RECORD OF DECISION

NORTH PENN AREA 6 SUPERFUND SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE, MONTGOMERY COUNTY, PENNSYLVANIA

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION III
PHILADELPHIA, PENNSYLVANIA
SEPTEMBER 2018

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DECLARATION

Site Name and Location

North Penn Area 6 Superfund Site
Operable Unit 2
J.W. Rex Property
Lansdale Borough, Montgomery County, Pennsylvania
CERCLIS ID Number PAD980926976

Statement of Basis and Purpose

This decision document presents the selected remedy (Selected Remedial Action) for the J.W. Rex Property, part of Operable Unit 2 (OU2) of the North Penn Area 6 Superfund Site (Site) located in Lansdale Borough, Montgomery County, Pennsylvania (see Figure 1), which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), 42 U.S.C. §§ 9601 et seq., and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. OU2 consists of six properties at which soil contamination was historically identified at the Site. This decision document explains the factual and legal basis for selecting the remedial action for soil contamination at the J.W. Rex Property portion of OU2 of the Site. The information considered or relied upon in making this decision is contained in an Administrative Record established in connection with the Selected Remedial Action. The Pennsylvania Department of Environment Protection (PADEP) concurred with the Selected Remedial Action in a letter dated September 26, 2018.

Assessment of the Site

The remedial action selected in this Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of the Selected Remedy

The remedial action described here is the final remedial action for the J.W. Rex Property portion of OU2 and will be the second remedial action selected for the J.W. Rex Property. Former industrial and disposal operations conducted at the J.W. Rex Property have resulted in residual contamination, mainly volatile organic compounds (VOCs), in soil and groundwater.

This Site is in the Borough of Lansdale and small portions of Hatfield, Towamencin, and Upper Gwynedd townships. The preliminary boundaries of the Site were determined based on groundwater quality data. In 1979, high levels of trichloroethene (TCE) were detected in several wells within the Lansdale area, including those at the J.W. Rex Property. This discovery led to the addition of the Site to

the CERCLA National Priorities List (NPL) in 1989. The Site is situated over a large area with commercial, industrial, and residential uses. The Site layout is provided in Figure 1.

The Site includes the J.W. Rex Property located at 951 West Eighth Street in Lansdale, Pennsylvania, upon which industrial operations, including disposal, occurred in the past. The Site also includes other properties on which contamination from such operations has migrated or otherwise come to be located. The northern edge of the J.W. Rex Property was used as a dump by Lansdale Borough until 1954, at which time the J.W. Rex Company purchased the property. The former dump is currently an open field.

EPA performed a Remedial Investigation and Feasibility Study (RI/FS) at the J.W. Rex Property and identified impacts to groundwater as a result of the historic industrial and disposal operations. EPA issued a Record of Decision (ROD) in 2000 to select a remedial action for contaminated groundwater at the Site, identified as Operable Unit 3 (OU3), including at the J.W. Rex Property.

The Selected Remedial Action in this ROD addresses the threat from contaminated soil at the J.W. Rex Property portion of OU2 at the Site. This contamination presents a risk of exposure via direct contact with contaminated soils, exposure to groundwater that has been contaminated by the migration of contaminants from the soil, and vapor intrusion from volatilization of VOCs from contaminated soil and groundwater. The remedial action objectives (RAOs) are as follows:

- Prevent direct contact with soils contaminated with contaminants of concern (COCs) at levels which are associated with a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent potential future exposure to COCs via vapor intrusion which poses a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent migration of contaminants in soil that would result in groundwater contamination in excess of the applicable federal maximum contaminant level (MCL) or other risk-based standard if there is no MCL for a particular contaminant.

The major components of the Selected Remedial Action are:

- Excavation of soils contaminated above the clean-up level.

- Off-site disposal of contaminated soils.

- Backfill of excavated areas with clean fill.

- Institutional Controls to prevent future potential exposure to remaining contaminated soils and vapor intrusion.

The estimated present worth cost of the Selected Remedial Action is $5,196,400.

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Statutory Determinations

The Selected Remedial Action is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action (ARARs), is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

The Selected Remedial Action does not employ treatment as a principal element because of cost and implementability issues associated with treating contamination at the J. W. Rex Property. EPA considered treatment options to address contaminated soils. While proven technologies exist for treatment of the COCs, the cost of implementing these technologies as well as implementation issues relating to the proximity of residential areas and the active commercial and industrial operations on the J.W. Rex Property prevented these technologies from being carried forward in the OU2 FS.

