U.S. EPA Superfund Program
Proposed Remedial Action Plan

Foster Wheeler Energy Corporation/Church Road Trichloroethene Superfund Alternative Site Wright Township, Luzerne County, Pennsylvania

A. INTRODUCTION

Dates to Remember

June 16, 2026 to July 16, 2026
Public Comment Period on EPA's Proposed Plan (30 Days)

Public Meeting: June 30, 2026
Location: **Saint Jude Parish**
420 S Mountain Blvd.
Mountain Top, PA 18707
Time: **6:00 to 7:30 pm**

A formal presentation will begin at ***6:00 pm.***

The United States Environmental Protection Agency (EPA) is issuing this Proposed Remedial Action Plan (Proposed Plan) to present the Preferred Alternative for a Final Remedial Action at the Foster Wheeler Energy Corporation/Church Road Trichloroethene (TCE) Superfund Alternative Site (Site). This Proposed Plan includes a summary of remedial alternatives evaluated to transition the remedy from interim to final at the Site, provides the rational for proposing the Preferred Alternative, addresses Sitewide groundwater impacts and memorializes ongoing activities at the Site resulting from completed remedial actions.

The Site is located in Mountain Top, Wright Township, Luzerne County, Pennsylvania. The Site was proposed for the National Priorities List (NPL) in September 2007 and currently follows the Superfund Alternative Approach (SAA).[1] The SAA uses the same investigation, cleanup process, and standards that are used for sites listed on the NPL. While the Site remains proposed for the NPL, it has not been listed on the NPL. The National Superfund Database Identification Number is PAD003031788.

In this Proposed Plan, EPA describes its Preferred Alternative for a final remedy for the Site to address risks to human health and the environment presented by consumption of site-related contaminated groundwater and exposure to vapor intrusion. The Preferred Alternative for the Site is **Alternative 3**. The estimated total cost for Alternative 3 is approximately $7,396,000. The Preferred Alternative includes the following components:

- Continued operation and optimization of the existing groundwater extraction and treatment system (GETS);
- Contingent soil vapor investigation and mitigation for vapor intrusion (VI) risk;
- Monitored natural attenuation (MNA) downgradient from the GETS capture zone; and
- Expansion of institutional controls (ICs) and implementation of engineering controls.

[1] Superfund Alternative Approach (https://www.epa.gov/enforcement/superfund-alternative-approach).

In addition to the above-listed components, all of the ongoing activities resulting from the completed remedial actions implemented under the Interim ROD will continue. These will include routine inspections and maintenance of the Cap over the source area soils (SAS) and the Former Wastewater Treatment Pond (FWWTP), as well as operation of the spring aeration system in the Affected Area (AA) and the existing sub-slab depressurization systems (SSDS) in the AA.

EPA is the lead agency for Site activities, and the Pennsylvania Department of Environmental Protection (PADEP) is the support agency. This Proposed Plan summarizes information from the 2018 Remedial Investigation (2018 RI) Report and the July 2025 Feasibility Study (2025 FS) conducted for the Site. A previous Feasibility Study was completed in 2018 (2018 FS), at the time of the Remedial Investigation; the 2025 FS was completed to evaluate remedial alternatives for the remaining portions of the Site that require additional or ongoing clean-up actions.

EPA, in consultation with PADEP, will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period. The final remedy will be documented in a Final Record of Decision (ROD) for the Site.

Although this Proposed Plan describes EPA's Preferred Alternative, EPA welcomes the public's comments on each of the alternatives presented in this Proposed Plan. The public comment period runs from June 16, 2026 to July 16, 2026, and a public meeting will be held on June 30, 2026 at Saint Jude Parish, located at 420 S Mountain Boulevard, Mountain Top, Pennsylvania. The public's comments and EPA's responses to those comments will be documented in the Responsiveness Summary section of the Final ROD for the Site. Based on public comments or new information, EPA, in consultation with PADEP, may modify the Preferred Alternative or select another alternative presented in this Proposed Plan after all necessary public participation requirements are met.

This Proposed Plan is being issued as part of EPA's public participation requirements under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9617(a), commonly known as the Superfund Law, and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300.430 (f)(2).

This Proposed Plan summarizes information that can be found in greater detail in the 2018 RI Report, the 2018 Interim ROD, the 2025 FS and other documents contained in the Administrative Record file supporting this action. EPA encourages the public to review all the documents that make up the Administrative Record to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted to date at the Site. The Administrative Record for the Site can be accessed from any computer linked to the internet at https://semspub.epa.gov by searching Region 3 and Administrative Record (which are all drop down menus) and typing in the EPA ID for the Site (PAD003031788). The Administrative Record file for this proposed action can also be accessed via the internet at www.epa.gov/superfund/fosterwheeler, and select the Remedial Collection Description. Internet access is available locally at the Marian Sutherland Kirby Library (information provided below).

The Site Administrative Record file may also be viewed at the following locations:

U.S. EPA Region 3
Administrative Records Room
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103
215-814-2396
By appointment only

Marian Sutherland Kirby Library
35 Kirby Avenue, Mountain Top, PA 18707
Phone: 570-474-9313
Fax: 570-474-2587
E-mail: info@kirbylib.org

B. SITE BACKGROUND

Site Name, Location, and Description

The Site is located in Mountain Top, Wright Township, Luzerne County, Pennsylvania, approximately five to six miles south of Wilkes-Barre, Pennsylvania (Figure 1).

The Site includes the following three areas, as shown on Figure 2:

- The former Foster Wheeler Energy Corporation (FWEC) Facility, an approximately 105-acre property (former FWEC Facility or Property), located in the northeastern portion of the Site at 348 Crestwood Drive, within the Crestwood Industrial Park Complex. Figure 3 includes the layout of the former FWEC Facility;
- The AA,[2] primarily a residential area that extends from east to west along Church Road and Watering Run, is approximately 295 acres in size and is generally located south and southwest of the former FWEC Facility; and
- The Surrounding Industrial Properties (SIPs), located immediately south and west of the former FWEC Facility and consisting of eight separate commercial/industrial properties.

Land use near the Site includes a mixture of industrial, commercial, and residential uses. The former FWEC Facility and the SIPs are zoned for industrial use. The AA consists of mixed land use (mostly residential), centered along the main channel of Watering Run and Church Road. Future land use is anticipated to remain consistent with current land use.

Site History

Former FWEC Facility

FWEC operated the former FWEC Facility from 1953 until 1984, where it manufactured large pressure vessels utilized in oil refineries, electric utility plants, and the shipping industry. FWEC ceased operations at the Property in 1984. From 1989 through 1997, Morrison-Knudsen (MK) and its successors manufactured and remanufactured locomotives, small power control units, and flat cars for rail transportation of tractor-trailers at the Property. The Property was not active from 1997 through 2003, and from 2003 through 2011 Westinghouse Air Brake Technologies (Wabtec) used the Property for warehousing of products (primarily

[2] The AA is defined in the *Administrative Settlement Agreement and Order by Consent for Removal Response Action for the FWEC/Church Road TCE Site, dated August 29, 2005, Docket No. CERC-03-2005-0349DC* (2005 Order).

fiberglass insulation products) by third parties under a lease agreement. From 2011 through early 2025 the Property was used for tractor-trailer parking, also under a lease agreement with third parties. Currently, the Property is not being used for any purpose.

Affected Area

The AA is located south and southwest of the former FWEC Facility and consists of primarily residential development along Church Road, Sunset Gardens, Elbe Road, and South Mountain Boulevard, with limited commercial properties in the westernmost portion. Saint Jude's Church complex, which includes an elementary school, is located adjacent to the intersection of Church Road and Route 309. The AA also includes the Hillcrest Estates at Mountaintop (Hillcrest Estates), a residential development effort that began in March/April 2022. Continued construction is presently occurring at Hillcrest Estates.

Surrounding Industrial Properties

The former FWEC Facility is located within Crestwood Industrial Park. Crestwood Industrial Park is approximately 1,050 acres in size and is utilized by industries and manufacturers for mixed industrial use. Eight SIPs are located to the south and west of the former FWEC Facility and within approximately 0.25 miles of Watering Run. Some, but not all, of these commercial properties are located between the former FWEC Facility and the AA. These facilities represent the most proximal industrial locations, besides the former FWEC Facility, that could potentially be contributing contaminants via single or multiple migration pathways to Watering Run and groundwater.

Regulatory History and Previous Environmental Investigations

The following is a summary of environmental investigations and environmental remediation activities at the Site.

On February 1980, an electrical transformer in the main bay of the Main Building at the former FWEC Facility leaked Pyranol, a coolant containing polychlorinated biphenyls (PCBs), onto the concrete floor of the building. The estimated area affected by the spill was thirty feet by seventy feet and included an area along the interior railroad tracks. FWEC reported the spill to authorities, cleaned the area affected by the spill, and disposed of the waste at a permitted facility.

In 1985, prior to a potential sale of the Property, a prospective purchaser conducted an Environmental Assessment of the former FWEC Facility. The Environmental Assessment included the review of plant operations; sampling and analysis for asbestos; drilling of 11 soil borings; chemical analysis of selected samples for TCE, PCBs, and oil; sampling of surface and subsurface soils in the former vapor degreaser area (FVDA) for TCE; sampling for PCBs in the former spill area; and sampling and analysis of the contents of the hydrotesting sump. The Environmental Assessment concluded that further investigation be undertaken at the former vapor degreaser, the PCBs spill site area, and the hydrotesting sump. Soil samples taken from the area close to the sealed vapor degreaser indicated elevated concentrations of TCE ranging from 0.08 to 13.1 milligrams per kilogram (mg/kg). This area has since been referred to as the SAS.

In August 1986, EPA conducted a Preliminary Assessment for the Site. On February 24, 1988, FWEC, EPA, and the Pennsylvania Department of Environmental Resources (PADER), now known as PADEP, entered into a Consent Agreement and Order, Docket Number III-88-08-DC (1988 Order). The 1988 Order required FWEC to

begin the implementation of a Site Investigation Program to begin identifying remedial work that needed to be done at the Site. FWEC submitted its Site Investigation Plan to EPA and PADER in 1988, and by December 1989, FWEC had completed its Site Remediation Program Report.

Prior to purchasing the Property in September 1989, MK performed investigation activities at the Site in August and September 1989. The investigation included a review of aerial photographs, a record search, a soil investigation in select areas of the former FWEC Facility, and installation and sampling of 13 groundwater monitoring wells.

Following MK's purchase of the Property in September 1989, MK removed six former underground storage tanks (UTSs) from the Site. The following USTs were excavated and disposed of off-Site: two fuel oil USTs (1,000- and 10,000-gallon) north and west of the X-Ray Building; three 30,000-gallon fuel oil USTs east-southeast of the Finish Paint Building; and one 500-gallon UST west of the southeastern corner of the Main Building.

In 1991, pursuant to the 1988 Order, FWEC implemented design and construction of an Interim Remedial Measure (IRM) consisting of a GETS to remove contaminants, specifically TCE, from groundwater through air-stripping, and to control and stabilize the contamination downgradient of the SAS and near the Site boundary. The GETS commenced operations in October 1993 and is still in operation today. Treated effluent from the GETS is discharged to the headwaters of Watering Run, a drainage feature located at the southern portion of the Property. Five extraction wells, two near the SAS and three near the former FWEC Facility's southern boundary, currently remove and treat groundwater affected by TCE from the hydrostratigraphic units underlying the Site. Regular sampling has been conducted to monitor the effectiveness of the GETS as well as capture seasonal fluctuation. The GETS has been effective in reducing groundwater contaminant concentrations at the former FWEC Facility. TCE was detected at the former FWEC Facility prior to operation of the GETS at a maximum concentration of 180,000 micrograms per liter (µg/L). The most recent maximum concentration of TCE detected at the former FWEC Facility was 600 µg/L in 2024. Figure 4 depicts the GETS components on the former FWEC Facility.

Wabtec entered into a Consent Order and Agreement with PADEP in October 2003 (Act 2 Agreement) for Remediation/Reuse of a Special Industrial Site under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2). The Act 2 Agreement includes findings that the "intended use" of the former FWEC Facility is for "industrial activity" and is in accordance with local zoning. The "reuse excludes developing" any portion of the former FWEC Facility "for recreational areas, schools, nursing homes, and other residential-style facilities unless a residential statewide health standard is first attained" at the former FWEC Facility and approved by PADEP. The Act 2 Agreement also includes the following restrictions: (1) prohibition on the use of groundwater at the former FWEC Facility for any purpose, (2) limiting use of the former FWEC Facility to industrial uses, and (3) restrictions on excavations in the SAS. The Act 2 Agreement requires an Environmental Covenant (EC) in order to be fully enforced, and to date, an EC has not been signed despite several attempts from FWEC, PADEP, and EPA to coordinate with Wabtec. However, at the time of issuance of this Proposed Plan, an EC has been drafted and is under review by all parties. Lastly, the Act 2 Agreement is restricted to the former FWEC Facility and does not include the AA or the SIPs.

In September 2004, groundwater samples were collected from 16 private wells located at residential properties along Church Road. Analytical results indicated detected concentrations of TCE in 15 of the 16

samples collected, at concentrations up to 160 µg/L. Fourteen of the samples contained concentrations of TCE above the EPA Maximum Contaminant Level (MCL) of 5 µg/L[3]. Bottled water was provided to affected residences, and additional samples from residential wells were collected. Carbon filtration systems were installed at residences where TCE was detected in samples collected from residential wells and were operated until the residences were permanently connected to the public water supply in 2007.

In 2005, FWEC and EPA executed an Administrative Settlement Agreement and Order by Consent for Removal Response Action for the Church Road TCE Site, dated August 29, 2005, Docket No. CERC-03-2005-0349DC (2005 Order). The 2005 Order required FWEC to perform quarterly sampling, connect affected properties to public water and abandon residential wells within the AA. By July 21, 2007, FWEC had completed the final connections to public water at all 36 locations for which FWEC had received signed Water Line Agreements. For the one residence where FWEC could not secure a Water Line Agreement for connection to public water, FWEC purchased three carbon filter tanks for that residence. After the affected residences were connected to public water, sampling was conducted quarterly at the six sentinel well properties and selected groundwater seeps within the AA. The final quarterly sampling event was completed in February 2013.

On April 2, 2009, EPA and FWEC amended the 2005 Order (Amended 2005 Order) to connect four additional homes adjacent to the AA to public water and to cover a groundwater seep with gravel. In December 2009, FWEC removed vegetation and placed filter fabric and gravel over the seep to eliminate the potential for human and animal contact with groundwater contaminated with TCE. FWEC installed an enhancement to the seep IRM in September and October 2011. The enhancement consisted of an electric powered aeration system designed to reduce concentrations of TCE in the water collected in a man-made structure adjacent to the seep. In September 2012, a Response Action Report was issued to close out activities required in the Amended 2005 Order.

On April 9, 2009, EPA and FWEC entered into an Administrative Settlement Agreement and Order on Consent for a Remedial Investigation/Feasibility Study (RI/FS) (RI/FS AOC), Docket No. 03-CERC-2009-0061DC. Under the RI/FS AOC, FWEC agreed to investigate and evaluate cleanup options following the SAA.

The RI/FS was conducted from 2009 through 2018, and the results are presented in the 2018 RI Report and the 2018 FS. The results of RI showed that the concentrations of TCE in groundwater at the Site are declining due to the operation of the GETS and natural attenuation processes. However, residual source areas remained on the former FWEC Facility that needed to be addressed. Based on the data analyses and risk assessment performed during the RI/FS, there were no immediate human health risks or threats to ecological receptors, although the potential for future risk warranted further action be taken at the Site.

In September 2018, EPA issued an Interim ROD selecting an interim remedy for soil, sediment, and groundwater contamination at the former FWEC Facility and Sitewide VI (Selected Interim Remedy). The Selected Interim Remedy included continued groundwater extraction and treatment using the existing GETS, optimization of the GETS to ensure complete capture of the plume on the former FWEC Facility, capping and soil vapor extraction (SVE) treatment of SAS, sediment removal and wetland restoration at the former wastewater treatment pond (FWWTP), VI monitoring and mitigation, groundwater monitoring (for GETS

[3] 40 C.F.R. § 141.61(a)(5), Code of Federal Regulations, MCLs for organic contaminants (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141/subpart-G/section-141.61).

performance monitoring and to establish contaminant trends post-GETS optimization), and groundwater use restrictions (in the form of ICs).

On December 19, 2019, EPA entered into a Consent Decree with FWEC for the preparation of the interim remedial design and implementation of the Interim Remedial Action at the Site. Per the Consent Decree, FWEC continues to be responsible for long-term monitoring activities at the Site to monitor the effectiveness of the Interim Remedial Action. The Consent Decree also outlines land, water, or other resource use restrictions, including: (1) use and/or contact with groundwater at the former FWEC Facility, (2) activities that adversely impact the Selected Interim Remedy, such as excavation or construction, and (3) conduct vapor intrusion sampling at new construction located within 100 feet of the contaminant plume and at existing structures if concentrations of contaminants in groundwater increase by an order of magnitude.

The remedies selected in the Interim ROD included both capping and SVE treatment, if practicable, for the SAS at the FVDA. In accordance with the Interim ROD, FWEC performed an SVE treatability study in 2019 to evaluate if SVE would be an applicable technology for SAS at the FVDA. The results of the SVE treatability study indicated that the target vacuum radius of influence could not be achieved and that SVE was not a viable technology to treat the SAS. Due to the failure to achieve performance goals during the SVE treatability study, FWEC voluntarily implemented a focused soil excavation in 2019 to remove a "hot spot" identified during the SVE treatability study. The excavation was completed with limitations on its extent due to the makeup of the glacial till and presence of foundation structures. Residual TCE impacts above the cleanup level remaining after the focused soil excavation were to be addressed by the Cap remedy. On September 20, 2020, the Interim Remedial Action construction activities for the installation of the impermeable Cap over the SAS in the FVDA at the former FWEC Facility were completed, and the Cap serves as the intended final remedy for the SAS. Annual inspections have been conducted since 2021 to ensure the Cap remains protective and functions as intended per the guidelines outlined in the Interim ROD.

On September 30, 2020, FWEC completed the Interim Remedial Action for the FWWTP. FWEC removed contaminated sediment from the FWWTP area and restored the wetland with native vegetation, serving as the intended final remedy for sediment at the Site. Annual inspections have been conducted since 2021 to ensure the wetland restoration remains protective and functions as intended per the guidelines outlined in the Interim ROD.

