PFAS compounds in groundwater throughout the Site. The data review also discusses the performance of the residential SSD systems, and additional vapor intrusion sampling at the warehouse.

Groundwater Remedy

Groundwater sampling to evaluate the COCs has been conducted at the Site since 2002. Most recently, a comprehensive sampling event was conducted in March 2020 and EPA sampled for VOCs, PFAS, and metals. Similar to previous sampling events, the area of highest concentrations of TCE and PFAS in groundwater coincide with where historical operations took place inside the warehouse.

TCE results from the March 2020 sampling event are shown in Table 1, an attachment to this FYR. While Figures from the 2020 comprehensive sampling event have been drafted by USGS, they have not yet been finalized and therefore TCE groundwater plumes are depicted from May 2016 and are included as Figures 2 and 3 in this FYR. Generally, the nature and extent of groundwater contamination documented in 2020 is consistent with 2016 results with some variability within the source area. TCE is consistently found to be the VOC at highest concentrations across the Site. Figures 2 and 3 show the concentrations of TCE in the shallow bedrock (generally less than 60 ft bgs) and the deep bedrock (generally greater than 60 ft bgs) aquifer based on May 2016 data. As shown in the figures, TCE concentrations (and VOCs in general) are found at their highest concentrations in the shallow bedrock underlying the warehouse. The maximum concentration of TCE in the shallow bedrock was found at 195,000 in May 2016 (E-11S) and 75,000 ug/L in March 2020 (MW-32S). These concentrations are indicative of DNAPL and while the location of the maximum concentration changed (from E-11S to MW-32S) between sampling events, this change is insignificant because E-11S and MW-32S are adjacent to one another and have remained representative of the core of the source area. TCE was found at 150,000 ug/L in MW-32S in May 2016. Overall, data show an order of magnitude decrease in TCE concentrations from the 2016 to 2020 sampling events in the shallow bedrock. The highest TCE concentration found at depth was 66,000 ug/L in May 2016 (E-11I) and 17,000 ug/L in March 2020 (E-11I), similarly showing a reduction in TCE concentrations with time in the source area. That said, these concentrations are still indicative of DNAPL. Overall, March 2020 results indicate that TCE concentrations range from 2,500 to 75,000 ug/L in the bedrock groundwater underlying and in close proximity to the warehouse. While TCE concentrations reduce with vertical depth, TCE concentrations reduce dramatically (by orders of magnitude) laterally downgradient. In the downgradient residential area, the most recent available data indicates TCE concentrations range from non-detect to 71 ug/L (GW-24 in March 2020).

Table 2, provided as an attachment to this FYR, includes a summary of PFAS results from the March 2020 sampling event. Similar to the TCE groundwater plume maps, the USGS has drafted PFAS groundwater plumes but they have not yet been finalized. For the purposes of this FYR, historical PFAS data (years 2002 to 2016) are included in Figures 4 and 5. Elevated concentrations of PFOA and PFOS have consistently been detected in groundwater underlying and downgradient of the warehouse. March 2020 data indicate the maximum concentrations occur at E-11S (2,359 ng/L in March 2020), a shallow bedrock well located inside the warehouse whereas historically, the maximum concentrations of PFOA/PFOS occurred in close proximity at MW-32S with an estimated 7,700 ng/L in May 2016. While this shift of maximum concentrations from E-11S to MW-32S between sampling events was similarly observed in TCE concentrations, this also represents that the area of highest PFAS concentrations coincides with the highest TCE concentrations found in groundwater. Maximum concentrations at depth were found in E-9I, (an estimated concentration of 1,103 ng/L), a deeper bedrock well in close

proximity to shallow bedrock well E-11S. While combined PFOA/PFOS concentrations decrease with depth and with distance from the warehouse, the concentrations at depth and in the downgradient residential area remain well above the current EPA health advisory (HA) of 70 ng/L. In the residential area, concentrations ranged from non-detect to an estimated 290 ng/L (MW-06S). Figure 4 and 5 show combined PFOA/PFOS concentrations in shallow and deep bedrock wells from previous sampling events.

The public water supply is comprised of a network of groundwater wells and reservoirs, with supply wells located over a mile from the Site. Monitoring of PFAS under the Unregulated Contaminant Monitoring Rule (UCMR) was last conducted in 2015 and data does not indicate that the drinking water supply is impacted by PFAS contamination.

Indoor Air Remedy

As described earlier, EPA conducted annual inspections of the residential SSD systems during this FYR period. EPA also conducted numerous sampling events related to the evaluation of potential vapor intrusion in homes in the neighborhood that do not have SSD systems. EPA also conducted indoor air sampling inside some homes with SSD systems to ensure the systems were functioning properly. These sample events are described below. The locations of the residences are being withheld due to privacy considerations.

2016

Indoor air and/or subslab sampling was conducted in two homes following issuance of the 2016 FYR. These were homes where previous sampling had either not been conducted or earlier sampling results were below the then-current screening levels for TCE.

The first home had a non-functional radon system that had been installed by the previous homeowner. In this home, EPA collected subslab and indoor air samples over a 24 hour period. TCE was detected in the two subslab sampling locations at concentrations ranging from 4.2 ug/m³ to 29 ug/m³. Tetrachloroethene was detected at concentrations ranging from less than 1 ug/m³ to 3.3 ug/m³, and 1,1,1-TCA was detected in concentrations ranging from less than 1 ug/m³ to 1.6 ug/m³. In the indoor air samples, TCE was detected but at only trace concentrations (maximum of 0.11 ug/m³), and tetrachloroethene was detected at a maximum concentration of 1.2 ug/m³. While contaminant concentrations in indoor air were below levels of concern, EPA elected to repair the existing radon system (now referred to as a SSD system) because of *potential* for vapor intrusion given TCE was detected in the subslab. Since 2016, this home has been included in the annual inspection of residential SSD systems.

In the second home, the homeowner has a finished basement and denied EPA's request to conduct subslab sampling but agreed to indoor air sampling. Samples were collected over a 24 hour period. TCE was detected at only trace concentrations, with a maximum detection of 0.11 ug/m³, well below levels of concern. No additional action or monitoring is planned at this home.