Because this remedial action will result in hazardous substances remaining under the buildings on the J.W. Rex Property above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted every five years after initiation of the remedial action to ensure that the remedial action is protective of human health and the environment pursuant to CERCLA Section 121(c) and 40 C.F.R. § 300.430(f)(4)(ii).

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Data Certification Checklist

The following information is included in the Decision Summary of this ROD. Additional information can be found in the Administrative Record for this remedial action.

ROD CERTIFICATION CHECKLIST	
Information	Location/Page Number
Chemicals of concern and respective concentrations	Section 5.2.1, p. 7; and Section 7.1.1, p. 12
Baseline risk represented by the chemicals of concern	Section 7.1.3, p. 13; and Table 2, p. 14
Clean-up levels established for chemicals of concern and the basis for these levels	Section 8.0, p. 15
How source materials constituting a principal threat are addressed	Section 4.0, p. 4; Section 10.0, p. 23; Section 11.0, p. 29; Section 12.4, p. 35; and Section 12.5, p. 35
Current and reasonably anticipated future land use assumptions and potential future beneficial uses of groundwater	Section 6.0, p. 9; and Section 11.4, p. 33
Potential future land and groundwater use that will be available at the J.W. Rex Property portion of the Site as a result of the selected remedy	Section 11.4, p. 33
Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	Section 9.0, p. 16; and Table 5, p. 28
Key factors that led to selecting the remedy	Section 11.1, p. 29

Karen Melvin, Director
Hazardous Site Cleanup Division
EPA Region III

9/28/18
Date

II. DECISION SUMMARY

NORTH PENN AREA 6 SUPERFUND SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

RECORD OF DECISION

1.0 SITE NAME, LOCATION AND DESCRIPTION

The North Penn Area 6 Site (Site) is located within the North Penn Water Authority (NPWA) service district in Montgomery County, Pennsylvania. Five other National Priorities List (NPL) sites (North Penn Areas 1, 2, 5, 7, and 12) and a state Superfund site (North Penn Area 4) have also been identified in the NPWA area. The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) identification number for the Site is PAD980926976.

This Site is in the Borough of Lansdale and small portions of Hatfield, Towamencin, and Upper Gwynedd townships. The preliminary boundaries of the Site were determined based on groundwater quality data. In 1979, high levels of trichloroethene (TCE) were detected in several wells within the Lansdale area, including those at the J.W. Rex Property. This discovery led to the addition of the Site to the NPL in 1989. The Site is situated over a large area with commercial, industrial, and residential uses. The Site layout is provided in Figure 1.

The Site includes the J.W. Rex Property located at 951 West Eighth Street in Lansdale, Pennsylvania, upon which industrial operations, including disposal, occurred in the past. The Site also includes other properties on which contamination from such operations has migrated or otherwise come to be located. The northern edge of the J.W. Rex Property was used as a dump by Lansdale Borough until 1954, at which time the J.W. Rex Company purchased the property. The former dump is currently an open field.

The industrial building on the J.W. Rex Property is currently used for heat-treating various metals to achieve a change in their properties. Activities performed for heat treatment of metals include degreasing, heating, and cooling. Since 1958, controlled degreasing has been performed in the industrial building at the J.W. Rex Property. From approximately 1958 to 1974, TCE was used for degreasing. After 1974, TCE was no longer purchased or used. From 1974 to 1984, degreasing was performed using tetrachloroethene (PCE). Since 1984, PCE has not been used at the J.W. Rex Property. All known receiving areas for TCE and PCE at the J.W. Rex Property are located between the large loading dock on the northeastern side of the industrial building and the storage room on the east side of the building. The spent chemicals were stored at the loading dock area prior to being shipped off-site.

The U.S. Environmental Protection Agency (EPA) is the lead agency for Site activities and the Pennsylvania Department of Environmental Protection (PADEP) is the support agency.

The response action in this Record of Decision (ROD) addresses soil contamination at the J.W. Rex Property portion of Operable Unit 2 (OU2). OU2 addresses soil contamination at six properties at the Site that were not addressed during Operable Unit 1. This action comprises the first remedial action for OU2 and is considered the final remedial action for soil contamination at the J.W. Rex Property portion of OU2.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Site was discovered in 1979, when NPWA identified elevated levels of contamination in its wells. The wells were immediately taken out of service because of the levels of TCE in the groundwater. The NPWA began sampling several wells in the area in 1979 to determine the types and levels of contamination in the groundwater. The production well at the J.W. Rex Property was one of the sampled wells that showed significant levels of TCE. The Site was referred to EPA, who conducted a Preliminary Assessment/Site Investigation (PA/SI). The data from the PA/SI were used to support the addition of the Site to the NPL in March 1989.