FWEC conducts VI sampling in any new buildings constructed within 100 feet of the groundwater plume in accordance with the Interim ROD and Consent Decree. At Hillcrest Estates, passive vapor intrusion mitigation systems are installed at each newly constructed building; these systems can be activated with a sub-slab depressurization fan if a VI issue is detected. During the 2022-2023, 2023-2024, 2024-2025, and 2025-2026 heating seasons, FWEC conducted sub-slab vapor and indoor air sampling within newly constructed residences in Hillcrest Estates (where access was permitted). FWEC also conducted supplementary VI investigation activities in 2023, including collection of shallow groundwater samples, at Hillcrest Estates. No Site-related contaminants of concern (COCs) were detected in the shallow groundwater samples at concentrations exceeding their respective EPA Residential Groundwater Vapor Intrusion Screening Levels (VISLs), thus, shallow groundwater does not pose a VI risk from Site-related COCs at Hillcrest Estates. To date, only one VI issue has been discovered at Hillcrest Estates, from either soil gas or shallow groundwater. One sample collected during the 2025-2026 heating season exceeded VISL criteria, and the sub-slab depressurization fan was activated to mitigate the risk in the residence.

In October 2022, a limited soil gas evaluation was conducted by Geo-Technology Associates, Inc. on behalf of the Hillcrest Estates property owner, Tuskes Homes, at the four residential buildings that had been constructed at that time. Sub-slab soil gas samples were collected from the buildings, and the analytical results for the samples were non-detect, indicating that Site-related VI was not a concern at these four buildings and confirming the results of the VI investigations conducted at Hillcrest Estates by FWEC.

In October 2025, EPA finalized the 2025 FS for the Site which evaluates alternatives to address Sitewide groundwater and ongoing activities at the Site resulting from the Interim Remedial Action. EPA evaluated the remedial alternatives presented in the 2025 FS and has identified its Preferred Alternative for the Site in this Proposed Plan.

C. SITE CHARACTERISTICS

Current Use

The Property and the SIPs are currently zoned for industrial use. The Property is currently vacant, and the most recent land use was for tractor trailer parking. The SIPs include vacant and active industrial businesses and activities. The AA has mixed land use, though it is mostly residential. Currently land use surrounding the Site is a mix of industrial, commercial, and residential uses. Future land use is anticipated to remain consistent with current land use. A map of the Property and surrounding areas is provided as Figure 1.

General Physiographic and Ecological Setting

Regionally, ground surface elevations rise to the east of the former FWEC Facility and generally slope downward to the north, west, and south. Immediately west of the northern portion of the former FWEC Facility, ground surface slopes upward to a plateau-like ridge occupied by an adjacent industrial manufacturing facility. Ground surface slopes radially from this adjacent industrial manufacturing facility, consistent with the regional topography. In the SIPs, localized ground topography is significantly impacted by the industrial development in the area. In general, south and west of the former FWEC Facility, ground surface elevations slope significantly toward the AA and the valley created by Watering Run, with decreases in elevation from approximately 1,620 feet mean sea level (msl) at the former FWEC Facility to approximately 1,300 feet msl at the downgradient edge of the AA.

The former FWEC Facility is covered by large former building cement slabs, asphalt and gravel parking lots, access roads, and open field areas formerly used as storage areas. The FWWTP covered an area of approximately 0.16 acres in the northwestern portion of the Property. While there has been evidence of wildlife occurrence on the former FWEC Facility, the lack of significant habitat present in the developed portion of the former FWEC Facility limits its value for supporting significant populations of ecological receptors. The FWWTP is now a small emergent wetland that drains into an unnamed tributary of Bow Creek. The unnamed tributary is a breeding habitat for amphibians as its shallow depth and intermittent nature prevent it from supporting fish.

The AA is approximately 295 acres centered along the main channel of Watering Run, the primary surface water feature in the Site area. This area consists of riparian, wetland and open water habitats of Watering Run. Tributaries, groundwater seeps, and springs discharge along the channel course. The riparian and

wetland habitats present include upland broadleaf deciduous forests, low land broadleaf deciduous forests, emergent wetland areas and ephemeral springs. The open water channel of Watering Run originates on the former FWEC Facility and flows downgradient, converging with multiple tributaries and ephemeral springs along the length of the AA. The aquatic, riparian and terrestrial habitats present within the AA represent the most significant habitats present at the Site.

A portion of the SIPs are also adjacent to the channel of Watering Run and downstream of the former FWEC Facility. The SIP area consists of multiple industrial and commercial properties with associated impervious asphalt parking areas, mowed lawn and landscaping features. The developed nature of the SIPs does not afford significant value as wildlife habitat. The only exceptions are isolated, fragmented, or adjacent forested areas present on the properties associated with the steeply sloped and forested corridor of Watering Run.

Geology, Hydrogeology, and Surface Water Hydrology

The local geology is comprised of two primary stratigraphic units: overburden and bedrock. The overburden consists of unconsolidated glacial till with minor occurrences of fill in the SIPs area. The glacial till is underlain by sedimentary bedrock of the Catskill Formation. The bedrock consists of saprolitic weathered bedrock underlain by incompetent highly-fractured bedrock. The bedrock becomes less fractured and more competent with increased depth. The overburden and bedrock units are not uniform and vary in depth throughout the Site.

Groundwater flow direction on and near the former FWEC Facility is generally to the south-southwest and, at more distal locations from the former FWEC Facility, such as underlying the AA, groundwater flow direction is generally to the west. A groundwater elevation high is consistently observed in the southeast corner of the CertainTeed facility, which is located directly south of the former FWEC Facility. This groundwater elevation high is likely a result of groundwater converging from the two hillsides to the south of the Site and flowing towards Watering Run. This results in a localized occurrence of northwesterly groundwater flow and influences the primary groundwater flow direction to the west down the valley.

FWEC performed three rounds of groundwater sampling during the RI that included water level measurements: May 2013 (Round 1), September 2013 (Round 2), and April 2014 (Round 3). Rounds 1 and 2 were performed during relatively low rainfall periods and the water level measurements indicate a similar, westerly flow pattern, particularly in the northern portion of the former FWEC Facility. In contrast, Round 3, which was performed during a relatively high rainfall total period, shows more of a south-southwesterly flow direction. An effect on contaminant transport from this variation is not apparent. The presence of the perennial gaining stream (Watering Run) along the valley floor also helps to channel groundwater flow along the topographic contours of the valley. At a large scale, geologic structure (*i.e.*, bedding and fracture planes) does not appear to have a significant controlling influence on groundwater flow. Groundwater flow is affected by changes in hydraulic head and geologic heterogeneity, resulting in local variability in vertically downward and upward flow gradients, as well as steeper gradients in the eastern portions of the Site and less steep gradients in the western portions of the Site. The entirety of the groundwater monitoring well network is included in Figure 2.

While the macro-style distribution of hydraulic head has a net flow direction from the former FWEC Facility to the western margin of the AA, locally, vertical hydraulic head gradients are complex and appear to be caused by the combined influences of the primary groundwater flow direction, extraction well operation at the

former FWEC Facility, and localized artesian conditions caused by the higher valley sides compared to the lower elevation of the valley and Watering Run which receives groundwater from the surrounding hills.

Flow within the glacial till is influenced by heterogeneity, with some degree of preferential flow as a function of the differences in hydraulic conductivity. Flow within the weathered bedrock is likely to be variably influenced by the local degree of weathering, dominated by relic fractures (secondary porosity). Flow within the highly fractured bedrock and less-fractured, competent bedrock is likely to be dominated by fracture flow.

The former FWEC Facility is located at a surface water drainage divide, with the northern portion of the Property draining to the north towards Bow Creek and the central and southern portions of the Property draining to the south towards Watering Run.

Nature and Extent of Contamination

The nature and extent of contamination have been updated since the Interim ROD, as the Interim Remedial Actions selected in the Interim ROD have either been completed, are currently on-going, or were deemed not viable, as was the case for SVE in the SAS. FWEC implemented the Interim Remedial Actions for the former FWEC Facility beginning in 2019 and completed the construction phase of the actions in 2022. The following subsections include summaries of the current nature and extent of contamination at the Site.

Source Area Soils and Sediment

Residual sources of chlorinated solvent-related impacts, specifically TCE, are isolated to the former FWEC Facility in the SAS at the FVDA underneath the impermeable Cap. During the Interim Remedial Action, FWEC completed an SVE treatability study, and the results indicated SVE would not be a viable remedy due to Site lithology limitations. FWEC completed excavation and off-Site disposal of a “hot spot” of SAS during the SVE treatability study. Cap construction was completed in 2020, which included installation of an impermeable liner under an asphalt cap.

As part of the Interim Remedial Action at the FWWTP, contaminated sediment was excavated and disposed, which mitigated the potential future threat to human health and ecological receptors in that area. The FWWTP was restored to a wetland, and no Site-related residual impacts remain at the FWWTP.

Groundwater

At the Sitewide scale, the 2018 RI results show that TCE is present in a linear plume whose morphology is strongly influenced by regional and localized topography, bedrock structure, and localized variations in both horizontal and vertical hydraulic gradients. Impacted groundwater flows in a general southwesterly direction from the source area on the former FWEC facility toward the downgradient Property boundary. The plume exhibits a pronounced directional shift in the vicinity of the CertainTeed facility; the plume flows westerly from the CertainTeed facility through the AA, extending to the western portion of the Site. The plume is generally narrow in width and exhibits a higher-concentration plume core throughout its length, indicating migration is predominantly via advective transport with relatively limited lateral dispersion. Spatial data evaluation also indicates the potential presence of other downgradient TCE sources in the vicinity of the CertainTeed, Bergen Machine, and Fabri-Kal properties; TCE from these potential sources would be expected to migrate into downgradient groundwater in the AA. These suspected other sources in the SIPs area may result in a comingled plume of undefined confluence.

In certain parts of the SIPs and AA, the impacted groundwater intermittently discharges at the surface in the forms of seeps and artesian flow from several monitoring wells. The data also indicates groundwater impacts south of the Property in the SIPs, specifically in portions of the CertainTeed and Bergen Machine facilities, may be within the existing GETS capture zone, migrating north onto the former FWEC Facility due to groundwater gradient reversal caused by the existing GETS recovery wells. Any such migration of groundwater impacts on the former FWEC Facility is being captured and treated by the existing GETS.

The 2018 RI results also indicate TCE-impacted groundwater is present within unconsolidated glacial till and bedrock, including weathered bedrock, highly fractured bedrock, and less-fractured, competent bedrock lithologies. At the former FWEC Facility, the plume distribution appears to be vertically continuous within both the glacial till and bedrock lithologies, *i.e.,* there do not appear to be aquitards or aquitard-like conditions separating the hydrostratigraphic units. Groundwater in bedrock at depth may be under confined or semi-confined conditions in the eastern part of the AA. As a result, contaminant migration and/or attenuation at different locations will vary accordingly.

Sitewide groundwater monitoring is currently conducted semi-annually. Samples are collected from a network of monitoring wells, springs, and the GETS components. The analytical results from the groundwater samples continue to support a decreasing trend in TCE concentrations.

Vapor Intrusion

The 2018 RI results indicate the contaminant plume in the AA appears to be stable and the contaminant concentrations have declined over time due to continued operation of the GETS at the former FWEC Facility and from natural attenuation processes. In addition, the closure and cessation of pumping at the former private wells in the AA have reduced the induced migration of groundwater toward the residences. This also has led to a reduction in the concentrations of VOCs beneath the structures and a corresponding reduction in potential VI at these locations. Continued GETS operation and natural attenuation processes are expected to lead to further declines in the concentrations of the shallow VOC groundwater contaminants in the AA, and a further reduction in the potential for VI at these locations in the future. Based on the apparent downward trend in contaminant concentrations and the installation and operation of the SSDS, the current VI health risks for the AA via the indoor air exposure pathway have been mitigated. However, a potential future VI risk will remain as long as the groundwater in the AA is impacted by VOCs.

The Interim ROD requires VI sampling to be conducted at any new building constructed within 100 feet of the groundwater plume, and at existing structures if the concentrations of contaminants in groundwater increase by an order of magnitude. There have been no increases in the concentration of contaminants by an order of magnitude in the groundwater plume with the exception of a one-time event at a monitoring well in the AA while under artesian conditions during a 2017 groundwater sampling event. FWEC initiated a VI investigation at the residential property nearest to this monitoring well that included collection of sub-slab soil gas, indoor air, and outdoor ambient air samples. Concentrations of VOCs in the sub-slab soil gas samples collected at that property were below the applicable VISL, and further evaluation using the VISL Calculator showed that unacceptable carcinogenic risks or hazards were present. All groundwater samples collected from this monitoring well since the 2017 sampling event have returned to historic levels and are showing a downward trend.

New residential construction is currently in various stages of development in the AA at Hillcrest Estates. VI investigations have been conducted during the heating seasons (November through March) and will continue as new units are completed. An initial VI investigation at Hillcrest Estates was conducted in March 2023 that included collection of sub-slab soil gas, indoor air, outdoor air, shallow groundwater, and soil gas samples. Concentrations of VOCs in the samples were below the applicable VISL at the time collection. In 2024, additional VI samples were collected from 19 newly constructed residential buildings. Concentrations of VOCs in the samples were below the applicable VISL, with the exception of naphthalene in one sub-slab soil gas sample that was determined to not be related to the Site. In 2025, an elevated concentration of TCE was detected in one sub-slab soil gas sample, and the sub-slab depressurization system was activated to mitigate the risk to the residence.

Please see Section 5.2 of the Interim ROD and the Administrative Record for a full description of the historic nature and extent of contamination at the Site.

Conceptual Site Model

A conceptual site model (CSM) describes contaminant sources, contaminant release mechanisms and migration routes, exposure pathways, and potential receptors. It documents what is known about human exposure under current and potential future Site conditions.

The 2018 RI delineated the extent of soil, sediment, and groundwater impacts at the Site. The delineation was based on sampling and analysis of Site-related constituents in soil, sediment, and groundwater at the former FWEC Facility, and groundwater and/or soil vapor in the vicinity of the SIPs and AA.

The 2025 FS presents the identification of site-specific remediation goals (RGs) that are used to define the extent and volume of impacted groundwater based on the presence of concentrations of COCs that exceed the RGs. The TCE groundwater plume beneath the former FWEC Facility, in the SIPs, and the AA was defined by groundwater sampling from monitoring wells during the RI and the subsequent semi-annual groundwater monitoring events that have occurred to date. Additional groundwater plume dimension analysis was conducted to further refine the plume dimensions using geospatial interpolation methods. The estimated extent of groundwater impacts at the Site in the overburden and bedrock, based on data in wells where TCE concentrations exceed RGs, is shown in Figures 5 and 6, respectively.

D. SCOPE AND ROLE OF RESPONSE ACTION IDENTIFIED IN THIS PROPOSED PLAN

This Proposed Plan presents EPA's Preferred Alternative for a Final Remedial Action to address Sitewide groundwater impacts and ongoing monitoring activities at the Site.

EPA characterizes waste on-site as either principal threat waste or low-level threat waste. The concept of principal threat waste and low-level threat waste, as developed by EPA in the NCP, is applied on a site-specific basis when characterizing source material. "Source material" is defined as material that includes or contains hazardous substances or pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or that act as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile and which would present a significant risk to human health or the environment should exposure occur. Contaminated groundwater is generally not

considered to be source material. The contamination associated with the Site does not have the toxicity and mobility characteristics of principal threat waste. Although this Proposed Plan does not address principal threat waste at the Site, contaminated Site-related groundwater, which is considered a low-level threat waste, is being actively treated by the GETS, which was part of the previous Selected Interim Remedy identified under the 2018 Interim ROD. EPA has not identified any principal threats at the Site.

E. SUMMARY OF SITE RISKS

WHAT IS HUMAN HEALTH RISK AND HOW IS IT CALCULATED?

A Superfund human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of developing cancer or non-cancer health effects if no cleanup action were taken at a site. To estimate baseline risk at a Superfund site, EPA undertakes a four-step process:

1. Analyze Contamination
2. Estimate Exposure
3. Assess Potential Health Dangers
4. Characterize Site Risk

In Step 1, EPA looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). A comparison between site-specific concentrations and concentrations reported in past studies helps EPA to determine which concentrations are most likely to pose the greatest threat to human health.

In Step 2, EPA considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, EPA calculates a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of exposure that could reasonably be expected to occur.

In Step 3, EPA uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. EPA considers two types of risk: cancer and non-cancer risk. The likelihood of any kind of cancer resulting from a Superfund site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, EPA calculates a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index (HI) of less than 1) exists below which non-cancer health effects are no longer predicted.

In Step 4, EPA determines whether site risks are great enough to cause health problems for people at or near the Superfund site. The results of the three previous steps are combined, evaluated and summarized. EPA adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

During the RI/FS, EPA conducted a Human Health Risk Assessment (HHRA) and a Baseline Ecological Risk Assessment (BERA) to determine the current and potential future effects of contaminated media on human health and the environment in the absence of any cleanup actions at the Site. These assessments provide the basis for making the decision to take action and identify the contaminants, media, and exposure pathways that need to be addressed by the remedial action. The HHRA and the BERA describe the risk assessments conducted for the Site in detail, and the results of both assessments are summarized below. These documents can be found in the Administrative Record for the Site.

Human Health Risk Assessment

The HHRA was conducted during the RI/FS to characterize and quantify the current and potential future human health risks that would occur if no remedial action were taken to address contaminated media at the Site. The HHRA identifies the potential exposure pathways in which people may be exposed to Site contaminants, the toxicity of the contaminants present, and the potential for carcinogenic and non-carcinogenic effects to occur from exposure to the contaminants. EPA has set a target risk range of $1x10^{-4}$ to $1x10^{-6}$ for a lifetime excess carcinogenic risk. For non-carcinogenic contaminants, EPA sets a target of a Hazard Index (HI) of no greater than 1. Unless otherwise noted, risk numbers represent the hypothetical resident, which is the most sensitive receptor. A cumulative risk assessment will be performed when Remediation Goals are believed to be achieved for the Site.