2019

The resident of a home EPA had previously conducted multi-media sampling at, including subslab and indoor air sampling in the spring of 2016 (results did not indicate any levels of concern), contacted the RPM regarding water that was collecting in their basement. While it was a small amount of water that

was coming in through the basement wall, the resident was concerned the water may be impacted with contaminants related to the Site. Out of an abundance of caution, EPA agreed to conduct additional subslab and indoor air sampling because there was not a sufficient volume of water for an aqueous sample. Samples were collected over a 24 hour period. TCE (maximum concentration 4.25 ug/m³) and 1,1,1-TCA (maximum concentration 1.9 ug/m³) were detected in subslab but below levels of potential concern. TCE was only detected in one indoor sample at a concentration of 0.1 ug/m³, below levels of concern. No additional action or monitoring is planned at this home.

2020

EPA conducted indoor air sampling in one residence that currently has a SSD system. EPA conducted the sampling because it was noted during the annual inspection of the system that vacuum communication between the suction port of the system and one test location was less than ideal. The fan was replaced with a more powerful unit and vacuum was somewhat improved at that location, but out of an abundance of caution EPA collected indoor air samples over a 24 hour period. TCE (maximum detection of 0.3 ug/m³), 1,2-dichloroethane (maximum detection 3.7 ug/m³), 1,1-dichloroethene (maximum detection 0.1 ug/m³), and 1,1,1-TCA (maximum detection 0.094 ug/m³) were detected in the indoor air samples but the concentrations were determined to be below levels of concern. EPA will continue to ensure the SSD system is functioning properly at this home and will evaluate if periodic sampling is warranted.

2021

EPA conducted indoor air sampling in three additional residences (one of which is an apartment complex). These locations have EPA installed SSD systems but during the annual inspections conducted in 2019 were determined to have marginal vacuum at at least one test location. At each location, indoor air samples were collected over a 24 hour period.

In the first residence, only trace levels of 1,2-dichloroethane (a compound which is not detected in groundwater impacted by the site) were detected. No additional action other than annual inspections of the SSD system are planned at this residence.

In the second residence, only trace levels of TCE were detected in a single sample, and low concentrations of 1,1,1-TCA and 1,2-dichloroethane were detected in the three samples. The concentrations were found to be below levels of concern and no additional action other than annual inspections of the SSD system are planned at this residence.

In the apartment complex, EPA collected indoor air samples from each of the two ground floor apartment units over a 24 hour period. Only trace levels of TCE (maximum concentration of 0.1 ug/m³) were detected in the samples, along with low concentrations of 1,2-dichloroethane. The concentrations were found to be below levels of concern and no additional action other than annual inspections of the SSD system are planned at this residence.

Warehouse Sampling

Vapor intrusion sampling is also conducted at the warehouse to assess whether site-related VOCs that are known to be present in the groundwater beneath the warehouse and surrounding areas have migrated as vapors into the warehouse. Following is a record of sampling events that took place in the warehouse

since the 2016 FYR. Note – the May 2016 sample results were pending at the time the 2016 FYR was issued:

- May 2016: Indoor air and subslab
- December 2016: Indoor air
- August 2017: Indoor air
- February 2019: Indoor air
- November 2020: Indoor air
- February 2021: Indoor air and subslab

On May 4, 2016 EPA conducted a round of subslab and indoor air sampling in the warehouse. TCE concentrations in indoor air ranged from 58 ug/m³ to 230 ug/m³. Concentrations of TCE in subslab samples ranged from 5 ug/m³ to 24,000 ug/m³. Upon seeing the preliminary analytical results and the unusually high concentrations of TCE in indoor air, EPA immediately contacted the owner of the warehouse with instructions to make sure the building ventilation system was turned on (large fans on one side of the warehouse). EPA then returned to the Site on May 19, 2016 to collect another set of indoor air samples. The results for the indoor air samples collected on May 19 indicated concentrations of TCE ranging from 0.62 ug/m³ to 2.9 ug/m³, more in line with historical concentrations and below levels of concern. Upon discussions with EPA's contractor, it was determined that well development activities conducted inside the warehouse immediately prior to the May 4 sampling event and insufficient venting of building air resulted in the short-term increase in concentrations. Additional sampling events are discussed below.

Indoor air and sub-slab sampling results conducted between December 2016 and February 2021 showed no unacceptable risks to human health. On each occasion, samples were collected over an 8 hour period. During this review period, concentrations of TCE detected in indoor air inside the warehouse ranged from 0.4 ug/m³ to 8 ug/m³.

In November 2020, the TCE concentrations (ranging from 1.4 ug/m³ to 4.6 ug/m³) detected in the samples were generally consistent with concentrations detected during previous sampling events and were below levels of concern for worker exposure. However, additional compounds were detected at low concentrations including: 1,1,1-TCA, 1,1-dichloroethane, 1,2-DCA, and vinyl chloride. The detections of 1,2-DCA and vinyl chloride, while below levels of concern, appeared to be somewhat unusual because they are not compounds recently detected in the groundwater beneath the site. Due to these results, EPA returned to the warehouse in January and February 2021 to conduct a co-located subslab and indoor air sampling event. Samples were again collected over an 8 hour period. The sample results for indoor air were comparable to those from the November 2020 sampling event. The sample results for subslab samples reaffirmed that elevated concentrations of TCE are present beneath the slab. However, 1,2-DCA was not detected in subslab samples and vinyl chloride was only detected at a very trace concentration (0.1 ug/m³) in a single subslab location. The data confirm the detections of 1,2-DCA and vinyl chloride in indoor air are most likely related to an ambient source(s) within the warehouse and not related to groundwater contamination beneath the warehouse. Both compounds are common components of plastic and vinyl products and can be found in many consumer goods.

While TCE and other site-related contaminants has been detected in the air inside the warehouse, the concentrations detected indicate there is no current unacceptable risk to workers. However, given the concentration of the contaminants in the groundwater and subslab soil gas beneath the warehouse and

potential for vapor intrusion, EPA will continue to conduct periodic air sampling to ensure worker safety.

Site Inspection

There are currently no groundwater treatment-related remedial components to inspect. When the ISCO injections were conducted, temporary equipment was mobilized to the Site and then removed following the injections. The March 2020 groundwater sampling event was conducted by EPA's contractor at the time and included inspections of the condition of each monitoring well. The need for minor repairs to the surface pads of several wells were noted. Monitoring well MW-19S was noted as being damaged and inaccessible for sampling. EPA will conduct necessary repairs to these wells prior to the next groundwater sampling event.