Operable Unit 1 (OU1) – Twenty-six properties were initially identified by EPA as potential sources of contamination at the Site. Beginning in 1993, EPA evaluated twenty of the properties as part of the OU1 Remedial Investigation/Feasibility Study (RI/FS). Based on the OU1 RI/FS, EPA determined that soil contamination at four of the properties may have contributed to groundwater contamination and required remedial action. In September 1995, EPA issued the OU1 ROD, which required soil remediation at the four properties.

Operable Unit 2 (OU2) - OU2 consists of six properties identified initially as having contributed to soil contamination at the Site, but which were not addressed in the OU1 effort. Under OU2, the owners or operators of these six properties conducted soil investigations in accordance with an Administrative Order on Consent for RI/FS (RI/FS AOC) under EPA oversight. The potentially responsible parties at four of the properties have completed the work required at their respective properties under the RI/FS AOC. The J.W. Rex Property is one of the two remaining properties where OU2 soil contamination still needs to be addressed. This ROD pertains specifically to remediation of the OU2 soils at the J.W. Rex Property.

Several environmental sampling events have occurred to support the OU2 RI at the J.W. Rex Property. These included sampling groundwater, surface water, soil, and indoor air for a variety of contaminants. Data from these sampling events were used to determine if there are contaminants of concern (COCs) present at the J.W. Rex Property and assess the risks from the COCs.

In March 2017, the OU2 FS was completed at the J.W. Rex Property to identify alternatives for a remedial action based on the data collected during the previous investigations. The OU2 FS summarizes these investigations and identifies alternatives for addressing the risk presented by contaminated soil at the J.W. Rex Property.

Operable Unit 3 (OU3) - The groundwater at the Site is being addressed as OU3. EPA completed the RI/FS for OU3 in 1999, and issued a ROD for OU3 in 2000. The remedial action set forth in the OU3 ROD consists of groundwater extraction and treatment, monitoring of residential wells, and long-term monitoring of the groundwater. Currently, ten properties have been selected for installation of groundwater extraction and treatment systems, including the J.W. Rex Property. EPA is responsible for implementing the OU3 remedial action at six of the ten properties, and the remedial action at the remaining four properties is being implemented by the respective responsible parties. To date, EPA has installed groundwater extraction and treatment systems at five of the six EPA-lead properties. The need for a groundwater treatment

system at the final EPA-lead property is currently being reassessed. The J.W. Rex Property is one of the four properties where the responsible party entered into a Consent Decree with EPA to implement the OU3 remedial action. As a result, a groundwater extraction and treatment system has been built and is being operated at the J.W. Rex Property by the current property owner, J.W. Rex. As part of the OU3 groundwater remedial action, the groundwater at the J.W. Rex Property is currently extracted and treated via air stripping and discharged into a nearby creek.

3.0 COMMUNITY PARTICIPATION

The OU2 RI/FS, Proposed Remedial Action Plan (PRAP), and other documents relating to OU2 of the Site are contained in the Administrative Record supporting selection of this remedial action, which can be viewed at https://semspub.epa.gov/src/collections/03/AR/PAD980926976 (for documents relating to OU2, select the link for Remedial - 02) or at the following locations:

EPA Administrative Records Room, Attention: Administrative Coordinator 1650 Arch Street Philadelphia, PA 19103-2029 (215) 814-3157 Hours: Monday through Friday, 8:00am to 4:30pm; by appointment only.	Lansdale Public Library 301 Vine Street Lansdale, PA 19446 Hours: Call (215) 855-3228

A notice of availability of these documents was published in *The Reporter*, a Lansdale newspaper, on March 30, 2018. In addition, EPA sent a fact sheet summarizing the Agency's preferred remedial alternative for remedial action at OU2 to residences and businesses near the J.W. Rex Property in April 2018.

EPA held a 30-day comment period from March 30 through April 30, 2018, to accept public comments on the remedial alternatives presented in the PRAP, as well as on the other documents contained within the Administrative Record file. On April 12, 2018, EPA held a public meeting to discuss the PRAP and accept comments. A transcript of this meeting is included in the Administrative Record for this remedial action. EPA did not receive any comments at the public meeting or during the public comment period; therefore, no responses are included in the Responsiveness Summary section of this ROD.