The 2018 FS report and the Interim ROD addressed the potential exposure to soil, surface water, and sediment. The 2025 FS addressed the exposure routes for groundwater and VI. These potential exposure routes are summarized by Site area for scenarios where the Expected Lifetime Cancer Risk (ELCR) is equal to or greater than $1x10^{-4}$ and/or the non-cancer HI is equal to or greater than 1 as follows:

Former FWEC Facility

- Exposure to impacted groundwater via ingestion, dermal contact, and inhalation. Receptors identified in the HHRA include commercial and construction/utility workers (potential future), and residents (hypothetical potential future).
- Potential indoor air exposure via vapor intrusion should future Site use include building construction. Receptors identified in the HHRA include commercial worker (potential future, and residents (hypothetical potential future).

Surrounding Industrial Properties

- Exposure to impacted groundwater via ingestion, dermal contact, and inhalation. Receptors identified in the HHRA include residents (current and potential future).

Affected Area

- Exposure to TCE-impacted groundwater via ingestion, dermal contact, and inhalation. Receptors identified in the HHRA include residents (current and potential future).
- Potential indoor air exposure via vapor intrusion and future structures. Receptors identified in the HHRA include residents (current and potential future).

Human Health Risk-Based Contaminants of Concern

The human health COCs for the Site were selected from the list of contaminants of potential concern (COPCs) identified for the groundwater exposure scenarios evaluated in the HHRA.

The human health COCs for the Site were selected using the following criteria:

- Carcinogens: If the total cumulative ELCR is greater than $1x10^{-4}$ per exposure pathway, COCs were identified as any compound with an individual ELCR above $1x10^{-4}$.
- Non-carcinogens: If the total HI is greater than 1, COCs were identified as any compound with a hazard quotient (HQ) > 1.

Based on information collected in the HHRA, the development of remediation goals was not necessary for several COPCs. The rationale for retaining or eliminating COPCs from the development of the remediation goals process is included in the HHRA. Those human health COCs that were retained are identified below in Table 1. A summary of all of the COPCs is included in Appendix A; the exposure pathways and risk-based preliminary remediation goals for all COPCs are included in Appendix B; and the selection of final remediation goals for Site COCs are listed below in Table 1 and are included in Appendix C.

Table 1: Human Health Risk-Based Contaminants of Concern

Media	COC	Final Remedial Goals[a] (mg/L)
Groundwater	TCE	$5.0E^{-3}$
Soil Vapor	1,1,1-Trichloroethane	$1.7E^{2}$ / $7.3E^{2}$
	1,1,2-Trichloroethane	$5.8E^{-3}$ / $2.6E^{-2}$
	1,1-Dichloroethane	$5.8E^{-2}$ / $2.6E^{-1}$
	1,1-Dichloroethene	7.0 / $2.9E^{1}$
	Naphthalene	$2.8E^{-3}$ / $1.2E^{-2}$
	PCE	$3.6E^{-1}$
	TCE	$1.6E^{-2}$ / $1.0E^{-1}$
	Xylenes, Total	3.5

Notes:
The notation of "*1.0E-1*" means the same as "*1* x 10^{-1}".

[a] Soil Vapor final remedial goals, except PCE and Total Xylenes, include two goals: one for the residential goal (first number displayed), and one for the commercial goal (second number displayed). Thus: RESIDENTIAL GOAL / COMMERCIAL GOAL. Note PCE and Total Xylenes only include a residential goal.
mg/L = milligrams per liter
PCE = tetrachloroethene

Metals can become soluble in the presence of chlorinated solvents and need to be periodically monitored throughout the life of a chlorinated solvent Site. Cyanide, iron, manganese, and chromium were identified as COPCs (Appendix A) and thus should be periodically monitored at the Site to ensure concentrations are decreasing over time.

Ecological Risk Assessment Summary

A Screening Level Ecological Risk Assessment (SLERA) was conducted during the RI/FS to determine whether Site-related COPCs posed an unacceptable risk to ecological receptors. The conclusion of the SLERA is that contaminants posed potential risk in various media. Additional surface water, sediment, and soil samples were collected and EPA completed a BERA. The BERA evaluated the potential for adverse ecological risks to be associated with terrestrial and aquatic receptors associated with the Site. The terrestrial assessment focused on the exposure of terrestrial plants, insects, and vertebrates to contaminants of potential ecological concern (COPECs) identified in surface soil in the Former Expended Waste Area, the Former Open Area, and the Former Shot Blast Area, all located on the former FWEC Facility. The aquatic assessment focused on the exposure of benthic invertebrates, fish, and aquatic vertebrates to COPECs identified in surface water and sediments found within Watering Run and its tributaries and the FWWTP.

The BERA concluded that the potential for risk to the aquatic and semi-aquatic biota inhabiting Watering Run and its tributary is negligible (or is not Site-related) and does not warrant further ecological evaluation or invasive remedial action. The potential for risk to terrestrial biota is negligible and does not warrant further ecological evaluation or invasive remedial action. However, the potential for risk to macroinvertebrates and amphibians from COPECs in the FWWTP from the surface water and sediment contamination exceeded acceptable levels and warranted further action; this risk was mitigated once FWEC completed Interim Remedial Action in the FWWTP.

Risk Assessment Summary

The HHRA and BERA for the Site demonstrate the presence of unacceptable risks to human health and the environment, and that remedial actions are necessary to reduce the risks to within or below EPA's acceptable risk range. The Interim Remedial Actions for the SAS and FWWTP were completed in 2020 and successfully mitigated risk related to contaminated soils, sediment, and surface water on the former FWEC Facility. The 2025 FS and this Proposed Plan summarize the remaining COCs for groundwater and VI-related risks at the Site.

WHAT IS THE PRIMARY "CONTAMINANT OF CONCERN"?

EPA and PADEP have identified one primary contaminant of concern, *i.e.,* the contaminant that poses the greatest potential risk to human health at the Site.

Trichloroethene (TCE): Prior to any remedial action implementation at the Site, TCE was detected in groundwater at the former FWEC Facility at a maximum concentration of 180,000 µg/L. TCE is a halogenated organic compound historically used as an industrial solvent and a degreaser. Exposure to this compound has been associated with deleterious health effects in humans, including anemia, skin rashes, diabetes, liver conditions, and urinary tract disorders. TCE is carcinogenic to humans by all routes of exposure.

EPA has determined that the Preferred Alternative identified in this Proposed Plan, or one of the other remedial alternatives considered in the Proposed Plan aside from the "No Action" alternative, is necessary to protect public health or welfare from actual or threatened releases of hazardous substances

into the environment.

Please see Section 7.0 of the Interim ROD and the Administrative Record for a full summary of the historical Site Risks identified in the Interim ROD.

F. REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals developed to address the COCs and exposure pathways to protect human health and/or the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and Site-specific risk-based levels.

The RAOs for Sitewide groundwater take into account protection of human health and the environment and ARARs. The RAOs specify the COCs, potential exposure routes for contacting the COCs, and the target RGs for the COCs to prevent exposures greater than acceptable levels as defined in the HHRA. The RAOs are the basis for evaluation of the remedial alternatives.

The exposure to COCs from VI due to impacted soil vapor potentially occurs as a result of COCs in groundwater. The exposure to COCs from impacted soil vapor and associated Interim ROD RAOs were identified in the 2018 FS for the Former FWEC facility. The remedy selected for VI due to impacted soil vapor in the Interim ROD is ongoing VI Monitoring and Mitigation. The ongoing Sitewide groundwater monitoring results are used as a surrogate to identify if an area at the Site has the potential for impacts to soil vapor that would cause VI risk in the future. The RAOs for Sitewide groundwater presented herein will address the soil vapor and will be consistent with the Interim ROD.

RAOs for soil and sediment, while included in the Interim ROD, are not needed in the Final ROD because Interim Remedial Actions taken at the SAS and the FWWTP removed the potential future threat to human health and ecological receptors. Thus, additional remedial action for sediment and soil are not needed under the Final ROD. The Preferred Alternative outlined in this Proposed Plan includes continued inspections and maintenance of the Cap over the SAS and the FWWTP. There is no waste remaining in the FWWTP; however, FWEC has conducted annual inspections of the FWWTP since 2021 to ensure the wetland restoration remains protective and functions as intended per the guidelines outlined in the Interim ROD. Annual inspections of the FWWTP will continue for a reasonable timeframe to ensure the success of the FWWTP.

The following six (6) RAOs were developed to protect human health and the environment from current and potential future risk at the Site:

- **Remedial Action Objectives, Groundwater**
    - Prevent future human ingestion, inhalation, or dermal contact exposure with impacted groundwater at the Site;
    - Reduce COC concentrations to the MCLs for drinking water or non-zero MCL Goals (MCLGs) as well as to concentrations that would result in a cumulative excess carcinogenic risk within EPA's acceptable risk range of 10^{-4} to 10^{-6} and a cumulative excess non-carcinogenic HI of less than or equal to 1.0;
    - Prevent migration of the groundwater contaminant plume; and

- Restore the aquifer to its beneficial use.

- **Remedial Action Objectives, Soil Vapor**
  - Prevent future human inhalation exposure due to intrusion of soil vapor concentrations of Site-related COCs greater than or equal to acceptable screening levels calculated using EPA Office of Solid Waste and Emergency Response (OSWER) Guidance 9200.2-154 for assessment and mitigation of the VI pathway from subsurface sources to indoor air; and
  - Prevent human inhalation exposure from intrusion of subsurface vapors that would result in an excess carcinogenic risk of greater than or equal to 10^{-4} or an excess non-carcinogenic HI of greater than or equal to 1.0.

G. SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that any remedy selected to address contamination at a site must be protective of human health and the environment, cost-effective, in compliance with promulgated standards or requirements that are determined to be ARARs (or justify a waiver), and not inconsistent with the NCP.

The alternatives evaluated below were designed to meet the RAOs for the final remedial action. The Preferred Alternative for this final remedial action is Alternative 3, which consists of continued operation and optimization of the existing GETS; contingent soil vapor investigation and mitigation for VI risk; MNA; expansion of ICs; and implementation of engineering controls. In addition, all of the ongoing activities resulting from the completed remedial actions implemented under the Interim ROD will continue. These will include routine inspections and maintenance of the Cap over the SAS and the FWWTP, as well as operation of the spring aeration system in the AA and the existing SSDS in the AA.

Table 2: Evaluated Alternatives

Alternative	Description
1	No Action
2	Continued Operation and Optimization of the Existing GETS, Contingent Soil Vapor Investigation and Mitigation for VI Risk, and MNA
3	Expansion of ICs and Implementation of Engineering Controls Plus the Components Described in Alternative 2
4	In-Situ Biological Treatment of Groundwater at the Source Area Plus the Components Described in Alternative 3
5	Expand Existing Groundwater Extraction Well Network into the SIPs and AA with Aboveground Stand-Alone Treatment System and Discharge to Surface Water Plus the Components Described in Alternative 3

Common Components of Remedial Alternatives

Each of the remedial alternatives, with the exception of Alternative 1 (No Action), include the following common components:

- Common Element #1: Continued operation and optimization of the existing GETS

The continued operation and optimization of the GETS will be performed to maintain full capture of the TCE plume at the downgradient boundary of the former FWEC Facility during all seasonal groundwater level conditions and contain and remediate groundwater at the source area. The GETS includes the ex-situ treatment of groundwater via air stripping and discharge of the treated water to surface water. For cost estimation purposes, it is assumed operation and monitoring of the GETS will be conducted for 30 years.

- Common Element #2: Routine inspections and maintenance of the Cap over the SAS

  The Cap on the SAS on the former FWEC Facility as selected in the interim ROD will be monitored and maintained as an impervious barrier to prevent mass transport of TCE from residual source area soils into groundwater.

- Common Element #3: Routine inspections and maintenance of the FWWTP

  The FWWTP will be monitored for a reasonable timeframe to ensure restoration activities completed under the Interim ROD maintain effectiveness and ensure survival of restoration plantings.

- Common Element #4: Continued Operation of the spring aeration system in the AA

  The operation of the spring aeration system as selected in the interim ROD will be continued to maintain treatment of the TCE-impacted groundwater emanating at a spring located at Property #15 in the AA. The SAS includes the ex-situ treatment of groundwater via air stripping and discharge of the treated water to surface water.

- Common Element #5: Continued operation of existing SSDS in the AA

  The operation of the two existing SSDS as selected in the interim ROD will be performed to maintain protection against VI exposure. This does not include operation of active or passive sub-slab radon mitigation systems that are installed in new construction or in buildings where VI risk associated with the groundwater plume is not occurring.

- Common Element #6: Contingent soil vapor investigation and mitigation for VI risk

  Sitewide groundwater monitoring will continue, and the results will be used to determine whether VI mitigation or monitoring measures would be required at specific locations where structures are present or planned based on the TCE concentrations in groundwater, and mitigation of VI at any locations where unacceptable risk due to VI associated with the groundwater plume is identified in the future.

- Common Element #7: MNA

  Long-term groundwater monitoring will be performed routinely in wells within the existing monitoring well network on a regular basis to assess concentration trends to support a MNA remedy.

  MNA has been proven effective at decreasing contaminant concentrations downgradient of the former FWEC Facility and the comparison of MNA to active remedies in the 2018 FS and 2025 FS resulted in similar timeframes to groundwater completion. Groundwater monitoring since implementation of the Interim ROD has documented the progress of changes in groundwater concentrations over time. MNA is a commonly accepted site management

technique that is easily implemented.

Supporting evidence for the viability of MNA to achieve cleanup goals at the Site includes the following:

- The low contaminant levels detected downgradient from the former FWEC Facility are amenable to natural attenuation.
- Additional migration of contaminants to groundwater from the source area has been addressed. The SAS on the former FWEC Facility have been removed to the extent practicable and the remaining impacted soils have been capped to prevent ongoing migration of contaminants to the groundwater. Full groundwater source control has been achieved through optimization of the GETS.
- The TCE plume has steadily decreased in concentration and size over time. Monitoring data collected since 2016 shows a decrease in the plume size (retraction along the plume fringe) by approximately 8.5% in the overburden and 18% in the bedrock while the extent of the TCE plume core (concentrations between 50 and 500 micrograms per liter [ug/L]) in both overburden and bedrock wells has decreased by approximately 100% in the AA.
- An MNA study conducted by FWEC indicated that MNA processes are occurring at the Site. The study concluded that biologically mediated natural attenuation is occurring, though is very limited in its extent and effectiveness. Biological degradation at the Site will be subordinate to physical attenuation processes like diffusion, dispersion, and dilution.

- Common Element #8: Five-Year Reviews

  In accordance with CERCLA Section 121(c), 42 U.S.C. § 9621(c), a performance evaluation must be conducted at least every five (5) years when a remedial action results in any hazardous substances, pollutants, or contaminants remaining on-Site. Five-Year Reviews (FYR) will be conducted every five years from the start of on-Site construction of the Interim Remedial Action. EPA issued its first FYR for the Site on October 29, 2025. For the purpose of estimating costs for the final remedial action, a period of 30 years has been assumed. Therefore, it is assumed that six (6) FYRs will be performed, at a minimum, within the 30-year period and will continue to be conducted beyond 30 years, as necessary, until cleanup levels are achieved.

ALTERNATIVE 1: NO ACTION

The NCP, 40 C.F.R. § 300.430(e)(6), requires that EPA consider a “No Action” alternative for every Superfund site to establish a baseline or reference point, against which each of the other remedial action alternatives are compared. Alternative 1 leaves the Site in its current state and all current and potential future risks associated with the Site would remain. For the purpose of this Proposed Plan, this alternative hypothetically assumes all existing mitigation systems are shut down and all operation and monitoring activities are discontinued. This alternative would not reduce human health or ecological risks to acceptable levels, and would not achieve the RAOs. This alternative would not be protective of human health, and thus will not be considered further.

Costs

- Capital Costs: $0
- Operation & Maintenance (O&M) Costs and Periodic Costs: $0
- 30-Year Total Present Value Costs: $0
- Time to Implement: Immediate

ALTERNATIVE 2: CONTINUED OPERATION AND OPTIMIZATION OF THE EXISTING GETS, CONTINGENT SOIL VAPOR INVESTIGATION AND MITIGATION FOR VI RISK, AND MNA

Alternative 2 is a continuation of the operation and monitoring components of the Sitewide groundwater and VI remedies specified in the Interim ROD. Alternative 2 also includes all other ongoing activities resulting from the completed remedial actions implemented under the Interim ROD, described in the Common Components of Remedial Alternatives section listed above. The operation and optimization of the GETS will continue, soil vapor monitoring and mitigation will continue, the Cap on the SAS and the FWWTP will be monitored and maintained as appropriate, and the operation of the spring aeration system and existing SSDS in the AA will continue under Alternative 2. Long-term groundwater monitoring will be performed routinely in wells within the existing monitoring well network on a regular basis to assess concentration trends to support a MNA remedy.

Costs

- Capital Costs: $0
- O&M Costs and Periodic Costs: $7,280,000
- 30-Year Total Present Value Costs: $7,280,000
- Time to Implement: Immediate

ALTERNATIVE 3: EXPANSION OF ICs AND IMPLEMENTATION OF ENGINEERING CONTROLS IN ADDITION TO THE COMPONENTS DESCRIBED IN ALTERNATIVE 2

Alternative 3 includes the components described in Alternative 2 with the addition of pursuing additional ICs as needed to prohibit use of groundwater at the Site for any purpose. Engineering controls would be implemented to determine effectiveness at preventing access and contact with impacted media or tampering with treatment infrastructure. The ICs and engineering controls to be imposed for Sitewide groundwater will need to be maintained until the RGs are attained.

ICs are non-engineered instruments or legal instruments (*e.g.*, deed restrictions, deed notices, ordnances, easements, covenants, zoning) that impose restrictions on the use of impacted property or resources to help minimize the potential for human exposure to those impacts and/or protect the integrity of the remedy. Engineering controls, by contrast, encompass a variety of engineered and physical barriers (*e.g.*, soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination in an area.

The ICs to be expanded include the following:

- Existing deed restrictions on properties would be reevaluated for the need for any amendments;

- Municipal restrictions (*e.g.*, a town ordinance) on properties located within the current groundwater plume would be pursued and implemented, as necessary, prohibiting the extraction of groundwater for any purpose or discharging of water in a manner that could negatively impact the remedial action;
- Verify requirements for installation of passive sub-slab radon depressurization systems for new construction on lands within the current groundwater plume; and
- Implement an EC on the former FWEC Facility and adjacent impacted parcels, as required under the Act 2 Agreement between Wabtec and PADEP.