As described earlier in this FYR, the residential SSD systems are inspected annually. The official FYR inspection took place in September/October 2020 coinciding with the annual SSD system inspections. EPA RPMs Brad White and Katie Mishkin were present during the 2020 inspections of the residential SSD systems and air sampling events. The Site inspection and SSD inspections were conducted during a time of COVID-19 restriction. All recommended CDC, State and local required precautionary measures were taken in conducting the Site inspection including social distancing, masks, and use of sanitizer, etc. Data from the inspections and sampling events was shared with the homeowners and PADEP.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

No.

Human health is being protected from exposure to contaminated groundwater because municipal water is provided and ICs are in place, and residents are being protected from vapor intrusion through the ongoing operation of the SSD systems.

The ISCO remedy was determined to be ineffective in addressing the VOC mass due to the presence of more contaminant mass than originally understood, contaminant rebound (e.g. matrix diffusion), and the inability to distribute the amendment in a fractured rock environment. Additionally, early research has been suggestive that oxidation could potentially have an adverse impact on the PFAS compounds. For these reasons, EPA discontinued the ISCO remedy and has proposed an interim Remedial Action to address source area contamination.

Groundwater Remedy

In January 2021, after completion of a Focused Feasibility Study, EPA released a Proposed Plan to address only the source area contamination (underlying and adjacent to the warehouse) as part of an interim Remedial Action. The proposed interim Remedial Action is In Situ Thermal Remediation (ISTR) at source areas combined with groundwater extraction, treatment, and discharge (Figure 2,3). ISTR is expected to treat a significant amount of mass in a relatively short period of time. This remedy will treat the DNAPL and is expected to eliminate the source of VOC contamination to the groundwater. It will additionally address the VOC contamination that is diffused in the bedrock matrix in the source area. EPA intends to issue the Interim ROD in the coming months. Following implementation of the

proposed interim Remedial Action, EPA will evaluate the remaining contamination across the entire Site for all contaminants of concern and propose an amendment to the final Selected Remedy for groundwater.

While the remedy currently remains protective in the short terms because everyone is provided with municipal water and institutional controls are in place, restoration of the groundwater for future beneficial use can be better assessed once the source area contamination is addressed.

Indoor Air Remedy

While EPA has proposed an interim Remedial Action to address the source area groundwater contamination, EPA will continue to implement the indoor air component of the Selected Remedy in accordance with the 2011 ROD. The residential SSD systems are operating as designed and, provided they are left on, are working and maintaining the effectiveness of the remedy. A number of units have been replaced; the operational life expectancy of the fans is about 10 years, which is the age of the original units. A procedure is in place for homeowners to contact EPA in the event a unit fails, and replacement is a simple and relatively inexpensive process. In addition, the units are inspected annually.

The ROD indicated that subslab monitoring would be conducted at least every five years until the performance standards (for subslab soil vapor) are met. This was based on the assumption that COCs in groundwater underlying the neighborhood would decrease within the timeframes estimated in the 2011 ROD. However, since the levels of COCs, specifically TCE, remain elevated in the groundwater underlying the neighborhood, EPA has not conducted subslab sampling beneath the homes with SSD systems. However, as described earlier in this report, EPA did conduct pressure field extension testing in 2020 of the residential SSD systems to ensure sufficient vacuum was being created beneath the slabs. While this testing was conducted when the systems were first installed, EPA repeated testing to ensure site conditions have not changed. For those homes where insufficient vacuum was identified in one or more of the test ports, EPA made attempts to improve system operation. For those homes where vacuum remained marginal in one or more test ports, EPA conducted indoor air sampling to ensure potential Site-related contaminants were not migrating into the home above acceptable levels. Operation of the SSD systems will continue until the subslab vapors have achieved the cleanup goals specified in the ROD.

The ROD did not address indoor air within the Plant warehouse. EPA has conducted a number of indoor air sampling events in the warehouse to evaluate potential worker exposure, and information to date has not indicated indoor air concentrations of Site contaminants outside of the acceptable risk range. However, concentrations in indoor air have been detected at the upper-end of the acceptable risk range, and there is potential future risk based on subslab concentrations. Implementation of the interim source area remedy (the Interim ROD) is expected to eliminate the source of the VOC vapors. EPA will continue to monitor indoor air until the interim remedy is implemented, and evaluate subslab and indoor air following completion of the remedy.

Implementation of Institutional Controls

All ICs called for in the ROD to restrict the potable use of impacted water and protect the integrity of equipment are in place and are effective in preventing exposure to Site contaminants.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

Yes.

While risk methodology and inputs have changed since the ROD, the cleanup levels and RAOs are still valid. This is largely because the performance standards include a total-risk goal for both cancer risk and noncancer hazard, which is protective by definition. Once the cleanup goals specified in the ROD are met, EPA will conduct a risk assessment to ensure the cumulative risk presented by all remaining Site-related compounds is below a 1E-4 cancer risk level (for groundwater) and a 1E-6 cancer risk level (for indoor air), and the noncancer HI is equal to or less than 1. Therefore, the remedial goals are protective. EPA will continue monitoring PFAS and 1,4-dioxane to verify that they are addressed by the remedy. Following implementation of the forthcoming interim source area remedial action, EPA intends to evaluate remaining Site-related contamination and issue an amendment to the 2011 ROD.

Current conditions are protective. Estimated risks from exposure to soil, sediment, and surface water are within the acceptable risk range. Contaminated groundwater is not being consumed. Periodic sampling is conducted at the warehouse to confirm that conditions remain protective with respect to vapor intrusion. Eighteen residences have SSDs that prevent vapor intrusion.

Current exposure pathways are evaluated below.

Changes in Standards and TBCs

Have standards identified as ARARs, newly promulgated standards, and/or changes in TBCs been revised, and would such revisions call into question the protectiveness of the remedy?

In the ROD, four MCLs were identified for chemicals of concern in groundwater: TCE (5 ug/L), cis-1,2-DCE (70 ug/L), 1,1,1-TCA (200 ug/L), and vinyl chloride (2 ug/L). None of these MCLs have changed.

The groundwater remedy also includes a provision that “cumulative risk presented by all remaining Site-related compounds, and/or chemical oxidation breakdown products, is below a 10⁻⁴ cancer risk level, and the noncancer HI is equal to or less than 1.” This performance standard remains protective by definition, because it specifies acceptable target risks.

Similarly, the specific performance standards for subsurface vapor (ROD, Section 20.3.2) were accompanied by a risk-based standard as well, and therefore are protective.