The engineering controls to be implemented include the following:

- Fencing and/or signage to prevent disturbance of remedial components at the Site such as monitoring/treatment wells, the GETS infrastructure, the SAS infrastructure, and current (and future, if needed) SSDS.

Costs

- Capital Costs: $31,000
- O&M Costs and Periodic Costs: $7,371,000
- 30-Year Total Present Value Costs: $7,402,000
- Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage

ALTERNATIVE 4: IN-SITU BIOLOGICAL TREATMENT OF GROUNDWATER AT THE SOURCE AREA IN ADDITION TO THE COMPONENTS DESCRIBED IN ALTERNATIVE 3

Alternative 4 includes the components described in Alternative 3 with the addition of implementing in-situ biological treatment technologies for groundwater at the source area on the former FWEC Facility.

In-situ biological treatment technologies to be implemented include:

- Enhanced biodegradation to include injecting biological amendments (enhanced anerobic biodegradation) such as emulsified vegetable oil for treatment of groundwater at the source area on the former FWEC Facility; and
- Biosparging to include injecting (air/oxygen) and possibly nutrients for treatment of groundwater at the source area on the former FWEC Facility.

Costs

- Capital Costs: $144,000
- O&M Costs and Periodic Costs: $7,371,000
- 30-Year Total Present Value Cost: $7,515,000
- Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage, approximately one year for prepare for and conduct in-situ biological treatment at the source area

ALTERNATIVE 5: EXPAND EXISTING GROUNDWATER EXTRACTION WELL NETWORK INTO THE SIPS AND AA WITH ABOVEGROUND STAND-ALONE TREATMENT SYSTEM AND DISCHARGE TO SURFACE WATER IN ADDITION TO THE COMPONENTS DESCRIBED IN ALTERNATIVE 3

Alternative 5 includes the components described in Alternative 3 with the addition of expanding the groundwater recovery well network to locations downgradient from the former FWEC Facility in the SIPs and the AA.

Expanding the groundwater recovery network and adding an above-ground stand-alone treatment system would include the following:

- Additional groundwater recovery wells will be evaluated for maintaining further capture and treatment of the TCE plume at locations within the SIPs and the AA and would include the ex-situ treatment of groundwater via stand-alone carbon treatment and discharge of the treated water to surface water.

An initial groundwater model was developed in 2017 and updated in 2024. The footprint of the 2024 model was also expanded to evaluate the potential impact of additional recovery wells installed in locations downgradient of the former FWEC Facility, in the SIPs and AA. Five simulations were evaluated and compared against the current pumping conditions under Alternative 5 using the groundwater models developed in 2017 and 2024:

- Scenario 1[4]: current pumping conditions + MNA (*i.e.*, no new pumping wells)
- Scenario 2: current pumping conditions + additional pumping well (RW-6D) near RMW-01D-1
- Scenario 3: current pumping conditions + additional pumping well (RW-7D) near RMW-06D-1
- Scenario 4: current pumping conditions + additional pumping wells (RW-8S/8D) near RMW-09S-2
- Scenario 5: current pumping conditions + all four additional pumping wells (RW-6D, RW-7D, RW-8S/8D)

<u>Costs</u>

Scenario 1:

- Capital Costs: $31,000
- O&M Costs and Periodic Costs: $7,371,000
- 30-Year Total Present Value Costs: $7,402,000
- Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage

Scenario 2 or 3:

- Capital Costs: $1,121,500
- O&M Costs and Periodic Costs: $8,306,000
- Total Present Value Cost: $9,416,500
  Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage, approximately one to two years to expand the

[4] Scenario 1 includes no new pumping wells, and Site conditions and costs would remain the same as described in Alternative 3.

groundwater recovery network and add an above-ground stand-alone treatment system

Scenario 4:

- Capital Costs: $1,265,500
- O&M Costs and Periodic Costs: $8,300,000
- Total Present Value Cost: $9,571,500
- Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage, approximately one to two years to expand the groundwater recovery network and add an above-ground stand-alone treatment system

Scenario 5:

- Capital Costs: $2,927,500
- O&M Costs and Periodic Costs: $9,659,000
- Total Present Value Cost: $12,586,500
- Time to Implement: Immediate for the components described in Alternative 2, approximately six months to procure and install fencing and/or signage, approximately one to two years to expand the groundwater recovery network and add an above-ground stand-alone treatment system

H. EVALUATION OF ALTERNATIVES

The remedial alternatives summarized in this Proposed Plan have been evaluated against the nine decision criteria set forth in the NCP, 40 C.F.R. § 300.430(e)(9)(iii), listed in Table 3 below. These nine criteria are organized into three categories: threshold criteria, primary balancing criteria, and modifying criteria. Threshold criteria must be satisfied in order for an alternative to be eligible for selection. Primary balancing criteria are used to weigh major trade-offs among alternatives. Modifying criteria are formally taken into account after public comment has been received on the Proposed Plan.

In the remedial decision-making process, EPA evaluates the relative performance of each alternative against the nine criteria and notes how each alternative compares to the other alternatives under consideration. A more detailed analysis of the alternatives can be found in the 2025 FS, which is in the Administrative Record file for the Site.

Table 3: Evaluation Criteria for Superfund Remedial Alternatives	
Threshold Criteria	**1. Overall Protection of Human Health and the Environment** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
	2. Compliance with ARARs evaluates whether an alternative meets applicable or relevant and appropriate requirements under either Federal environmental laws or more stringent requirements promulgated under State environmental laws or facility siting laws, or whether a waiver is justified.
Primary Balancing Criteria	**3. Long-term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time.
	4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
	5. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
	6. Implementability considers the technical and administrative feasibility of implementing an alternative, including factors such as the relative availability of goods and services.
	7. Cost includes the estimated capital and annual operation and maintenance costs, as well as present worth cost of an alternative. Present worth cost is the total cost of an alternative over time in today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Modifying Criteria	**8. State/ Support Agency Acceptance** considers whether the State agrees with EPA's analyses and recommendations, as described in the Feasibility Study and Proposed Plan.
	9. Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Detailed Analysis of Proposed Remedial Alternatives

1. Overall Protection of Human Health and the Environment

A primary requirement of CERCLA is that the selected remedial alternative be protective of human health and the environment. A remedy is protective if it reduces current and potential future risks to acceptable levels within the established risk range posed by each exposure pathway at the Site.

Overall protection of human health and the environment addresses whether each alternative reduces current and potential future risks to acceptable levels and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls and/or institutional controls.

Alternative 1 (No Action) would not provide any protection of human health and the environment as no remedial action would be conducted by EPA to mitigate Site risks due to exposure to contamination in groundwater. Therefore, the No Action Alternative does not meet this criterion. As a result, the No Action Alternative is not eligible for selection and is eliminated from further consideration under the remaining criteria.

Alternative 2 is a continuation and expansion of the monitoring of the remedies specified in the Interim ROD that have been successful in achieving and maintaining protection of human health and the environment. Groundwater and VI data collected over the years show the remedial measures implemented, along with the ongoing monitoring activities, have reduced the concentration of COCs in groundwater and have been protective from potential VI exposure. The continued monitoring would further enhance the overall protectiveness of the remedies.

Alternative 3 offers overall protection of human health and the environment by maintaining and enhancing the components outlined in Alternative 2 until the RGs are achieved. Additionally, expanding on Site ICs and implementing engineering controls will increase protection of human health and the environment by further preventing contact or exposure to contamination.

Like Alternative 3, Alternative 4 offers overall protection of human health and the environment by maintaining and enhancing the components outlined in Alternative 3 until the RGs are achieved. Alternative 4 may also offer overall protection of human health and the environment through in-situ biological treatment of groundwater in the source area, however, treatment would be difficult to incorporate, as discussed further in the Long-Term and Permanence section.

Alternative 5 includes the expansion of the recovery well network and ex-situ treatment of groundwater using granular activated carbon (GAC) in the SIPs and/or AA, thus offering overall protection of human health and the environment over a greater area. Alternative 5 also offers overall protection of human health and the environment by enhancing the components outlined in Alternative 3 until the RGs are achieved.

2. Compliance with ARARs

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(B), require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law, which are collectively referred to as "ARARs," unless such ARARs are waived under Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(C).

"Applicable" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action,

location, or other circumstance at a CERCLA site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be applicable.

"Relevant and appropriate" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

EPA also considers TBCs along with ARARs. TBCs are non-promulgated criteria, advisories, or guidance, issued by Federal or State government that are not legally binding and do not have the status of potential ARARs. However, TBCs may be considered during development of remedial alternatives. EPA may use TBCs in determining the necessary level of cleanup for protection of human health or the environment when ARARs do not exist for particular contaminants.

ARARs for remedial action alternatives can be classified into one of the following three functional groups:

- **Chemical-Specific:** Health-risk-based numerical values or methodologies that establish concentration or discharge limits for particular contaminants. Often, these ARARs are used to determine the extent of site remediation. In general, chemical-specific requirements are set for a single chemical or a closely related group of chemicals. Examples include Federal and State MCLs for TCE.
- **Location-Specific:** Requirements that restrict remedial actions based on the characteristics of the Site or its immediate environment. Examples of these areas regulated under various Federal laws include floodplains, wetlands, and locations where historically significant cultural resources are present.
- **Action-Specific:** Requirements that set controls or restrictions on the design, implementation, and performance levels (including discharge limits) of activities related to the management of hazardous substances, pollutants, or contaminants. These action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how a selected alternative must be achieved. An example of action-specific ARARs include the substantive requirements of the Resource Conservation and Recovery Act (RCRA) regulations for generation, characterization, and management of hazardous wastes.

A complete list of ARARs and TBCs for the Site is provided in the 2025 FS and will be included in the Final ROD issued for this action. The major ARARs and TBCs identified include, but are not limited to:

- MCLs promulgated under the Safe Drinking Water Act at 40 CFR Part 141. These regulations establish MCLs for Site COCs and ensure drinking water safety (ARAR);
- Medium-Specific Concentrations (MSCs) under the Pennsylvania Statewide Health Standards for Drinking Water at 25 Pa Code, Chapter 250, Subchapter C. These regulations establish concentrations for demonstrating attainment after groundwater remediation under Pennsylvania's Land Recycling and Remediation Standards Act (Act 2) (ARAR);
- MCLs promulgated under the Pennsylvania Safe Drinking Water Act at 25 Pa Code, Chapter 109, where more stringent than Federal MCLs. These regulations establish PADEP's MCLs to provide a safe and

adequate supply of water (ARAR); and

- EPA's Regional Screening Level (RSL) Resident Tap Water Table (November 2024) provides the regional screening levels for chemical contaminants at CERCLA sites based on risk assessment and concentrations of chemicals of concern (TBC).

EPA anticipates that implementation of Alternatives 2 through 5 would attain ARARs.

3. Long-Term Effectiveness and Permanence

Alternative 2 offers long-term effectiveness and permanence by operating and maintaining the GETS and the spring aeration system that are already in place until TCE in groundwater is treated to concentrations below RGs. Previous remedial measures have eliminated the exposure pathways to impacted groundwater and VI risk. Routine inspections and maintenance of the Cap and the two existing SSDS also offer long-term effectiveness by preventing mass transport of TCE from the SAS into groundwater and preventing exposure to TCE in soil vapors via the VI pathway. Long-term groundwater monitoring would be used to determine the effectiveness of the Alternative 2 components and to determine when the RGs are met.

Alternative 3 offers long-term effectiveness by maintaining and enhancing the components outlined in Alternative 2 until the RGs are achieved. Permanence can be achieved via enhanced ICs and implemented engineering controls.

Alternative 4 may not offer added long-term effectiveness or enhance permanence due to several potential issues with in-situ biological treatment of groundwater in the source area. Additional reduction of TCE in groundwater at the source area would not have a measurable impact on TCE concentrations in groundwater downgradient of the former FWEC Facility nor add value in terms of reducing the timeline for achieving RGs in groundwater downgradient of the former FWEC Facility based on results of groundwater modelling simulations discussed further under Alternative 5. Additionally, the in-situ biological treatment of groundwater at the source area would likely not be successful due to the following:

- The low permeability and heterogeneity of the geology will limit contact between amendments injected or in-situ treatments and impacted groundwater. The results of the SVE pilot study conducted in 2017 as part of the Selected Interim Remedy at the source area confirmed the ineffectiveness of in-situ technology applications.
- Installation of new infrastructure (*e.g.*, injection wells, monitoring wells) would be limited to locations outside the Cap, as drilling through the Cap would not be an option. Therefore, application of amendments or in-situ treatments would be limited to the current groundwater monitoring wells located inside the Cap (monitoring wells MW-4 and MD-01 and recovery well RW-4), which would limit effective contact with the highest concentrations that remain in groundwater at the source area.
- The effectiveness would need to be determined in bench-scale and/or pilot-scale studies, which would delay full-scale implementation of this alternative.

- Shut down of the recovery well in the source area (RW-4) and the recovery well downgradient of the source area (RW-1) during bench-scale and/or pilot-scale studies could allow migration of TCE-impacted groundwater and possibly reverse current trends downgradient of the source area.

Alternative 5 includes expansion of the recovery well network and ex-situ treatment of groundwater using GAC in the SIPs and/or AA that would further enhance the protectiveness of the components outlined in Alternatives 2 and 3. However, the extraction and ex-situ treatment of groundwater in the SIPs and AA included in Alternative 5 may not offer long-term effectiveness based on results of groundwater modeling simulations that were completed in 2017 and updated in 2024. The footprint of the 2024 model was also expanded to evaluate the potential impact of additional recovery wells installed in locations downgradient of the former FWEC Facility, in the SIPs and AA. Five simulations were evaluated and compared against the current pumping conditions under Alternative 5 using the groundwater models developed in 2017 and 2024:

- Scenario 1: current pumping conditions + MNA (*i.e.*, no new pumping wells)
- Scenario 2: current pumping conditions + additional pumping well (RW-6D) near RMW-01D-1
- Scenario 3: current pumping conditions + additional pumping well (RW-7D) near RMW-06D-1
- Scenario 4: current pumping conditions + additional pumping wells (RW-8S/8D) near RMW-09S-2
- Scenario 5: current pumping conditions + all four additional pumping wells (RW-6D, RW-7D, RW-8S/8D)

Figures 7 through 10 show a comparison of the predicted model plume dimensions for all 5 Alternative 5 scenarios in both the overburden zone and the bedrock zone in ten years (Figures 7 and 8) and thirty years (Figures 9 and 10).

Overall, the groundwater modelling results for Alternative 5 indicate no measurable added long-term effectiveness under Scenarios 2 through 5 during the first ten years of additional recovery wells pumping, and the groundwater modelling results indicate no measurable added long-term effectiveness under Scenarios 2 through 4 even at 30 years of additional recovery wells pumping. Scenario 5 shows a more pronounced impact at 30 years in the overburden, however, the cost and implementability make Scenario 5 a prohibitive remedial alternative.

The concentration of TCE in the groundwater plume will remain above the RGs under Alternative 5 in both the bedrock and overburden layers under all scenarios. However, the direct contact and ingestion exposure pathways have been eliminated via the removal of private water wells, the installation and connection to the municipal water supply, and the deed restrictions implemented.

VI studies conducted in 2010, 2017, and from 2023 through the present at new residential development on Church Road have shown that under current groundwater conditions, the VI exposure pathway is not occurring with the exception of two properties where SSDS have been installed and are maintained. The VI exposure pathway will continue to be monitored and mitigated as needed under the components outlined in Alternatives 2 and 3.

Source control has been demonstrated under the current GETS network of extraction wells and the

plume downgradient of the former FWEC Facility is reducing in both concentration and area based on results of the ongoing groundwater monitoring program presented.

4. Reduction of Toxicity, Mobility, or Volume (TMV) through Treatment

Alternative 2's components are evaluated against the reduction of TMV through treatment as follows:

- Operation and optimization of the GETS has been effective at reducing the TMV of TCE in groundwater on the former FWEC Facility through treatment. The operation and optimization of the GETS will continue to maintain full capture of the TCE plume and the downgradient boundary of the former FWEC Facility, thus preventing further migration of TCE and a reduction in the volume of TCE in the groundwater plume.
- Operation of the spring aeration system has been effective at reducing the TMV of TCE in groundwater at the spring in the AA and will continue to prevent discharge of TCE-impacted groundwater to the surface through treatment.
- Inspections and maintenance of the existing Cap over the SAS on the former FWEC Facility does not reduce the toxicity or volume of TCE in the groundwater or soil vapor, but it does reduce the mobility of TCE by preventing mass transport of the compound from the SAS into groundwater.
- Operation of the two existing SSDS installed in the AA (and of any SSDS installed in the future, specifically for VI risk associated with the groundwater plume) is effective at maintaining the efficiency of the SSDS to reduce the mobility of TCE in soil vapor into the buildings, but it does not reduce the toxicity or volume of TCE in soil vapor.

Alternative 2 would not reduce the TMV of TCE in groundwater downgradient of the former FWEC Facility in the SIPs and AA as TCE in groundwater would not be actively treated to concentrations below RGs. However, based on groundwater sampling results, there is evidence that the remedies implemented on the former FWEC Facility have stopped further degradation of the groundwater, have reduced the groundwater plume in concentration and area, and demonstrate natural attenuation processes occurring in the groundwater plume.

Alternative 3 also would not reduce the TMV of TCE in groundwater or soil vapor as a standalone remedy as the expansion of ICs and implementation of engineering controls do not directly treat the contamination. However, the ICs and engineering controls would further enhance the protectiveness of the components outlined in Alternative 2.

Alternative 4 may reduce the TMV of TCE in groundwater at the SAS on the former FWEC Facility over time through in-situ biological treatment, as the goal would be to actively treat groundwater to reduce TCE concentrations to below RGs, if successful. However, in-situ biological treatment of groundwater at the SAS would likely not be effective, as noted under the Long-Term Effectiveness and Permanence discussion.

Alternative 5 would reduce the TMV of TCE in groundwater in the SIPs and AA over time through treatment, as TCE in extracted groundwater would be actively treated to concentrations below RGs. However, expansion of the recovery well network and ex-situ treatment of groundwater using GAC in the SIPs and/or AA would likely not be effective, as noted under the Long-Term Effectiveness and Permanence discussion.

Overall, each Alternative would reduce TMV of TCE using the details outlined in Alternative 2, as all Alternative 2 components are included in Alternatives 3 through 5. The ICs and engineering controls proposed in Alternative 3 would not reduce the TMV of TCE on their own, Alternative 4 may reduce the TMV of TCE although this alternative would not likely be a viable alternative in the SAS, and Alternative 5 would effectively reduce the TMV of TCE in groundwater through treatment.