Changes in Toxicity and Other Contaminant Characteristics

Have toxicity factors for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy? Have other contaminant characteristics changed in a way that could affect the protectiveness of the remedy?

Because the performance standards are based on total risk, no changes in toxicity factors could affect the protectiveness of the groundwater and vapor performance goals. Further, impacted groundwater is not being consumed and residential SSD systems are in place where necessary. The effect of changing toxicity factors on other media (soil, surface water, sediment) is discussed below.

Changes in Risk Assessment Methods

Have EPA's standardized risk assessment methodologies or guidance changed in a way that could affect the protectiveness of the remedy?

Risk assessment methodology continues to evolve. For example, standard default exposure factors were updated as recently as 2015. However, because the performance standards are based on total risk, no changes in methodology affect the protectiveness of the groundwater and vapor performance goals. The effect of changing risk assessment methods on other media is discussed below.

Changes in Exposure Pathways

Has land use or expected land use on or near the Site changed?

The site property use is commercial/industrial (a warehouse), surrounded by residences. The groundwater is provided by a public supplier. These uses have not changed since the ROD, and are not anticipated to change in the foreseeable future.

Have human health or ecological routes of exposure or receptors been newly identified or changed in a way that could affect the protectiveness of the remedy? Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?

The human receptors at the site are discussed below, grouped by the various media to which they might be exposed. The Screening Level Ecological Risk Assessment concluded that there were no unacceptable risks to ecological receptors and no further investigation was necessary.

GROUNDWATER

Groundwater is not currently consumed at the Site. "Garage well" GW-71, which was sampled historically, has been included under a state lead site (Polyclean) and is no longer considered as part of the Valmont TCE site. This well has a carbon treatment system on it. GW-70, a residential well located 2,500 feet north of the Site on Dessen Drive, was sampled historically and found to not have any Site-related contaminants.

Although local residential wells were replaced by a water line, some wells were retained by the homeowners for uses such as car washing and lawn watering. These scenarios were evaluated in 1993 (during review of the SI) and 2000 (as part of the RI) and were reevaluated in 2020 using updated site data, exposure factors, and toxicity factors. Both the past and current exposures were within acceptable ranges for Superfund; PFAS results were below the Lifetime Drinking Water Health Advisory of 70 ng/L for PFOA + PFOS in potable water.

VAPOR INTRUSION

Commercial/Industrial

The warehouse that is located over the original source area has been sampled regularly to ensure that VOCs in the slab do not migrate into indoor air at unacceptable concentrations. As stated earlier, EPA will continue to monitor indoor air quality.

Residential

As described earlier in this report, EPA conducted a number of indoor air and subslab sampling events at residences that had either not been sampled before, or the results of historical sampling were below then-current screening levels but above current screening levels, or they were sampled to evaluate the performance of the SSD systems. These efforts led to the repair of a non-EPA installed SSD system and inclusion in the annual inspection program of one residence, affirmation that vapor intrusion was not occurring at several other residences, and affirmation that existing SSD systems are functioning properly in a number of other residences.

Ideally, vapor intrusion sampling of homes that have never been sampled, or that exhibited some contamination in the past and were not sampled in the EE/CA, is recommended if the residents will grant access. EPA will continue outreach to those properties overlying the Site-related groundwater plume and offer sampling.

SOIL

Soil data from the industrial property were included in the RI, but they did not receive a quantitative risk assessment because a soil removal action was already planned to address the VOCs. Post-removal-action soil data from the industrial property were obtained in 2010. The cleanup goals for this soil were 5 ug/kg TCE and 39 ug/kg cis-1,2-DCE; these goals were met. (The soil confirmation samples were actually non-detect for cis-1,2-DCE.) These concentrations would still be protective for direct contact with the soil and for vapor emission into ambient outdoor air. The other two exposure pathways of interest would be vapor intrusion into the warehouse and migration of VOCs to groundwater. Those pathways are being dealt with more directly (see discussions of groundwater and vapor intrusion, above).

During the RI, soil samples were also obtained from residential properties. These soils did not undergo removal. Incorporating updated toxicity factors and default exposure factors for this five-year review, the risks from these soils are still at acceptable levels.

SURFACE WATER / SEDIMENT

Black Creek surface water and sediment were sampled for the RI; the risks were acceptable at the time. The data were rescreened for this five-year review to determine whether any chemicals would now be chemicals of concern due to updated risk factors or methodology. Surface water data were screened using the November 2020 Regional Screening Level (RSL) tap water concentrations multiplied by a factor of 10 (on the assumption that exposure to surface water would be at least 10X less frequent than exposure to residential tap water). Similarly, sediment was screened using the residential soil RSLs X 10.

No surface water chemicals exceeded screening levels. In sediment, chromium (maximum 6.8 mg/kg) exceeded screening levels. This concentration was used in the RSL calculator for recreational sediment exposure, at an exposure time of 4 hours/day and a conservative exposure frequency of 180 days/yr. Even under this conservative scenario, cancer risks would be within the acceptable 1E-6 to 1E-4 risk range, and the Hazard Index would be well below 1. Therefore, EPA concludes that surface water and sediment conditions would still be protective for human health.

Are there newly identified contaminants or contaminant sources leading to a potential/actual pathway not previously addressed by the remedy? Are there are unanticipated toxic byproducts or daughter products of the remedy not previously addressed by the decision documents?

PFAS were identified as site-related compounds because stain-resistant coatings were applied to fabrics at the site. However, the PFAS-contaminated wells are not used for potable purposes. Any risk associated with the PFAS would be addressed by the ROD's total risk performance standard. EPA will ensure that the future amendment to the final remedy addresses all groundwater contamination as necessary. In addressing the near-term goal of reducing the source contamination, EPA is designing its interim groundwater remedy to avoid mobilizing PFAS.

Recent groundwater sampling has confirmed 1,4-dioxane in the warehouse area. Groundwater is not currently consumed, so this does not compromise short-term protectiveness of the current remedy. While EPA found that concentrations of 1,4-dioxane were within the acceptable risk range, any risks posed by 1,4-dioxane would be addressed by the ROD's total risk performance standard.

Expected Progress Towards Meeting RAOs

Have new site conditions (e.g., discovery of new contaminants) impacted RAOs and remedy protectiveness? Is the remedy progressing as expected towards meeting RAOs?