5. Short-Term Effectiveness

All of the alternatives can be implemented quickly, as many of the components of each alternative are already in place. The GETS, monitoring well network, SSDS, spring aeration system, and the Cap over the SAS have already been implemented, and thus no additional time would be needed to start these components.

Alternative 2 would have no short-term risks posed to the community or workers and no protective measures would be required during implementation because the infrastructure for all the components is already in place and have been operating successfully for many years.

Alternative 3 would have no short-term risks posed to the community or workers for ICs because no physical activities are required for ICs. Engineering controls such as fencing and/or signs are low-impact activities that would require basic protective measures (*i.e.*, proper personal protective equipment [PPE], following correct installation procedures) during implementation to ensure no injuries occur, but there would be no danger of exposure to Site-related contamination during these activities.

Alternative 4 would have no short-term risks posed to the community with the exception of the unknown impact to the current GETS components, surface water, and plume stability discussed under the Long- Term Effectiveness and Permanence discussion. Risks to workers would be similar to risks posed during typical environmental investigation drilling activities with protective measures that would include the use of proper PPE and engineering controls.

Alternative 5 would have no short-term risks posed to the community with the exception of the impacts to Watering Run, discussed in the Implementability section. Risks to workers would be similar to risks posed during typical environmental investigation drilling activities with protective measures that would include the use of proper PPE and engineering controls.

6. Implementability

Alternative 2 would be easy to implement because the infrastructure for each component is already in place and has been in operation for many years. Additionally, the sitewide groundwater monitoring program would be easy to continue. Ongoing operation would continue with system repairs and/or replacement as needed.

Alternative 3 would be easy to implement as the expansion of ICs and implementation of engineering controls are not difficult to execute. The limiting factors to implementability would be associated with attaining private party agreements related to ICs.

Alternative 4 would not be easy to implement as successful execution of the in-situ biological treatment of groundwater at the SAS would likely not be effective, as noted under the Long-Term Effectiveness and Permanence discussion.

Alternative 5 would be difficult to implement. Expansion of the recovery well network and ex-situ treatment of groundwater using GAC on multiple private party industrial or residential properties in the SIPs and/or AA would be impacted by limited space available for deployment of infrastructure, access logistics, and deed restrictions that would be required for installation and long-term monitoring and maintenance. The infrastructure installation process and long-term maintenance would also add further disruption to the community where acceptance has been tolerated for the bi-annual groundwater sampling events.

In addition, the discharge of treated water into Watering Run under Alternative 5 could impact properties located downgradient of the treated water discharge points. The estimated additional volume of water ranges from 35 gallons per minute (GPM) under Scenarios 2 and 3, up to 70 GPM under Scenario 4, and up to 135 GPM under Scenario 5. The increased flow into Watering Run could create changes to the current water course and potential changes to surface water quality. Increased risk of flooding and property damage could occur during future storm events due to changes to the current stormwater management conditions.

7. Cost

EPA developed the estimated costs for Alternatives 2 through 5, as summarized below, using a presumed 30-year period. Capital costs include estimates for construction, work plan development, construction management, administration, and contingency. The 30-year present value O&M costs include a 20% contingency cost as a cost buffer. The present worth costs of each proposed alternative are expressed in today's dollars. Total estimated costs, including capital and annual O&M costs are presented below with an accuracy of -30% to +50%. See Tables 8 and 8A through 8F of the 2025 FS for detailed Cost Estimates.

Table 4: Estimated Costs of Alternatives 2 through 5

Alternative #		Capital Costs	30-Year Present Value O&M Costs	30-Year Total Present Value Costs (rounded)
Alternative 2		$0	$7,280,000	$7,280,000
Alternative 3		$31,000	$7,371,000	$7,402,000
Alternative 4		$144,000	$7,371,000	$7,515,000
Alternative 5	Scenario 1	$31,000	$7,371,000	$7,402,000
	Scenario 2 or 3	$1,121,500	$8,306,000	$9,416,500
	Scenario 4	$1,265,500	$8,300,000	$9,571,500
	Scenario 5	$2,927,500	$9,659,000	$12,586,500

8. State Acceptance

EPA has coordinated closely with PADEP in the preparation of this Proposed Plan. PADEP's acceptance of the Preferred Alternative will be evaluated after the public comment period ends. PADEP's comments and the EPA's response to any such comments will be included in the Responsiveness Summary section of the Final

ROD.

9. Community Acceptance

EPA will evaluate community acceptance of the Preferred Alternative after the public comment period ends, which will be held from June 16, 2026 to July 16, 2026. EPA will address the community's questions and substantive comments in the Responsiveness Summary section of the Final ROD.

I. PREFERRED ALTERNATIVE

The Preferred Alternative for the final remedial action at the Site is **Alternative 3, continued operation and optimization of the existing GETS; contingent soil vapor investigation and mitigation for VI risk; MNA; expansion of ICs; and implementation of engineering controls**. The estimated cost for Alternative 3 is $7,396,000. EPA is recommending Alternative 3 over the other alternatives because it is protective of human health and the environment, it will comply with ARARs and meet RAOs, uses treatment to the maximum extent practicable, is readily implementable, and is cost-effective.

EPA's Preferred Alternative includes the following components:

- Continued operation and optimization of the existing GETS;
- Contingent soil vapor investigation and mitigation for VI risk;
- MNA downgradient from the GETS capture zone; and
- Expansion of ICs and implementation of engineering controls.

In addition to the above-listed components, all of the ongoing activities resulting from the completed remedial actions implemented under the Interim ROD will continue. These will include routine inspections and maintenance of the Cap over the SAS and the FWWTP, as well as operation of the spring aeration system in the AA and the existing SSDS in the AA.

Alternative 3 is the EPA's Preferred Alternative because it has the best balance of the criteria. Protection of human health and the environment would be achieved by continuing to operate and optimize the existing GETS, monitor for VI exposure, monitor for continued groundwater plume attenuation, monitor the completed Interim ROD components in the SAS and the FWWTP, continue operating the spring aeration system and SSDS, expand ICs, and implement engineering controls. Consistent groundwater and VI data show the GETS is operating effectively and is reducing the TMV of TCE. Because many of these components are already in place, implementability of the existing remedy components would be immediate, and the expansion of ICs and implementation of engineering controls would not be difficult to achieve or take much time to accomplish. Lastly, compared to the other alternatives, Alternative 3 has a relatively low cost to implement.

Based on the information available at this time, EPA believes the Preferred Alternative meets the threshold criteria and provides the best balance of trade-offs when compared to the other alternatives with respect to the balancing criteria. EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA Section 121(b): 1) to be protective of human health; 2) to comply with ARARs (or justify a waiver); 3) to be cost-effective; 4) to utilize permanent solutions and alternative treatment technologies or resource

recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element (or justify not meeting the preference).

J. COMMUNITY PARTICIPATION

EPA encourages the public to gain a more comprehensive understanding of the Site and the action proposed in this Proposed Plan and to submit comments for consideration by the EPA. EPA relies on public input to ensure that the remedy selected for each Superfund site considers the needs and concerns of the local community.

Public Comment Period

To ensure the community's concerns are being addressed, a public comment period will open June 16, 2026, and close July 16, 2026. During this time, the public is encouraged to submit comments in any one of three ways:

- **Mail (postmarked no later than July 16, 2026):**
  U.S. EPA Region 3
  Attn: Elizabeth Habecker (Odren) (3SD21)
  Remedial Project Manager
  Four Penn Center
  1600 John F. Kennedy Boulevard
  Philadelphia, PA 19103
- **E-mail:** odren.elizabeth@epa.gov
- **Voicemail:** Call 215-814-3150 to leave a message. Please speak slowly and clearly and include your name and phone number.

For questions or more information on the Superfund community involvement process for this Site, please contact:

U.S. EPA Region 3
Attn: John Brakeall (3RA22)
Community Involvement Coordinator
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103
(215) 814-5537
brakeall.john@epa.gov

Public Meeting

EPA will conduct a Public Meeting on June 30, 2026 from 6:00 to 7:30 pm at the Saint Jude Parish, located at 420 S Mountain Boulevard, Mountain Top, Pennsylvania, to discuss the Proposed Plan. EPA will present the Proposed Plan and supporting information, answer questions, and accept both oral and written comments from the public.

It is important to note that although EPA has proposed a Preferred Alternative, the final remedy has not been selected for the Site. All relevant comments received will be considered and addressed by EPA before a final remedy is selected for the Site.

Detailed information on the material discussed herein may be found in the Administrative Record file for the Site and other information used by EPA in the decision-making process. EPA encourages the public to review the Administrative Record file to gain a more comprehensive understanding of the Site and the Superfund activities that have taken place there. The Administrative Record file for the Site can be accessed from any computer linked to the internet at www.epa.gov/superfund/fosterwheeler and select the Remedial Collection Description. The Administrative Record is also available at the following locations:

U.S. EPA Region 3
Administrative Records Room
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103
215-814-2396
By appointment only

Marian Sutherland Kirby Library
35 Kirby Avenue, Mountain Top, PA 18707
Phone: 570-474-9313
Fax: 570-474-2587
E-mail: info@kirbylib.org

Following the conclusion of the public comment period on this Proposed Plan, the EPA, in consultation with PADEP, will select the final remedial action to address Site-related contaminated groundwater and ongoing Site activities after reviewing and considering all information submitted during the 30-day public comment period. The EPA, in consultation with PADEP, may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments.

EPA will prepare a formal decision document which will summarize the decision process and identify the selected final remedial action for the Site in a Final ROD. The Final ROD will contain a Responsiveness Summary which will summarize and respond to significant comments received during the public comment period. Copies of the Final ROD for the remedial action will be available for public review in the Administrative Record file following issuance of the Final ROD.

APPENDICES

APPENDIX A – SUMMARY OF CHEMICALS OF CONCERN

APPENDIX B – RISK-BASED PRELIMINARY REMEDIATION GOALS

APPENDIX C – SELECTION OF FINAL REMEDIATION GOALS

APPENDIX A – SUMMARY OF CHEMICALS OF CONCERN

Appendix A
Summary of Chemicals of Potential Concern
Sitewide Groundwater Feasibility Study
FWEC/Church Road TCE Site
Mountain Top, Luzerne County, Pennsylvania

Building/ Area	Receptor [a]	Exposure Medium	Potential Constituent of Concern [b]	Units	Frequency of Detect	EPC [c]	Cancer ELCR [c]	Cancer COC? [d]	Cancer COPCs Contributing to Cumulative Risk [e]	Non-Cancer HQ [c]	Non-Cancer COC? [d]	Non-Cancer Target Endpoints (source) (for exposure pathway evaluated only) RfD Endpoint [f]	Non-Cancer Target Endpoints (source) (for exposure pathway evaluated only) RfC Endpoint [f]	Noncancer COPCs Contributing to Cumulative HQ [e]	Shared Targets?
Former FWEC Facility	Future Resident (Hypothetical)	Groundwater Used as Tapwater	Cyanide [m]	mg/L	7 / 16	5.62E-03	NA	No	--	2.3	Yes	Reproductive - I	Endocrine – I	--	None
			Cadmium	mg/L	1 / 23	2.90E-03	NA	No	--	0.21	No	Urinary - I	-	No	
			Chromium [i]	mg/L	3 / 23	6.92E-03	2.3E-04	Yes	--	0.19	No	NOEL - I	-	No	
			Cobalt	mg/L	2 / 23	5.39E-03	NA	No	--	0.90	No	Thyroid - P	-	No	
			Iron [j]	mg/L	15 / 23	3.09E+01	NA	No	--	2.2	No	GI - P	-	No	
			Manganese [j]	mg/L	18 / 23	4.24E+00	NA	No	--	9.8	No	Nervous - S	-	No	
			Mercury	mg/L	1 / 23	2.30E-04	NA	No	--	0.11	No	Nervous, Developmental - I	-	Yes	Developmental
			1,1,2-Trichloroethane	mg/L	1 / 81	3.40E-04	5.1E-07	No	No	0.24	No	Immune, Hematologic - I	Respiratory – X	Yes	Immune
			1,4-Dioxane	mg/L	11 / 54	5.43E-03	7.0E-06	No	Yes	0.0091	No	Hepatic, Urinary - I	Nervous, Respiratory – I	No	
			Trichloroethene	mg/L	61 / 81	7.46E-01	7.3E-04	Yes	--	85	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	Immune, Developmental
			Vinyl Chloride [k]	mg/L	1 / 81	3.30E-04	3.0E-05	No	Yes	0.0059	No	Hepatic - I	Hepatic – I	No	
		Vapor Intrusion from Groundwater	1,1,1-Trichloroethane	mg/m^3	3 / 3	4.21E+01	NA	No	--	8.1	Yes	-	Hepatic – I	--	Hepatic
			1,1,2-Trichloroethane	mg/m^3	2 / 3	3.93E-02	2.2E-04	Yes	--	190	Yes	-	Respiratory – X	--	Respiratory
			1,1-Dichloroethane	mg/m^3	3 / 3	2.88E+00	1.7E-03	Yes	--	NA	No	-	-	--	
			1,1-Dichloroethene	mg/m^3	3 / 3	6.19E+00	NA	No	--	30	Yes	-	Hepatic – I	--	Hepatic
			Mercury [i]	mg/m^3	1 / 3	9.81E-04	NA	No	--	3.1	Yes	-	-	--	
			Naphthalene	mg/m^3	2 / 3	2.10E-02	2.5E-04	Yes	--	6.7	Yes	-	Nervous, Respiratory – I	--	Nervous, Respiratory
			Ethylbenzene	mg/m^3	2 / 3	4.21E-02	3.8E-05	No	Yes	0.040	No	-	Developmental - I	Yes	Developmental
			Tetrachloroethene	mg/m^3	3 / 3	6.41E-02	6.0E-06	No	Yes	1.5	Yes	-	Nervous, Ocular – I	--	Nervous
			Trichloroethene	mg/m^3	2 / 3	6.64E-02	6.5E-04	Yes	--	32	Yes	-	Cardiovascular, Developmental, Immune - I	--	Developmental
			Xylenes, Total	mg/m^3	2 / 3	2.97E-01	NA	No	--	2.8	Yes	-	Nervous – I	--	Nervous
	Future Commercial Worker	Groundwater Used as Tapwater	Chromium [i]	mg/L	3 / 23	6.92E-03	1.2E-05	No	Yes	0.010	No	NOEL - I	Respiratory – I	No	
			Iron [j]	mg/L	15 / 23	3.09E+01	NA	No	--	0.15	No	GI - P	-	No	
			Manganese [j]	mg/L	18 / 23	4.24E+00	NA	No	--	0.63	No	Nervous - S	Nervous – I	No	
			1,4-Dioxane	mg/L	11 / 54	5.43E-03	1.7E-06	No	Yes	0.00062	No	Hepatic, Urinary - I	Nervous, Respiratory – I	No	
			Trichloroethene	mg/L	61 / 81	7.46E-01	1.1E-04	Yes	--	5.5	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	
		Vapor Intrusion from Groundwater	1,1,1-Trichloroethane	mg/m^3	3 / 3	4.21E+01	NA	No	--	1.9	Yes	-	Hepatic – I	--	Hepatic
			1,1,2-Trichloroethane	mg/m^3	2 / 3	3.93E-02	5.1E-05	No	Yes	45	Yes	-	Respiratory – X	--	Respiratory
			1,1-Dichloroethane	mg/m^3	3 / 3	2.88E+00	3.8E-04	Yes	--	NA	No	-	-	No	
			1,1-Dichloroethene	mg/m^3	3 / 3	6.19E+00	NA	No	--	7.1	Yes	-	Hepatic – I	--	Hepatic
			Mercury [i]	mg/m^3	1 / 3	9.81E-04	NA	No	--	0.75	No	-	-	No	
			Naphthalene	mg/m^3	2 / 3	2.10E-02	5.8E-05	No	Yes	1.6	Yes	-	Nervous, Respiratory – I	--	Nervous, Respiratory
			Ethylbenzene	mg/m^3	2 / 3	4.21E-02	8.6E-06	No	Yes	0.0096	No	-	Developmental - I	Yes	Developmental
			Tetrachloroethene	mg/m^3	3 / 3	6.41E-02	1.4E-06	No	Yes	0.37	No	-	Nervous, Ocular – I	Yes	Nervous
			Trichloroethene	mg/m^3	2 / 3	6.64E-02	2.2E-05	No	Yes	7.6	Yes	-	Cardiovascular, Developmental, Immune - I	--	Developmental
			Xylenes, Total	mg/m^3	2 / 3	2.97E-01	NA	No	--	0.68	No	-	Nervous – I	Yes	Nervous
	Future Construction/Utility Worker	Groundwater in a Trench	Trichloroethene	mg/L	61 / 81	7.46E-01	3.3E-06	No	No	28	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	

Appendix A
Summary of Chemicals of Potential Concern
Sitewide Groundwater Feasibility Study
FWEC/Church Road TCE Site
Mountain Top, Luzerne County, Pennsylvania

Building/ Area	Receptor [a]	Exposure Medium	Potential Constituent of Concern [b]	Units	Frequency of Detect	EPC [c]	Cancer ELCR [c]	Cancer COC? [d]	Cancer COPCs Contributing to Cumulative Risk [e]	Non-Cancer HQ [c]	Non-Cancer COC? [d]	Non-Cancer Target Endpoints (source) (for exposure pathway evaluated only) RfD Endpoint [f]	RfC Endpoint [f]	Noncancer COPCs Contributing to Cumulative HQ [e]	Shared Targets?
Affected Area	Future Resident (Hypothetical)	Groundwater Used as Tapwater	Iron [i]	mg/L	8 / 9	1.99E+01	NA	No	--	1.4	Yes	GI - P	-	No	
			Acrolein [n]	mg/L	2 / 75	1.81E-02	NA	No	--	88	Yes	Decreased survival - I	Respiratory – I	--	
			Trichloroethene	mg/L	78 / 97	3.01E-02	3.7E-05	No	No	4.6	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	
Surrounding Industrial Properties	Future Resident (Hypothetical)	Groundwater Used as Tapwater	Iron [i]	mg/L	14 / 16	1.84E+01	NA	No	--	1.3	Yes	GI - P	-	--	
			Manganese [j]	mg/L	4 / 4	6.58E+00	NA	No	--	15	Yes	Nervous - S	Nervous – I	--	
			Trichloroethene	mg/L	114 / 146	5.95E-02	7.3E-05	No	No	9.1	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	
	Current/Future (Hypothetical) Commercial Worker	Groundwater Used as Tapwater	Iron [i]	mg/L	14 / 16	1.84E+01	NA	No	--	0.22	No	GI - P	-	No	
			Manganese [j]	mg/L	4 / 4	6.58E+00	NA	No	--	2.4	Yes	Nervous - S	Nervous – I	No	
			Trichloroethene	mg/L	114 / 146	5.95E-02	8.6E-06	No	No	1.0	No	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	No	
	Current/Future Construction/Utility Worker	Groundwater in a Trench	Trichloroethene	mg/L	114 / 146	5.95E-02	2.5E-07	No	No	2.1	Yes	Cardiovascular, Developmental, Immune - I	Cardiovascular, Developmental, Immune - I	--	

Notes:

Yellow shading identifies COCs with ELCR greater than 1 x 10^{-4}.

Green shading identifies COCs with HQ greater than 1.

- - Endpoint is not included because the inhalation route of exposure was not evaluated, or the compound is a carcinogenic chemical of concern.

-- - Not applicable for cumulative COPC selection in this category.

ELCR - Excess Lifetime Cancer Risk.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient.
NA - Not Applicable.
NC - Not Calculated - see COC selection for average area.

(a) All receptors represent a Reasonable Maximum Exposure Scenario

(b) Compounds were chosen on the following basis:
If the exposure point total for each exposure area has a cumulative HI >1 or an ELCR > 10-4 then that exposure area was included.
Individual compounds were selected if the HQ > 0.1 or ELCR > 10-6.

(c) EPCs and HQ and ELCR calculations can be found in **Attachment A** of the Baseline Human Health Risk Assessment.

(d) Risk based COCs (ARARs are not considered in this table) are defined as:
Carcinogens: If the total ELCR for an exposure media is > $10^{-4.}$
Non-Carcinogenic: If the total HI for a compound within an exposure media is > 1

(e) COPCs that may contribute to cumulative risk with COCs are defined as:
Carcinogens: Any compounds with an ELCR within the USEPA target risk range (10^{-6} - 10^{-4}), where the total ELCR for an exposure media is > 10-4.
Non-Carcinogenic: All compounds with HQ > 0.1 with the same target endpoint, where the total HI for an exposure media is > 1.

(f) The primary target organ for inhalation can be found in **Attachment A - Table 9s** of the Baseline Human Health Risk Assessment.
Target endpoints are from references listed in the USEPA Regional Screening Level Tables (RSL) for the corresponding toxicity value, the abbreviations given here are consistent with those shown in the RSL table:
I = IRIS, C = CalEPA, A = ATSDR, H = HEAST, P = PPRTV, S = RSL user guide Section 5 , X = Appendix PPRTV Screen

(i) In the BHHRA, it was assumed that the reported chromium concentrations were hexavalent chromium concentrations. It is recommended that remedial alternatives be developed for chromium in groundwater used as tapwater only if it is confirmed that hexavalent chromium is present at the reported chromium concentrations.

(j) As per Section 2.1.2 of the text, cobalt in soil, iron and manganese in groundwater, and manganese in sediment have been excluded from further action based on lack of site related release, prevalence in the environment, and lack of significant risk above background.

(k) Vinyl Chloride would be considered with trichloroethene as chlorinated VOC COCs. Trichloroethene remediation would likely address vinyl chloride risks.

(l) Mercury was considered a COC for vapor intrusion based on the assumption that it is elemental mercury. Mercury is unlikely to be in a volatile form, and consequently has not been considered a COC for the vapor intrusion pathway.

(m) As indicated in Table 4-9I of the Draft Final RI Report, all cyanide analytical results for groundwater samples were either non-detects or were qualified ("B") detections. The "B" qualifier indicates "Reported value may be wholly or partially due to contamination in an associated blank sample". The BHHRA evaluated risks associated with these qualified detections. However, the available data do not indicate any confirmed positive detections of cyanide in groundwater samples. Therefore, the BHHRA risks identified for cyanide in groundwater are not representative of site conditions and development of remedial alternatives for cyanide in groundwater is not necessary.

(n) Acrolein in the Affected Area was initially identified as a COC for groundwater used as tap water, however acrolein was only detected in two out of seventy five samples. Therefore, developing a remedial strategy for the treatment of acrolein is not warranted.

Prepared by: LCG 11/21/2017
Checked by: KALS 11/22/2017
Updated by: WLG07/07/25

APPENDIX B – RISK-BASED PRELIMINARY REMEDIATION GOALS

Appendix B
Risk-Based Preliminary Remediation Goals
Sitewide Groundwater Feasibility Study
FWEC/Church Road TCE Site
Mountain Top, Luzerne County, Pennsylvania

Exposure Point	Receptor	Media	Chemical	Constituent of Concern or COPC? [a]	Units	Frequency of Detect	EPC	HQ (-)	Preliminary Remediation Goal [b]		Total Potential ELCR (-)	Preliminary Remediation Goal [b]		
									HI = 0.1	HI = 1		1.E-06	1.E-05	1.E-04
Former FWEC Facility	Future Resident (Hypothetical)	Groundwater Used As Tapwater	Mercury	COPC	mg/L	1 / 23	2.30E-04	0.11	2.1E-04	2.1E-03	NC	--	--	--
			1,1,2-Trichloroethane	COPC	mg/L	1 / 81	3.40E-04	0.24	1.4E-04	1.4E-03	5.1E-07	6.7E-04	6.7E-03	6.7E-02
			1,4-Dioxane	COPC	mg/L	11 / 54	5.43E-03	0.0091	6.0E-02	6.0E-01	7.0E-06	7.8E-04	7.8E-03	7.8E-02
			Trichloroethene	COC	mg/L	61 / 81	7.46E-01	85	8.8E-04	8.8E-03	7.4E-04	1.0E-03	1.0E-02	1.0E-01
			Vinyl Chloride	COPC	mg/L	1 / 81	3.30E-04	0.0059	5.6E-03	5.6E-02	3.0E-05	1.1E-05	1.1E-04	1.1E-03
		Vapor Intrusion From Groundwater [c]	1,1,1-Trichloroethane	COC	mg/m3	3 / 3	4.21E+01	8.1	5.2E-01	5.2E+00	NC	--	--	--
			1,1,2-Trichloroethane	COC	mg/m3	2 / 3	3.93E-02	190	2.1E-05	2.1E-04	2.2E-04	1.8E-04	1.8E-03	1.8E-02
			1,1-Dichloroethane	COC	mg/m3	3 / 3	2.88E+00	NC	--	--	1.7E-03	1.7E-03	1.7E-02	1.7E-01
			1,1-Dichloroethene	COC	mg/m3	3 / 3	6.19E+00	30	2.1E-02	2.1E-01	NC	--	--	--
			Naphthalene	COC	mg/m3	2 / 3	2.10E-02	6.7	3.1E-04	3.1E-03	2.5E-04	8.2E-05	8.2E-04	8.2E-03
			Ethylbenzene	COPC	mg/m3	2 / 3	4.21E-02	0.040	1.1E-01	1.1E+00	3.8E-05	1.1E-03	1.1E-02	1.1E-01
			Tetrachloroethene	COC	mg/m3	3 / 3	6.41E-02	1.5	4.3E-03	4.3E-02	6.0E-06	1.1E-02	1.1E-01	1.1E+00
			Trichloroethene	COC	mg/m3	2 / 3	6.64E-02	32	2.1E-04	2.1E-03	6.5E-04	1.0E-04	1.0E-03	1.0E-02
			Xylenes, Total	COC	mg/m3	2 / 3	2.97E-01	2.8	1.1E-02	1.1E-01	NC	--	--	--
	Future Commercial Worker	Groundwater Used as Tapwater	1,4-Dioxane	COPC	mg/L	11 / 54	5.43E-03	0.00062	8.8E-01	8.8E+00	1.7E-06	3.2E-03	3.2E-02	3.2E-01
			Trichloroethene	COC	mg/L	61 / 81	7.46E-01	5.5	1.4E-02	1.4E-01	1.1E-04	6.8E-03	6.8E-02	6.8E-01
		Vapor Intrusion from Groundwater [c]	1,1,1-Trichloroethane	COC	mg/m3	3 / 3	4.21E+01	1.9	2.2E+00	2.2E+01	NC	--	--	--
			1,1,2-Trichloroethane	COC	mg/m3	2 / 3	3.93E-02	45	8.7E-05	8.7E-04	5.1E-05	7.7E-04	7.7E-03	7.7E-02
			1,1-Dichloroethane	COC	mg/m3	3 / 3	2.88E+00	NC	--	--	3.8E-04	7.6E-03	7.6E-02	7.6E-01
			1,1-Dichloroethene	COC	mg/m3	3 / 3	6.19E+00	7.1	8.7E-02	8.7E-01	NC	--	--	--
			Naphthalene	COC	mg/m3	2 / 3	2.10E-02	1.6	1.3E-03	1.3E-02	5.8E-05	3.6E-04	3.6E-03	3.6E-02
			Ethylbenzene	COPC	mg/m3	2 / 3	4.21E-02	0.0096	4.4E-01	4.4E+00	8.6E-06	4.9E-03	4.9E-02	4.9E-01
			Tetrachloroethene	COPC	mg/m3	3 / 3	6.41E-02	0.37	1.7E-02	1.7E-01	1.4E-06	4.6E-02	4.6E-01	4.6E+00
			Trichloroethene	COC	mg/m3	2 / 3	6.64E-02	7.6	8.7E-04	8.7E-03	2.2E-05	3.0E-03	3.0E-02	3.0E-01
			Xylenes, Total	COPC	mg/m3	2 / 3	2.97E-01	0.68	4.4E-02	4.4E-01	NC	--	--	--
	Future Construction/ Utility Worker	Groundwater in a Trench	Trichloroethene	COC	mg/L	61 / 81	7.46E-01	28	2.7E-03	2.7E-02	3.3E-06	2.3E-01	2.3E+00	2.3E+01
Affected Area	Future Resident (Hypothetical)	Groundwater Used as Tapwater	Trichloroethene	COC	mg/L	78 / 97	3.01E-02	4.6	6.5E-04	6.5E-03	3.7E-05	8.1E-04	8.1E-03	8.1E-02
Surrounding Industrial Properties	Future Resident (Hypothetical)	Groundwater Used as Tapwater	Trichloroethene	COC	mg/L	114 / 146	5.95E-02	9.1	6.5E-04	6.5E-03	7.3E-05	8.2E-04	8.2E-03	8.2E-02
	Current/Future Construction/Utility Worker	Groundwater in a Trench	Trichloroethene	COC	mg/L	114 / 146	5.95E-02	2.1	2.8E-03	2.8E-02	2.5E-07	2.4E-01	2.4E+00	2.4E+01

Prepared by: LCG 11/21/2017
Checked by: KALS 11/22/2017
Updated by: WLG 07/07/25

Notes:
-- No PRG calculated
ELCR - Excess Lifetime Cancer Risk
ELCR and HI calculations were performed in the BHHRA.
EPC - Exposure Point Concentration.
HQ - Hazard Quotient.
NC - Not calculated.
PRG - Preliminary Remediation Goal
(a) Constituents of concern (COCs) and Compounds of potential concern (COPCs) contributing to cumulative risk above thresholds are identified in Table 1.
(b) PRGs have been calculated using the following equation:
(c) Vapor Intrusion values were initially only calculated for the Formwer FWEC Facility. These values will be used as PRGs for the SIP Area and the Affected Area.

$$PRG = \frac{Target\ ELCR\ \text{or HQ} \times EPC}{Total\ \text{Estimated ELCR or HQ}}$$

(c) EPCs are documented in the BHHRA.

APPENDIX C – SELECTION OF FINAL REMEDIATION GOALS

Appendix C
Selection of Final Remediation Levels
Sitewide Groundwater Feasibility Study
FWEC/Church Road TCE Site
Mountain Top, Luzerne County, Pennsylvania

Exposure Point	Compound of Concern [a]	Pathway	Units	EPC [c]	Preliminary Remediation Goal [b]		Preliminary Remediation Goal [b]			Potential ARAR/TBC	Selected Remediation Level	Basis
					HI = 0.1	HI = 1	1.E-06	1.E-05	1.E-04			
Groundwater										**MCL (ARAR)**		
Former FWEC Facility	Trichloroethene	Residential Tap Water	mg/L	7.46E-01	**8.8E-04**	8.8E-03	**1.0E-03**	1.0E-02	1.0E-01	5.0E-03	5.0E-03	MCL
	Trichloroethene	Commercial Tap Water	mg/L	7.46E-01	1.4E-02	1.4E-01	6.8E-03	6.8E-02	6.8E-01	5.0E-03	5.0E-03	MCL
	Trichloroethene	Future Construction in a Trench	mg/L	7.46E-01	2.7E-03	2.7E-02	2.3E-01	2.3E+00	2.3E+01	5.0E-03	5.0E-03	MCL
Affected Area	Trichloroethene	Residential Tap Water	mg/L	3.01E-02	**6.5E-04**	6.5E-03	**8.1E-04**	8.1E-03	8.1E-02	5.0E-03	5.0E-03	MCL
Surrounding	Trichloroethene	Residential Tap Water	mg/L	5.95E-02	**6.5E-04**	6.5E-03	**8.2E-04**	8.2E-03	8.2E-02	5.0E-03	5.0E-03	MCL
Industrial Properties	Trichloroethene	Future Construction in a Trench	mg/L	5.95E-02	**2.8E-03**	2.8E-02	2.4E-01	2.4E+00	2.4E+01	5.0E-03	5.0E-03	MCL
Vapor Intrusion - Indoor Air PRGs as Calculated from Groundwater - Remediation Levels are selected for subslab soil vapor only [d]										**VISL (Indoor Air) (TBC)**		
Former FWEC Facility	1,1,1-Trichloroethane	Residential VI	mg/m3	4.21E+01	5.2E-01	5.2E+00	--	--	--	5.2E+00	NA	
	1,1,1-Trichloroethane	Commercial VI	mg/m3	4.21E+01	2.2E+00	2.2E+01	--	--	--	2.2E+01	NA	
	1,1,2-Trichloroethane	Residential VI	mg/m3	3.93E-02	2.1E-05	2.1E-04	1.8E-04	1.8E-03	1.8E-02	1.8E-04	NA	
Indoor Air PRG Calcs	1,1,2-Trichloroethane	Commercial VI	mg/m3	3.93E-02	8.7E-05	8.7E-04	7.7E-04	7.7E-03	7.7E-02	7.7E-04	NA	
	1,1-Dichloroethane	Residential VI	mg/m3	2.88E+00	--	--	1.7E-03	1.7E-02	1.7E-01	1.8E-03	NA	
	1,1-Dichloroethane	Commercial VI	mg/m3	2.88E+00	--	--	7.6E-03	7.6E-02	7.6E-01	7.7E-03	NA	
	1,1-Dichloroethene	Residential VI	mg/m3	6.19E+00	2.1E-02	2.1E-01	--	--	--	2.1E-01	NA	
	1,1-Dichloroethene	Commercial VI	mg/m3	6.19E+00	8.7E-02	8.7E-01	--	--	--	8.8E-01	NA	
	Naphthalene	Residential VI	mg/m3	2.10E-02	3.1E-04	3.1E-03	8.2E-05	8.2E-04	8.2E-03	8.3E-05	NA	
	Naphthalene	Commercial VI	mg/m3	2.10E-02	1.3E-03	1.3E-02	3.6E-04	3.6E-03	3.6E-02	3.6E-04	NA	
	Tetrachloroethene	Residential VI	mg/m3	6.41E-02	4.3E-03	4.3E-02	1.1E-02	1.1E-01	1.1E+00	1.1E-02	NA	
	Trichloroethene	Residential VI	mg/m3	6.64E-02	2.1E-04	2.1E-03	1.0E-04	1.0E-03	1.0E-02	4.8E-04	NA	
	Trichloroethene	Commercial VI	mg/m3	6.64E-02	8.7E-04	8.7E-03	3.0E-03	3.0E-02	3.0E-01	3.0E-03	NA	
	Xylenes, Total	Residential VI	mg/m3	2.97E-01	1.1E-02	1.1E-01	--	--	--	1.0E-01	NA	
Vapor Intrusion - Subslab ARARs/TBCs protective of Indoor Air [d]										**VISL (Subslab Soil Vapor) (TBC)**		
Former FWEC Facility	1,1,1-Trichloroethane	Residential VI	mg/m3		--	--	--	--	--	1.7E+02	1.7E+02	VISL (Resi)
	1,1,1-Trichloroethane	Commercial VI	mg/m3		--	--	--	--	--	7.3E+02	7.3E+02	VISL (Com)
	1,1,2-Trichloroethane	Residential VI	mg/m3		--	--	--	--	--	5.8E-03	5.8E-03	VISL (Resi)
Subslab ARAR/TBC Selection	1,1,2-Trichloroethane	Commercial VI	mg/m3		--	--	--	--	--	2.6E-02	2.6E-02	VISL (Com)
	1,1-Dichloroethane	Residential VI	mg/m3		--	--	--	--	--	5.8E-02	5.8E-02	VISL (Resi)
	1,1-Dichloroethane	Commercial VI	mg/m3		--	--	--	--	--	2.6E-01	2.6E-01	VISL (Com)
	1,1-Dichloroethene	Residential VI	mg/m3		--	--	--	--	--	7.0E+00	7.0E+00	VISL (Resi)
	1,1-Dichloroethene	Commercial VI	mg/m3		--	--	--	--	--	2.9E+01	2.9E+01	VISL (Com)
	Naphthalene	Residential VI	mg/m3		--	--	--	--	--	2.8E-03	2.8E-03	VISL (Resi)
	Naphthalene	Commercial VI	mg/m3		--	--	--	--	--	1.2E-02	1.2E-02	VISL (Com)
	Tetrachloroethene	Residential VI	mg/m3		--	--	--	--	--	3.6E-01	3.6E-01	VISL (Resi)
	Trichloroethene	Residential VI	mg/m3		--	--	--	--	--	1.6E-02	1.6E-02	VISL (Resi)
	Trichloroethene	Commercial VI	mg/m3		--	--	--	--	--	1.0E-01	1.0E-01	VISL (Com)
	Xylenes, Total	Residential VI	mg/m3		--	--	--	--	--	3.5E+00	3.5E+00	VISL (Resi)

Notes:
A cumulative risk assessment will be performed when Remediation Goals are believed to be achieved for the Site.
During the HHRA, cyanide, iron, manganese, and chromium IV were identified as Potential Constituents of Concern (Appendix A) and thus should be periodically monitored for at the Site to ensure concentrations are decreasing over time.