The groundwater treatment has not reduced contamination to the extent that was expected. As a result, EPA has proposed an interim Remedial Action to address source area contamination. Vapor intrusion is also an ongoing potential risk, for which the SSDs must be maintained to continue to prevent exposure.

ICs are fully in place, and use of contaminated groundwater is prevented now and in the foreseeable future. The eventual goal of the remedy is to restore the aquifer and eliminate the threat of vapor intrusion.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

In order to ensure that the remedy is protective of human health and the environment in a changing climate, climate change vulnerabilities at the Site have been considered. Average temperatures in the region are expected to increase and while Black Creek may be impacted by a 100-year flood event, the extent of the flooding zone is more than 600 ft downgradient of the current extent of PFAS contamination. Therefore, it is not expected that climate change vulnerabilities will impact the remedy or protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues and Recommendations Identified in the Five-Year Review:

OU(s):01	Issue Category: Remedy Performance			
	Issue: The 2011 Selected Remedy was ineffective in addressing site-wide VOC groundwater contamination in a timeframe that would achieve restoration of groundwater to beneficial use.			
	Recommendation: Implement interim source area remedy and address remaining VOC contamination in a final site-wide amendment to the ROD.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA	8/14/2030

OU(s):01	Issue Category: Changed Site Conditions			
	Issue: PFAS are present in groundwater and are above EPA's risk-based screening levels.			
	Recommendation: Avoid mobilization of PFAS contamination during implementation of the interim source area remedy and address remaining PFAS contamination in a final site-wide amendment to the ROD.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA	8/14/2030

OTHER FINDINGS

There are a few homes overlying the VOC groundwater contaminant plume where vapor intrusion sampling has not yet occurred. These are residents who have historically been unresponsive when EPA requests access or whom have denied access. EPA will continue to make efforts to request access to conduct vapor intrusion sampling at these homes and will reach out to new homeowners if and when property ownership changes.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
<i>Operable Unit:01</i> 1	<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy is considered protective in the short term because residents are provided with municipal water, the residential subslab depressurization units are operational and ICs are in place. Therefore there is no current exposure. In order for the remedy to be protective in the long term, EPA will implement a source area interim groundwater remedy and address site-wide groundwater contamination in a final ROD amendment.	

VIII. NEXT REVIEW

The next FYR report for the Valmont TCE Site is required five years from the completion date of this review.

Government Performance and Results Act (GPRA) Measure Review

As part of this FYR, the GPRA Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

Environmental Indicators

Human Health: Human Exposure under Control and Protective Remedy in Place (HEUC)

Groundwater Migration: Groundwater Migration under Control (GMUC)

Sitewide Ready for Anticipated Use (SWRAU)

The Site achieved Sitewide Ready for Anticipated Use (SWRAU) on March 31, 2015.

ATTACHMENTS

TABLE 1
2020 TCE Concentrations (ug/L)

WELL	AREA	2020
MW-6S	NEIGHBORHOOD	24
MW-6I	NEIGHBORHOOD	14
MW-7S	NEIGHBORHOOD	56
MW-7I	NEIGHBORHOOD	13
MW-8S	NEIGHBORHOOD	18
MW-8D	NEIGHBORHOOD	2.7
GW-24	NEIGHBORHOOD	71
MW-25S	NEIGHBORHOOD	ND
MW-25I	NEIGHBORHOOD	ND
MW-1A	INDUSTRIAL PARK	ND
MW-26S	NEIGHBORHOOD	ND
MW-26I	NEIGHBORHOOD	ND
E-1S	INDUSTRIAL PARK	700
E-1I	INDUSTRIAL PARK	29
E-2S	INDUSTRIAL PARK	37
E-2I	INDUSTRIAL PARK	14
E-3S	INDUSTRIAL PARK	300
E-3I	INDUSTRIAL PARK	4500
E-4S	INDUSTRIAL PARK	1200
E-6S	INDUSTRIAL PARK	91
E-7S	INDUSTRIAL PARK	570
E-7I	INDUSTRIAL PARK	480
E-8S	INDUSTRIAL PARK	15
E-9S	INDUSTRIAL PARK	14,000
E-9I	INDUSTRIAL PARK	8100
E-10S	INDUSTRIAL PARK	190
E-11S	INDUSTRIAL PARK	55,000
E – 11I	INDUSTRIAL PARK	17,000
E-12S	INDUSTRIAL PARK	9000
E-13S	INDUSTRIAL PARK	1,100
E-13I	INDUSTRIAL PARK	230
E-14S	INDUSTRIAL PARK	130
E-14I	INDUSTRIAL PARK	170
MW-10A	INDUSTRIAL PARK	620
MW-10B	INDUSTRIAL PARK	ND
MW-10C	INDUSTRIAL PARK	ND
MW-11S	INDUSTRIAL PARK	2500
MW-11D	INDUSTRIAL PARK	190
MW-12S	INDUSTRIAL PARK	2000
MW-12I	INDUSTRIAL PARK	9.5
MW-13S	INDUSTRIAL PARK	180
MW-13I	INDUSTRIAL PARK	35

TABLE 1
2020 TCE Concentrations (ug/L)

WELL	AREA	2020
MW-13D	INDUSTRIAL PARK	ND
MW-14S	INDUSTRIAL PARK	ND
MW-14I	INDUSTRIAL PARK	ND
MW-14D	INDUSTRIAL PARK	ND
MW-15S	INDUSTRIAL PARK	7.7
MW-15D	INDUSTRIAL PARK	ND
MW-16S	INDUSTRIAL PARK	6.2
MW-16I	INDUSTRIAL PARK	2.3
MW-16D	INDUSTRIAL PARK	7.5
MW-17S	INDUSTRIAL PARK	1.1
MW-17I	INDUSTRIAL PARK	ND
MW-18S	INDUSTRIAL PARK	940
MW-19I	INDUSTRIAL PARK	ND
MW-19D	INDUSTRIAL PARK	ND
MW-20S	INDUSTRIAL PARK	ND
MW-20D	INDUSTRIAL PARK	ND
MW-21S	INDUSTRIAL PARK	ND
MW-21I	INDUSTRIAL PARK	ND
MW-21D	INDUSTRIAL PARK	ND
MW-22D	INDUSTRIAL PARK	240
MW-23S	INDUSTRIAL PARK	30
MW-23I	INDUSTRIAL PARK	3.4
MW-28S	INDUSTRIAL PARK	440
MW-28I	INDUSTRIAL PARK	14
MW-31S	INDUSTRIAL PARK	300
MW-31I	INDUSTRIAL PARK	5600
MW-32S	INDUSTRIAL PARK	75,000
MW-33S	INDUSTRIAL PARK	10,000
MW-34S	INDUSTRIAL PARK	200
MW-35S	INDUSTRIAL PARK	190