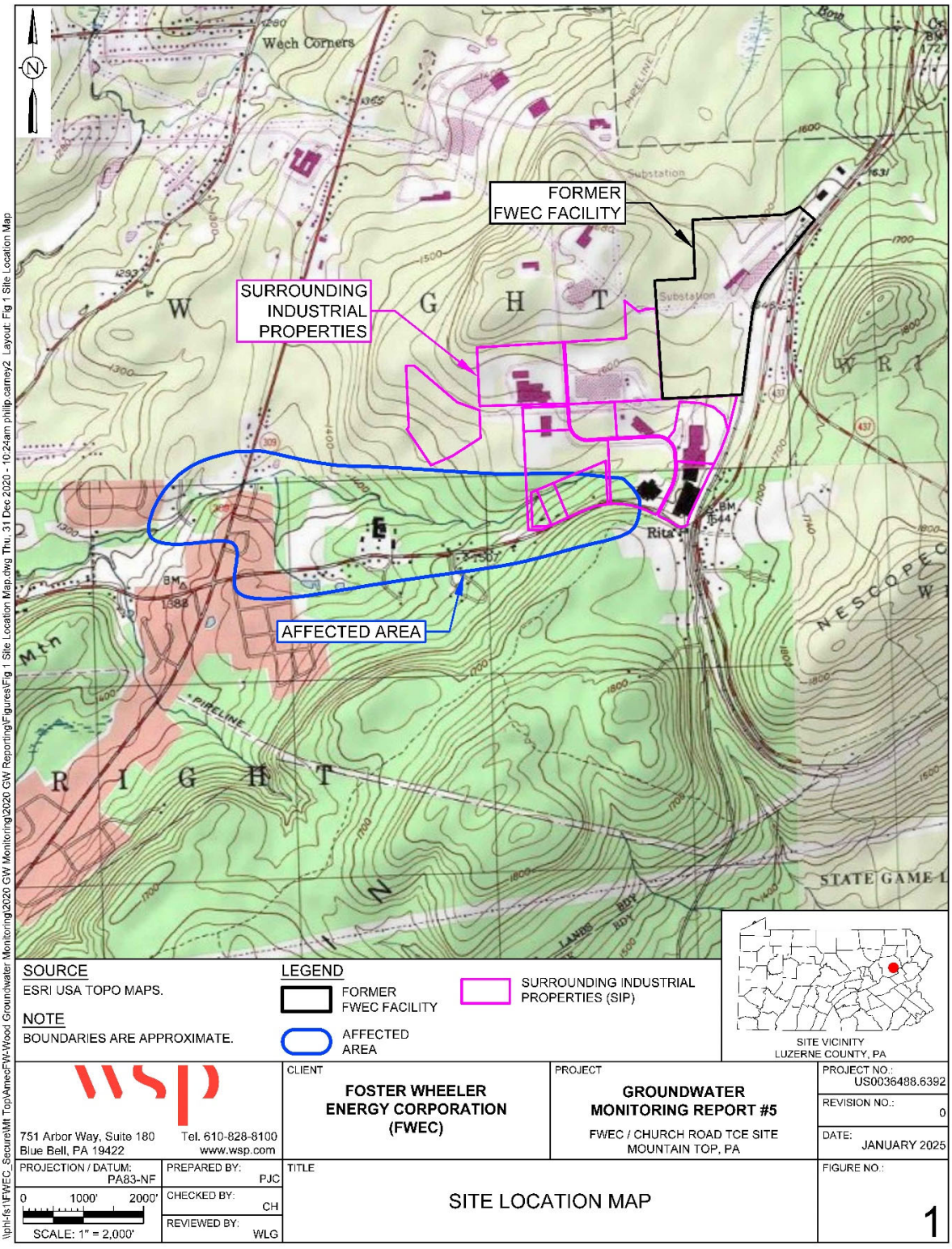
Prepared by: ARQ 11/28/17
Checked by: KALS 11/28/2017
Updated by: WLG 07/07/25

-- No PRG calculated
ARAR/TBC - Applicable or Relevant and Appropriate Requirements/To Be Considered.
EPC - Exposure Point Concentration.
MCL - Maximum Contamination Level (USEPA, 2017a)
NA - Not applicable.
PRG - Preliminary Remediation Goal
VISL - Vapor Intrusion Screening Level Calculator Version 3.5 for Residential and Commercial Use (June, 2017) Target hazard index of 1 and target cancer risk of $1x10^{-6}$ (USEPA, 2017b).

(a) COCs have been selected as per Table 1.
(b) PRGs have been calculated as per Table 2.
(c) EPCs are documented in the BHHRA. Groundwater concentrations shown for the groundwater to indoor air pathway are the maximum detected concentrations used for COPC selection.

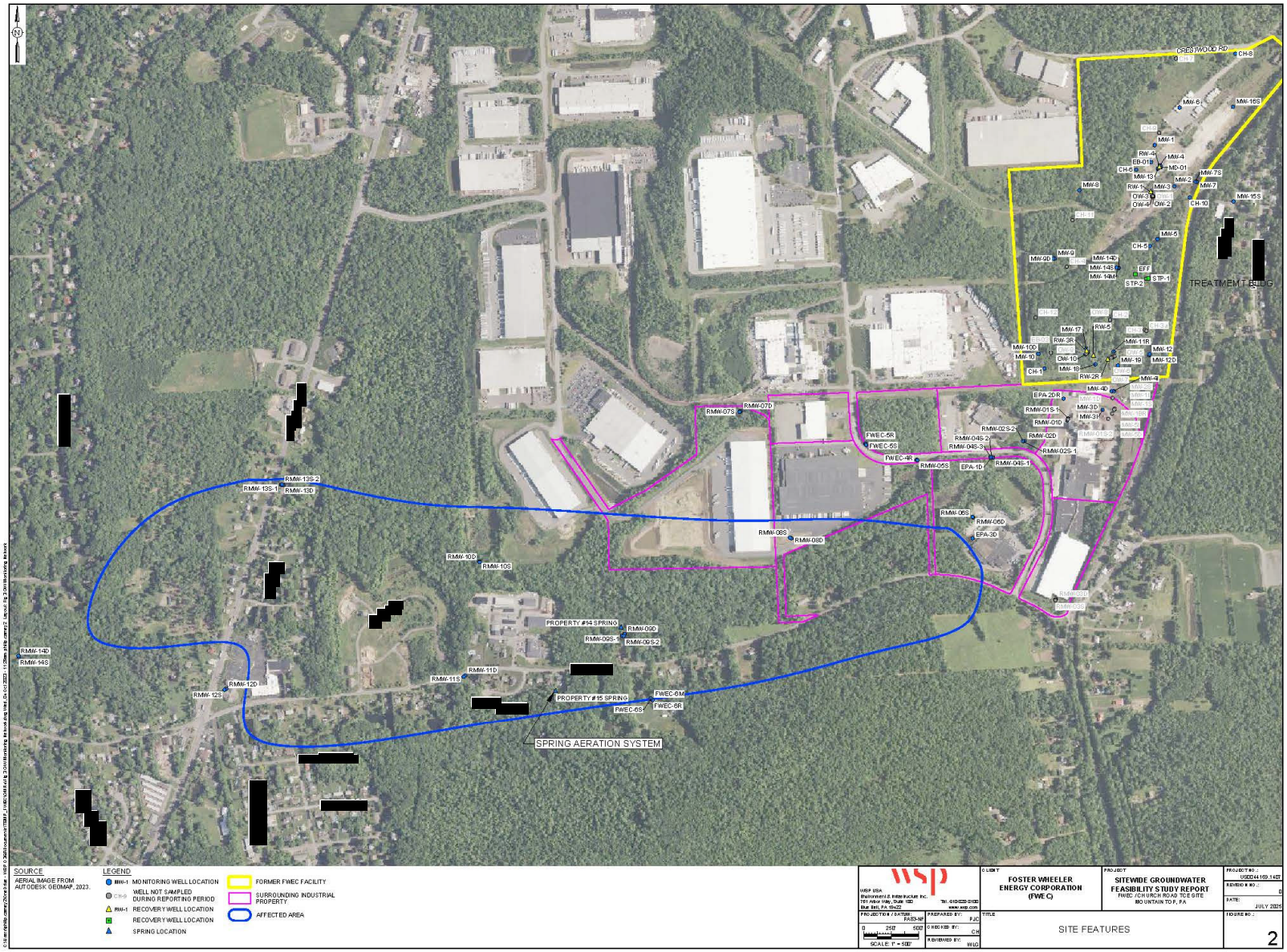
FIGURES

Figure 1: Site Location Map



Source: Figure 1, Groundwater Monitoring Report #5 for FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 2: Site Features

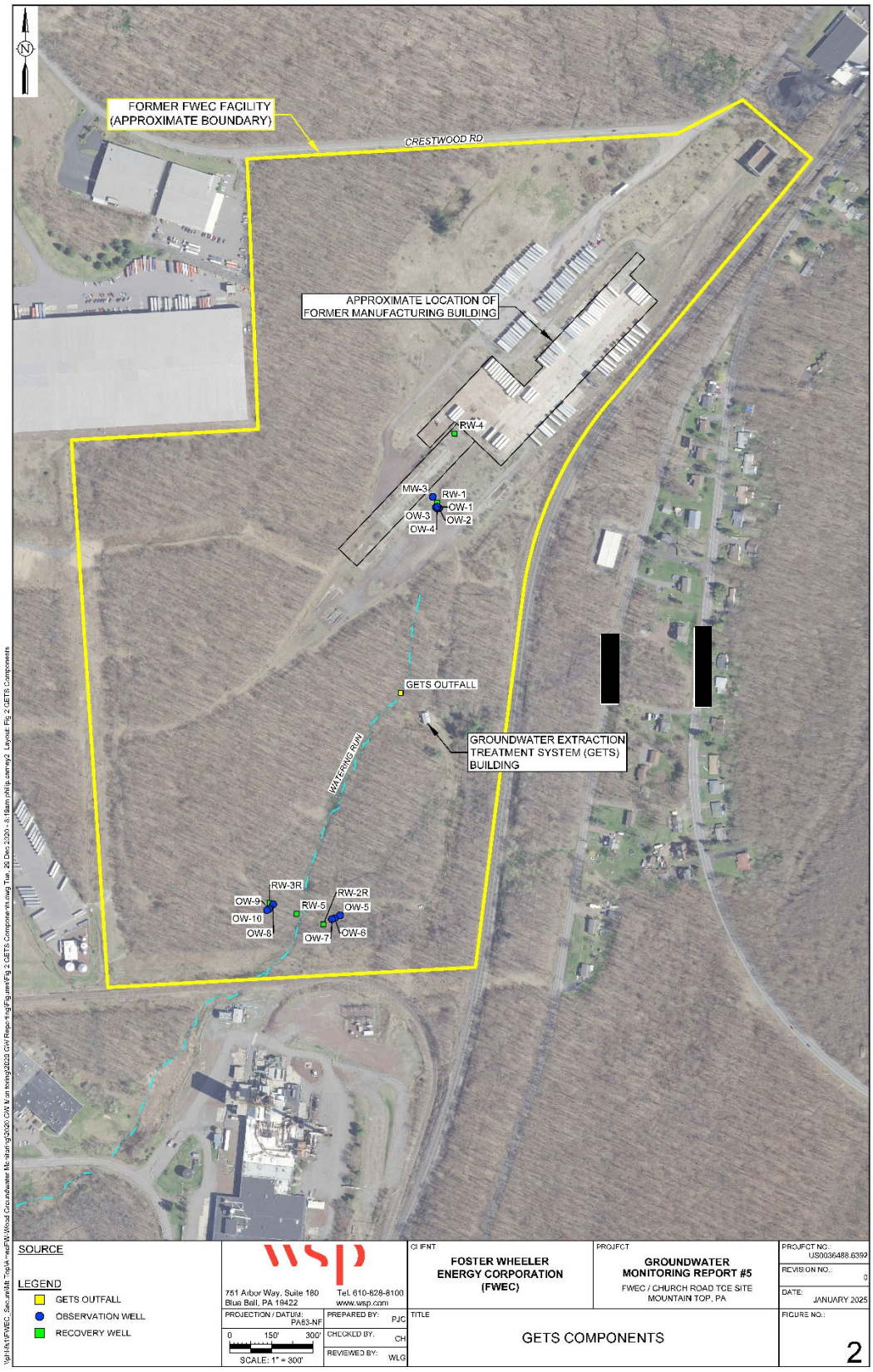


Source: Figure 2, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 3: Former FWEC Facility

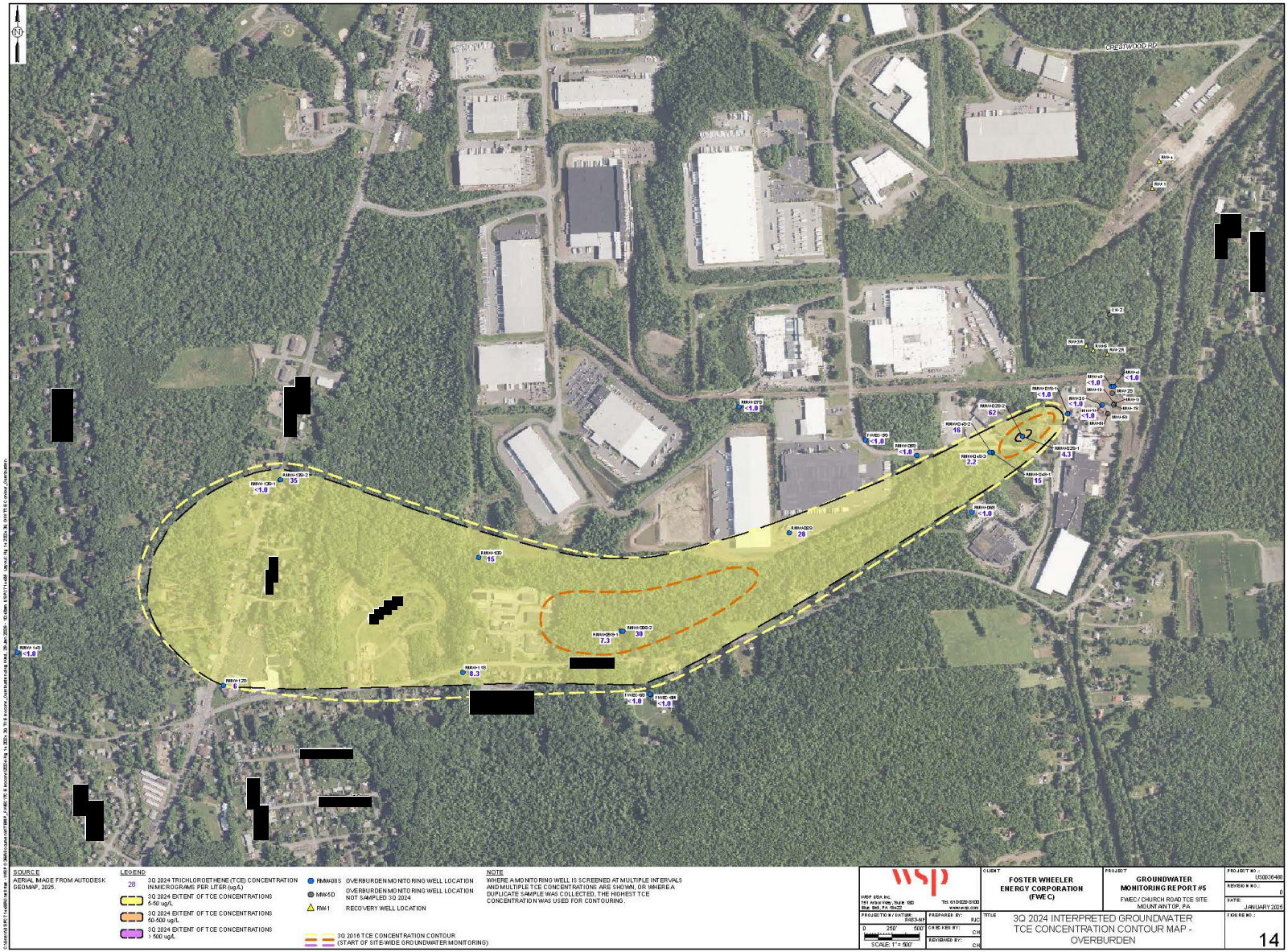
Source: Figure 1-3, Final Remedial Investigation Report for FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (Tetra Tech, 2017).

Figure 4: GETS Components



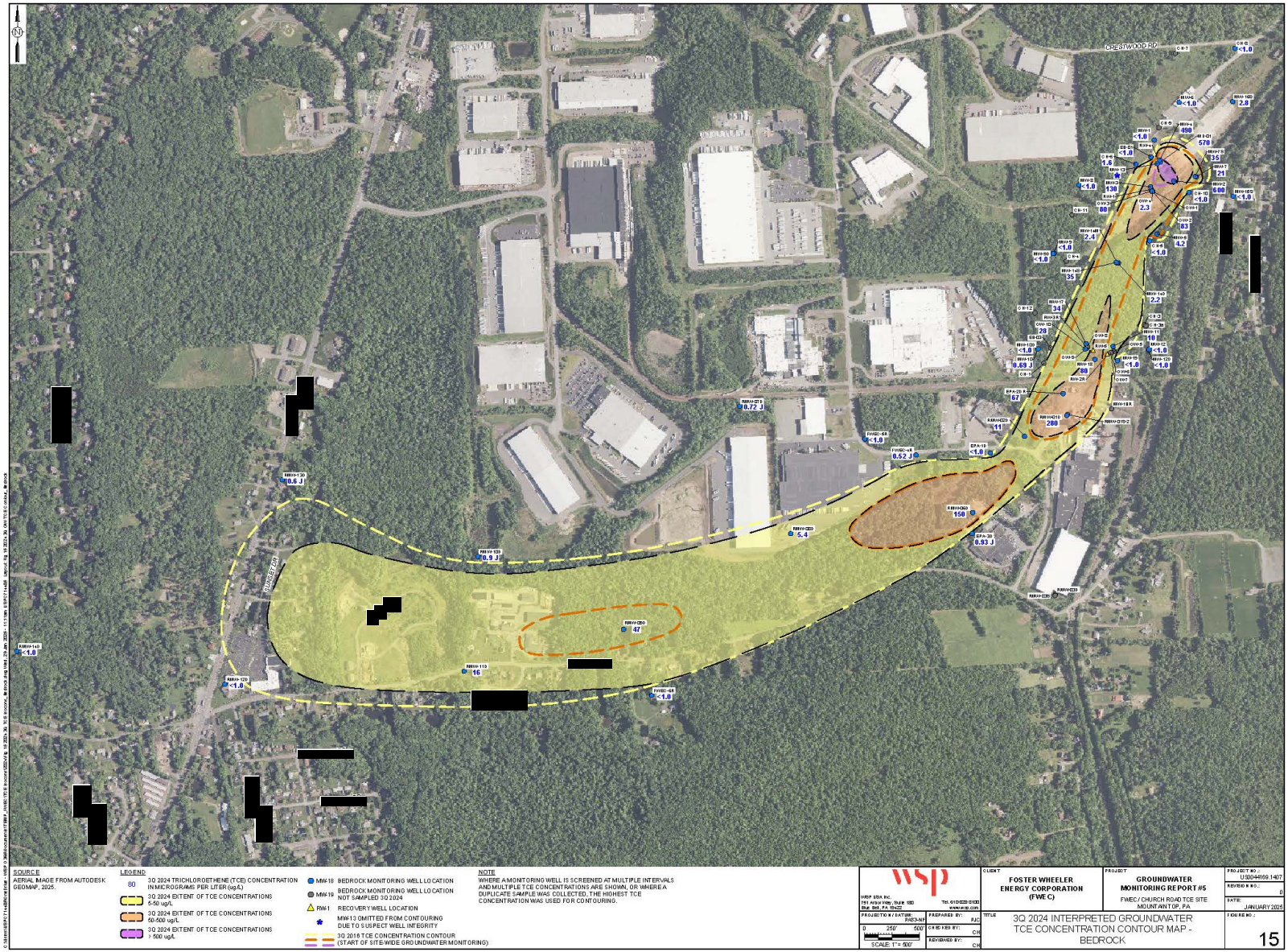
Source: Figure 2, Groundwater Monitoring Report #5 for FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 5: TCE Contour Map: Overburden



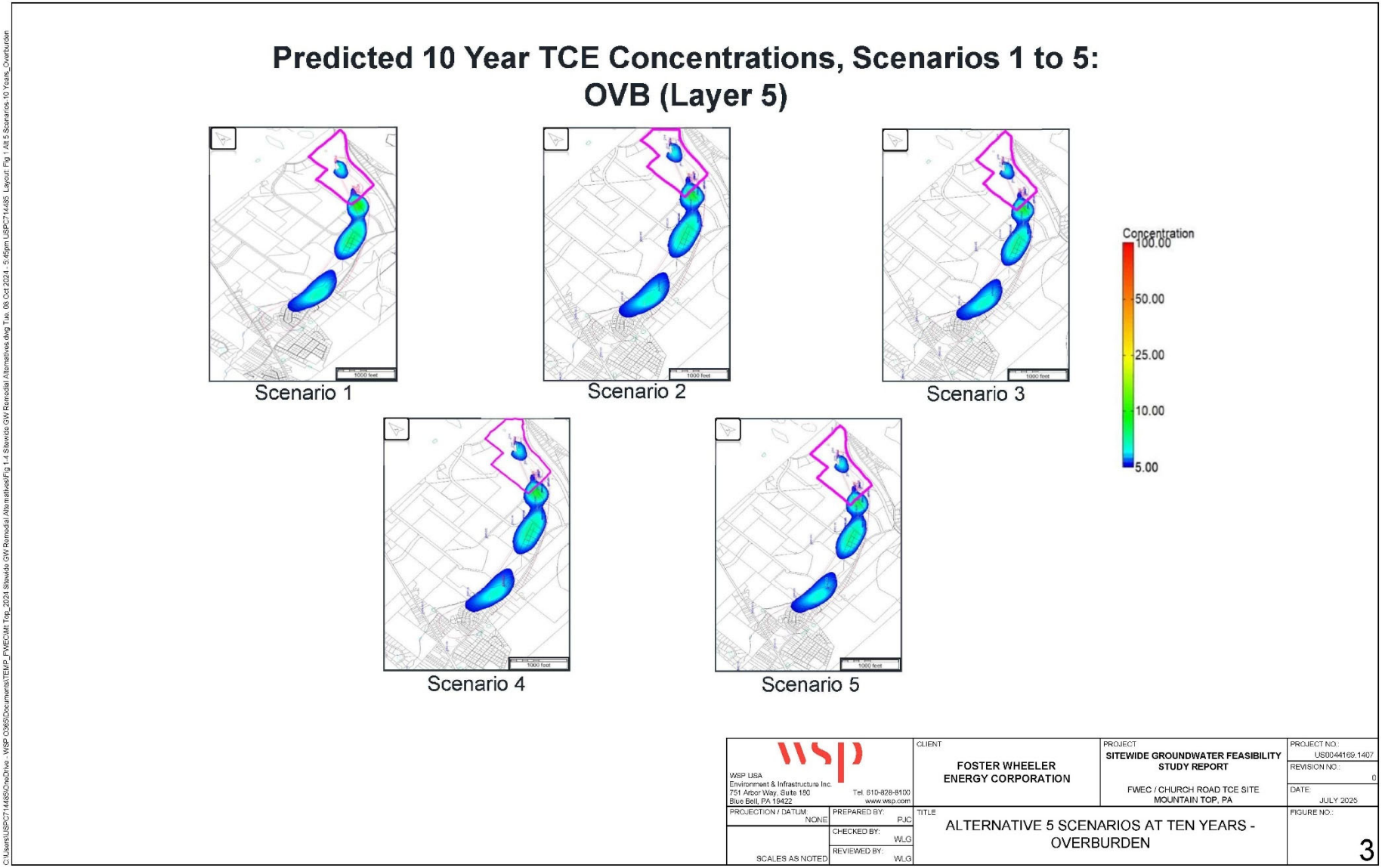
Source: Figure 14, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 6: TCE Contour Map: Bedrock



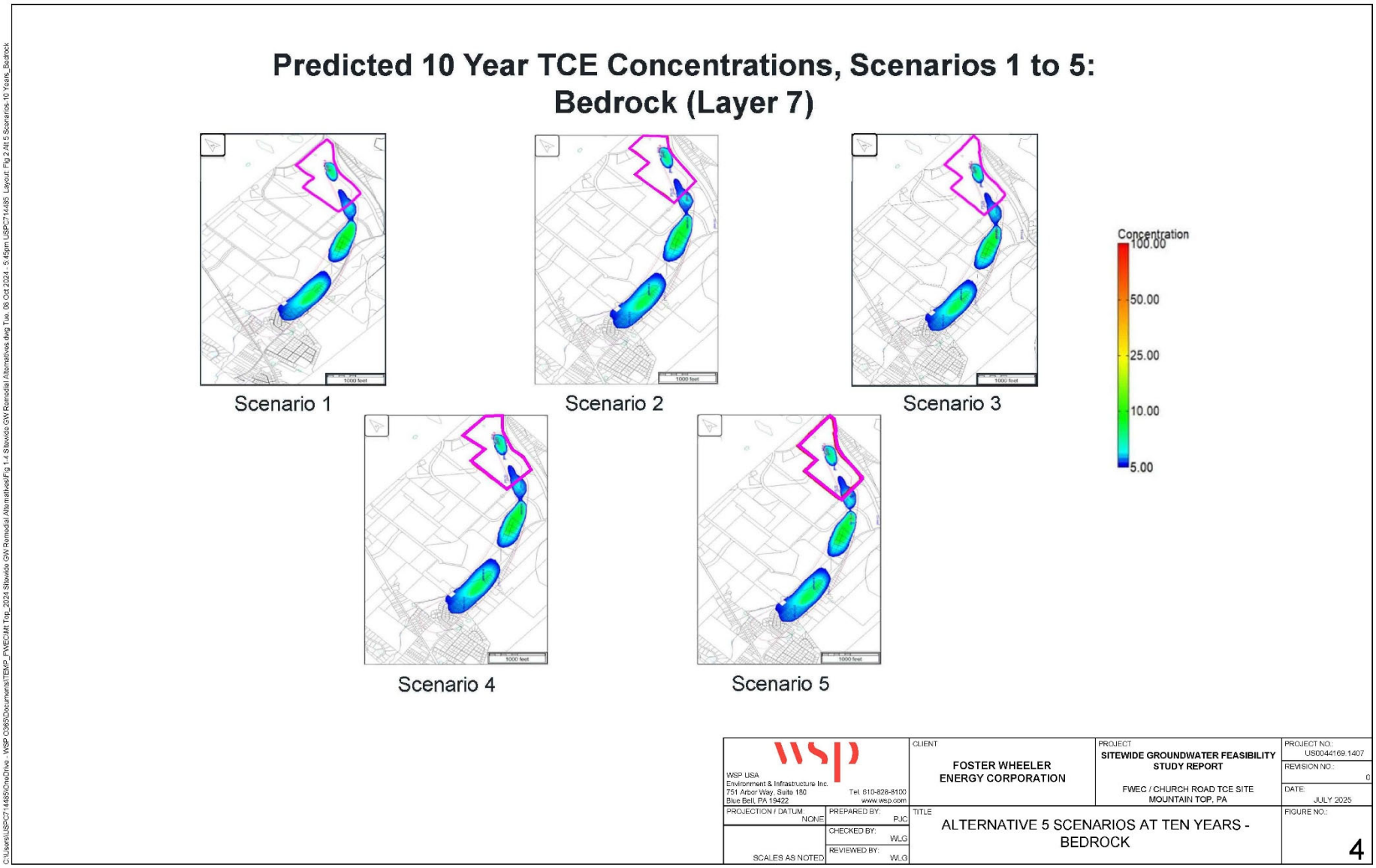
Source: Figure 15, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 7: Predicted 10-Year TCE Concentrations, Scenarios 1-5: Overburden



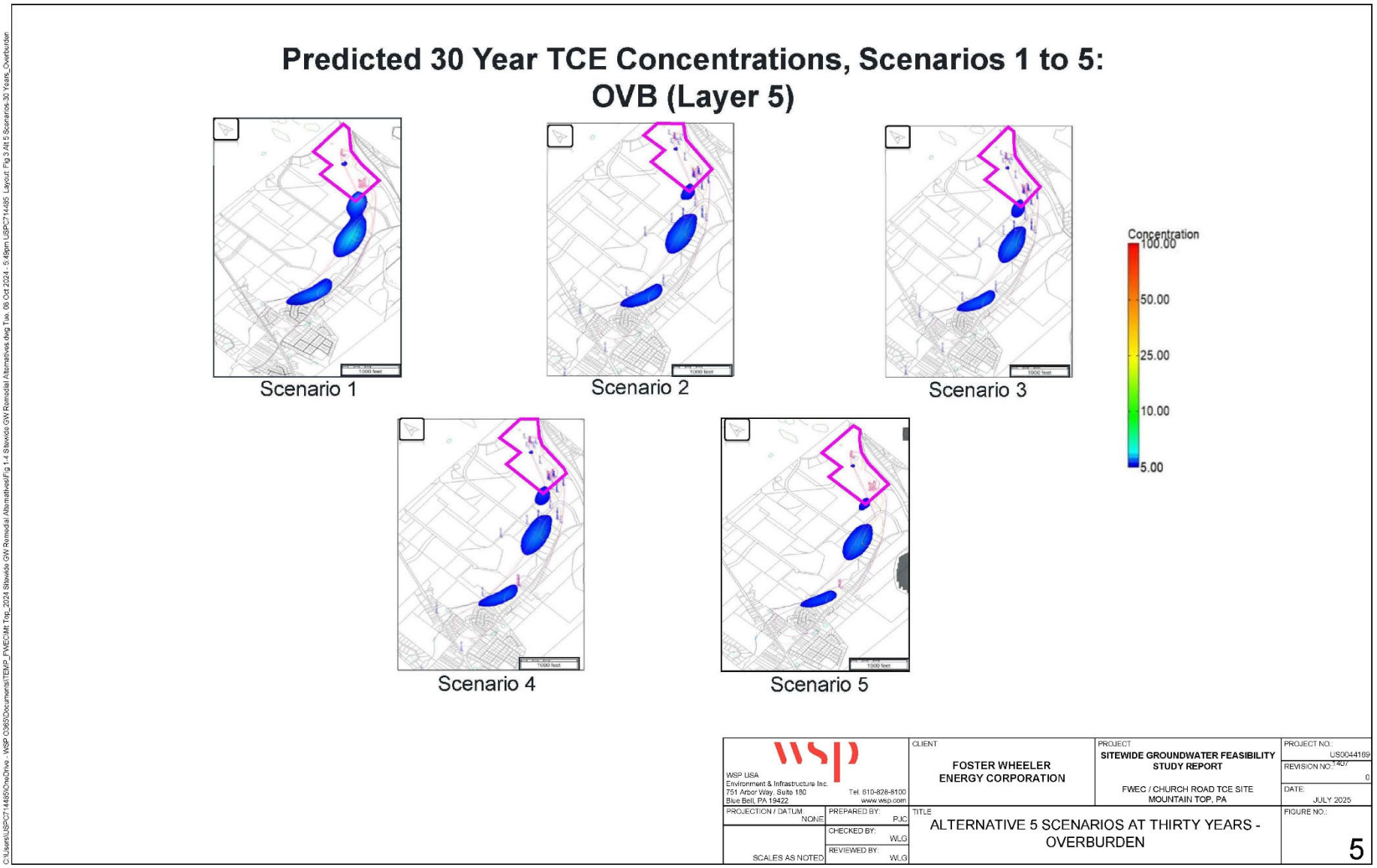
Source: Figure 3, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 8: Predicted 10-Year TCE Concentrations, Scenarios 1-5: Bedrock



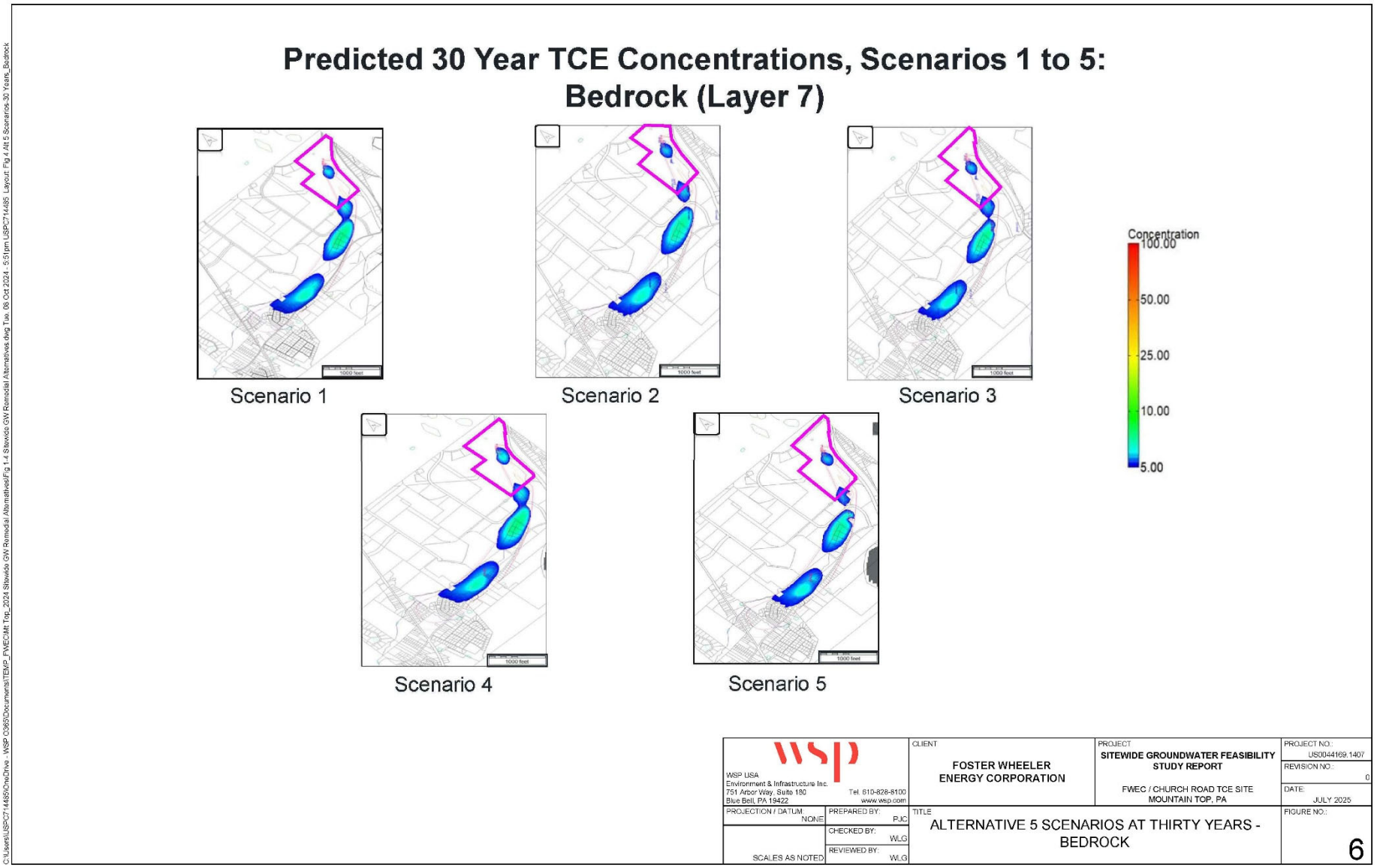
Source: Figure 4, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 9: Predicted 30-Year TCE Concentrations, Scenarios 1-5: Overburden



Source: Figure 5, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).

Figure 10: Predicted 30-Year TCE Concentrations, Scenarios 1-5: Bedrock



Source: Figure 6, Feasibility Study Report – Sitewide Groundwater, FWEC/Church Road TCE Site, Mountain Top, Pennsylvania (WSP, 2025).