Table 2. Perfluorinated Compounds Results from March 2020 (ng/L)

Well ID	Location	2020		
		PFOA	PFOS	Combined
GW-24	NEIGHBORHOOD	28.7	27.7	56.4
MW-06S	NEIGHBORHOOD	49.9 J	240 J	289.9 J
MW-06I	NEIGHBORHOOD	8.93 UJ	8.93UJ	ND
MW-7S	NEIGHBORHOOD	20.8 J	15.1 J	35.9 J
MW-7I	NEIGHBORHOOD	16.6 J	8.93 UJ	16.6 J
MW-19I	NEIGHBORHOOD	8.77 UJ	8.77 UJ	ND

MW-19D	NEIGHBORHOOD	8.93 UJ	8.93 UJ	ND
MW-25S	NEIGHBORHOOD	9.09 UJ	9.09 UJ	ND
MW-25I	NEIGHBORHOOD	9.09 UJ	9.09 UJ	ND
MW-26S	NEIGHBORHOOD	8.77 U	31	31
MW-26I	NEIGHBORHOOD	3.33 U	3.33 U	ND
MW-27	NEIGHBORHOOD	3.33 U	3.33 U	ND
MW-8S	INDUSTRIAL PARK	21.2 J	27.6 J	48.8 J
MW-8D	INDUSTRIAL PARK	8.77 UJ	8.77 UJ	ND
MW-10A	INDUSTRIAL PARK	-	-	-
MW-10B	INDUSTRIAL PARK	-	-	-
MW-10C	INDUSTRIAL PARK	-	-	-
MW-11S	INDUSTRIAL PARK	29.6 J	35.3 J	64.9 J
MW-11D	INDUSTRIAL PARK	8.77 UJ	8.77 UJ	ND
MW-12S	INDUSTRIAL PARK	-	-	-
MW-13S	INDUSTRIAL PARK	51.7 J	151 J	202.7 J
MW-13I	INDUSTRIAL PARK	23.2 J	17.7 J	40.9 J
MW-13D	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-14S	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-14I	INDUSTRIAL PARK	8.62 UJ	8.62 UJ	ND
MW-14D	INDUSTRIAL PARK	8.77 UJ	8.77 UJ	ND
MW-15S	INDUSTRIAL PARK	-	-	-
MW-16D	INDUSTRIAL PARK	8.47 UJ	8.47 UJ	ND
MW-16I	INDUSTRIAL PARK	9.81 J	8.93 UJ	9.81 J
MW-16S	INDUSTRIAL PARK	10.9 J	9.86 J	20.76 J
MW-18	INDUSTRIAL PARK	-	-	-
MW-22D	INDUSTRIAL PARK	352 J	156 J	508 J
MW-28S	INDUSTRIAL PARK	-	-	-
MW-31I	INDUSTRIAL PARK	-	-	-
MW-31S	INDUSTRIAL PARK	-	-	-
MW-32S	INDUSTRIAL PARK	-	-	-
MW-34S	INDUSTRIAL PARK	-	-	-
E-1S	INDUSTRIAL PARK	243 J	662 J	905 J
E-1I	INDUSTRIAL PARK	28.6 J	26.1 J	54.7 J
E-2S	INDUSTRIAL PARK	-	-	-
E-3S	INDUSTRIAL PARK	136 UJ	484 J	620
E-3I	INDUSTRIAL PARK	526 J	293 J	819 J
E-4S	INDUSTRIAL PARK	293 J	802 J	1095 J
E-7S	INDUSTRIAL PARK	102 J	208 J	310 J
E-7I	INDUSTRIAL PARK	61.8 J	167 J	228.8 J
E-9S	INDUSTRIAL PARK	695 J	385 J	1080 J
E-9I	INDUSTRIAL PARK	513 J	590 J	1103 J
E-11S	INDUSTRIAL PARK	1390 J	969 J	2359 J
E-11I	INDUSTRIAL PARK	349 J	48.4	397.4 J
E-13S	INDUSTRIAL PARK	360 J	507 J	867 J
E-13 I	INDUSTRIAL PARK	24.9	18.2	43.1

MW-1A	INDUSTRIAL PARK	12.7 J	21.1 J	33.8 J
MW-1B	INDUSTRIAL PARK	8.47 UJ	8.47 UJ	ND
MW-1C	INDUSTRIAL PARK	8.62 UJ	8.62 UJ	ND
MW-2S	INDUSTRIAL PARK	15.5 J	36.5 J	52
MW-2I	INDUSTRIAL PARK	8.62 UJ	8.62 UJ	ND
MW-17I	INDUSTRIAL PARK	-	-	-
MW-17S	INDUSTRIAL PARK	-	-	-
MW-19S	INDUSTRIAL PARK	-	-	(DRY WELL-NOT SAMPLED)
MW-19I	INDUSTRIAL PARK	8.77 UJ	8.77 UJ	ND
MW-19D	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-20S	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-20D	INDUSTRIAL PARK	8.77 UJ	8.77 UJ	ND
MW-21I	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-21S	INDUSTRIAL PARK	8.87 J	9.64 J	18.51 J
MW-21D	INDUSTRIAL PARK	8.93 UJ	8.93 UJ	ND
MW-23I	INDUSTRIAL PARK	8.62 UJ	8.62 UJ	ND
MW-23S	INDUSTRIAL PARK	12.5 J	11 J	12.5 J

Bold = concentration above risk-based screening level of 0.4 ug/L

J = value is estimated

ND = Not detected

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctane sulfonate

U = Analyte not detected

ng/L = Nanogram per liter

FIGURES

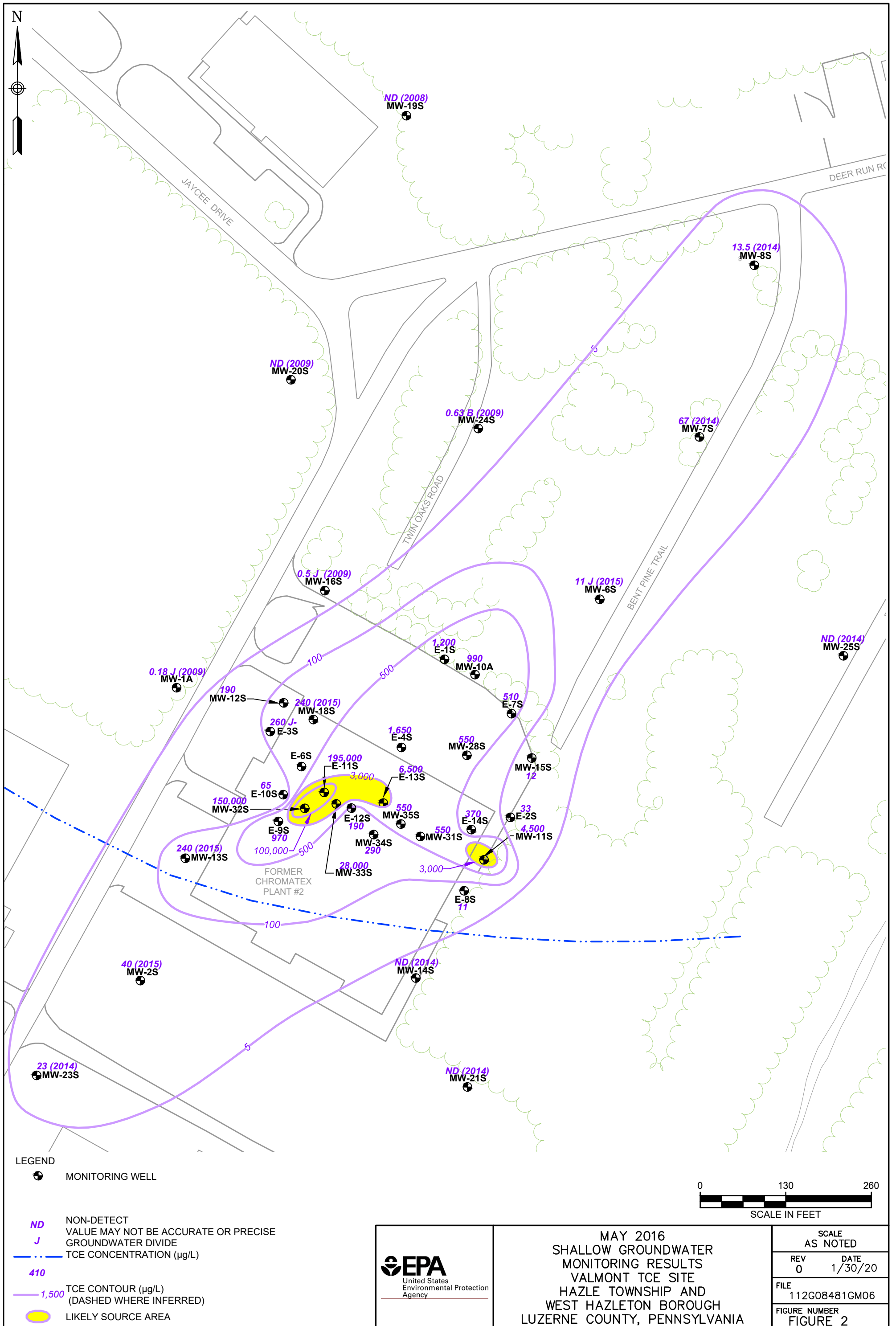
Figure 1 - Site Layout



SITE LOCATION
 VALMONT TCE SITE
 HAZLE TOWNSHIP AND WEST HAZLETON BOROUGH
 LUZERNE COUNTY, PENNSYLVANIA

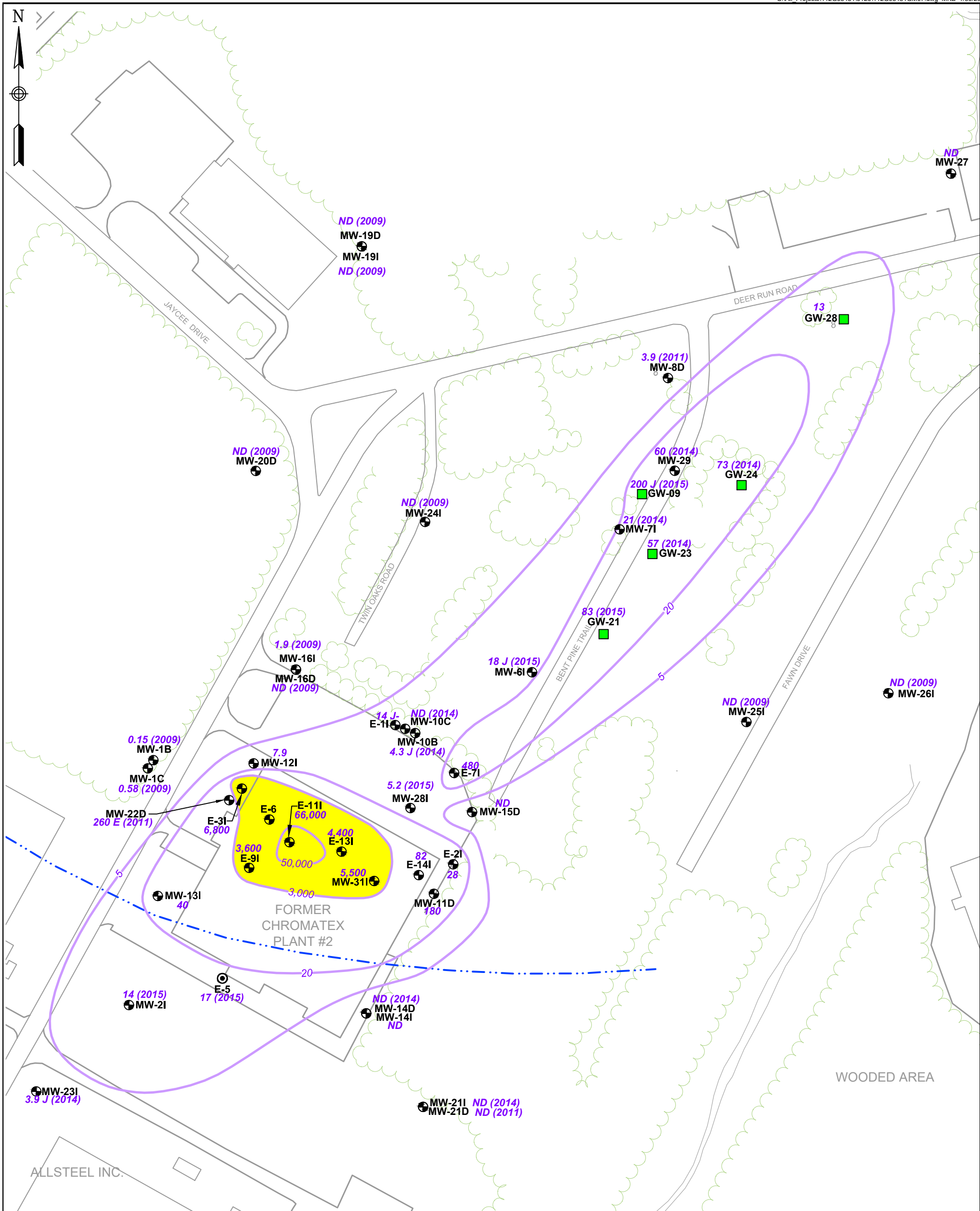
SCALE AS NOTED	
FILE Site_Location	
REV 0	DATE 04/01/20
FIGURE 1	

Figure 2 - Shallow Bedrock Groundwater TCE Concentrations. Shallow bedrock VOC source areas are shown in yellow.



*Delineation of residences has been removed from figures to protect privacy

Figure 3 - Deep Bedrock Groundwater TCE Concentrations. Deep bedrock VOC source area is shown in yellow.



- LEGEND**
- MONITORING WELL
 - INJECTION WELL
 - FORMER POTABLE WELL

- ND** NON-DETECT
- J or E** VALUE MAY NOT BE ACCURATE OR PRECISE
- GROUNDWATER DIVIDE
- 39** TCE CONCENTRATION (µg/L)
- TCE CONTOUR (µg/L)
(DASHED WHERE INFERRED)
- LIKELY SOURCE AREA

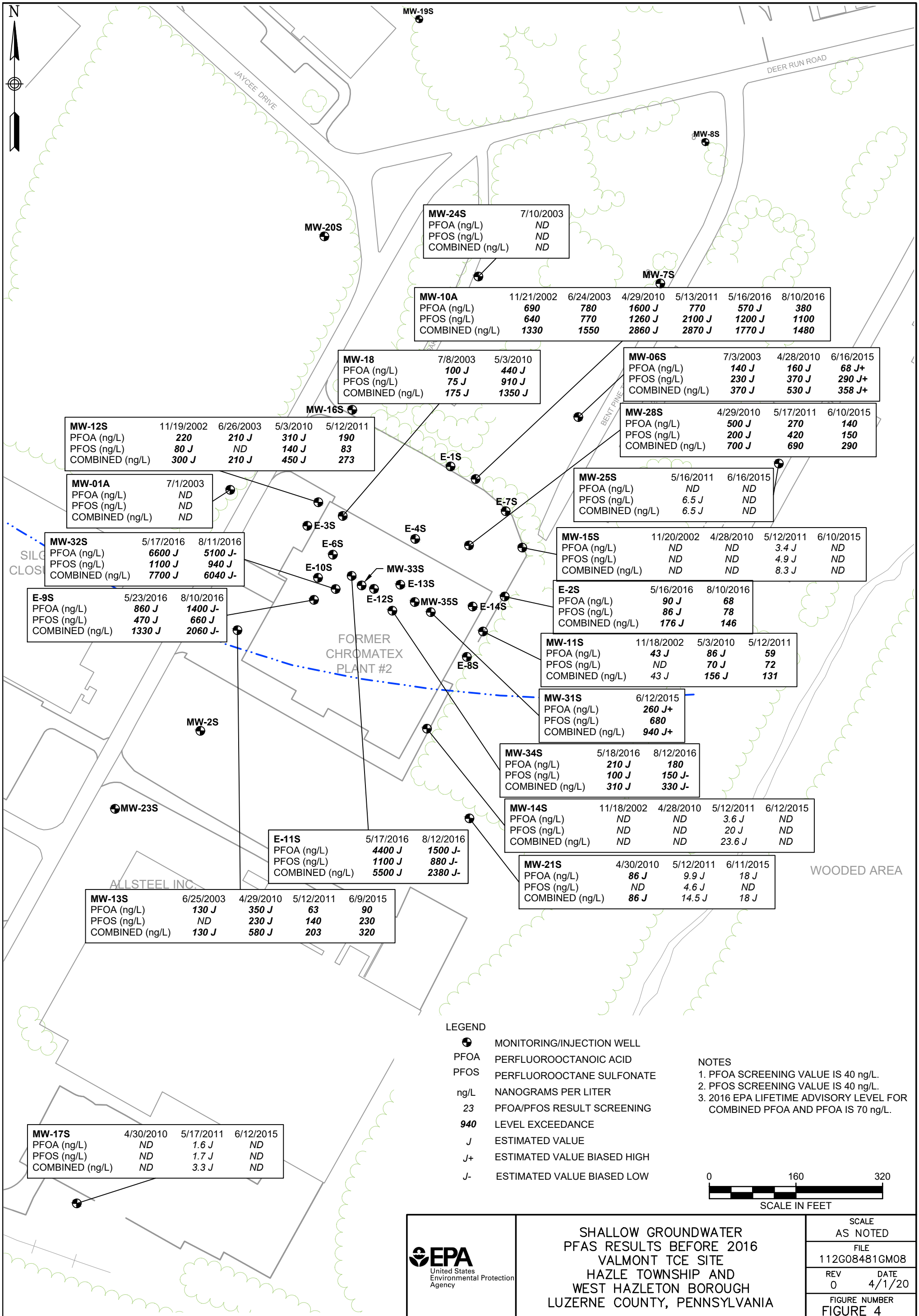


MAY 2016
 DEEP GROUNDWATER
 MONITORING RESULTS
 VALMONT TCE SITE
 HAZLE TOWNSHIP AND
 WEST HAZLETON BOROUGH
 LUZERNE COUNTY, PENNSYLVANIA

SCALE AS NOTED	
REV 0	DATE 1/30/20
FILE 112G08481GM07	
FIGURE NUMBER FIGURE 3	

*Delineation of residences has been removed from figures to protect privacy

Figure 4 - Shallow Bedrock Groundwater PFOA/PFOS Concentrations



*Delineation of residences has been removed from figures to protect privacy

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