4.0 SCOPE AND ROLE OF OPERABLE UNIT

This remedial action for OU2 addresses soils at the J.W. Rex Property portion of OU2 at the Site. The Remedial Action Objectives (RAOs) for this action are as follows:

- Prevent direct contact with soils contaminated with COCs at levels which are associated with a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent potential future exposure to COCs via vapor intrusion which poses a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent migration of contaminants in soil that would result in groundwater contamination in excess of the applicable federal maximum contaminant level (MCL) or other risk-based standard if there is no applicable MCL for a particular contaminant.

The RAOs are described in additional detail in Section 8.0.

OU3 addresses groundwater contamination at the Site, including groundwater at the J.W. Rex Property. The OU3 remedial action at the J.W. Rex Property, which includes a groundwater extraction and treatment system, has been constructed and is currently in operation. There is no direct groundwater treatment associated with this OU2 response action; however, the contaminated soils that are addressed by this OU2 response action may contribute to groundwater contamination through infiltration. Therefore, by addressing the contaminated soils, it is anticipated that this OU2 response action will contribute to reducing groundwater contamination in the future.

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, pollutants, or contaminants, and acts as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile, which would present a significant risk to human health or the environment should exposure occur. The soils at the J.W. Rex Property may be characterized as source material because the soils contain hazardous substances, act as a reservoir for migration of contamination to groundwater and air, and act as a source for direct contact exposure. The soils at the J.W. Rex Property may be considered principal threat wastes because they would present a significant threat to human health or the environment should exposure occur. The following section discusses in greater detail the risks to human health and the environment from exposure to contamination in the soils at the J.W. Rex Property. The proposed OU2 remedial action at the J.W. Rex Property is intended to permanently reduce the toxicity, mobility, and volume of those source materials that constitute the principal threat wastes at the J.W. Rex Property.

5.0 SITE CHARACTERISTICS

5.1 Surface Features, Soil and Geology, Hydrogeology, and Surface Hydrogeology

5.1.1 Surface Features and Resources

The J.W. Rex Property occupies 13.3 acres, is zoned as industrial, and is expected to remain industrial in the foreseeable future. The J.W. Rex Property currently contains a commercial building and the industrial building, which is an active industrial facility. A map of the J.W. Rex Property is provided in Figure 2.

Residential homes are situated northwest of the J.W. Rex Property across Squirrel Lane. Railroad tracks border the eastern side of the J.W. Rex Property, and commercial and residential properties are situated to the southwest across Eighth Street. Ground elevations in the area range from approximately 300 to 330 feet above mean sea level (msl), with the ground sloping slightly to the north.

5.1.2 Soil and Geology

Because of the amount of construction in this area, not much native or undisturbed soil is expected to be present. Soil sampling conducted at the J.W. Rex Property showed that soil generally consists of silty-clay and some clayey-silt. The soil samples were collected at increasing depths until bedrock was reached, which mostly occurred between 11.5 and 12 feet below ground surface (bgs). Many of the samples contained thin layers of black cinders, sand, concrete, or stone.

The Site is located in the Gettysburg-Newark Lowland Section of the Piedmont Plateau physiographic province. Area geology for Lansdale, Pennsylvania includes beds of fractured rocks of the Brunswick Formation and the Lockatong Formation. The Brunswick Formation consists of Brunswick shale, which is reddish-brown shale interbedded with siltstone and sandstone. Brunswick shale is generally thin and bedding planes are irregular and discontinuous. The Lockatong Formation is a gray argillite interbedded with thin beds of gray/black calcareous shale and siltstone. The total thickness of the Brunswick Formation in Montgomery County is approximately 9,000 feet, but thins to zero at locations where the underlying unit outcrops.

5.1.3 Hydrogeology

Groundwater at the Site occurs mostly in joints and fractures in the bedrock. The intergranular porosity (the pore space between sedimentary grains of the sedimentary rock) in sandstone may act as storage for groundwater; however, groundwater flow through the primary porosity is limited. Aquifer test results indicate the presence of an unconfined aquifer condition underlying the J.W. Rex Property.

Topography may exert some influence on regional groundwater flow, but that influence has historically been largely eliminated in the central Lansdale area because of extensive well pumping. Central Lansdale acts as a hydraulic divide between groundwater flow generally to the

northeast and to the southwest of the J.W. Rex Property. In addition, the elevations of potentiometric surfaces are much higher to the east of the J.W. Rex Property than to the west, corresponding to the subsurface geologic features. The Lockatong Formation is generally harder and less permeable than the Brunswick Formation, and outcrop to the east of the J.W. Rex Property. The lower permeability at higher topographic elevations to the east of the J.W. Rex Property tends to result in higher groundwater elevations.

5.1.4 Surface Water Hydrogeology

An unnamed tributary (designated Tributary No. 2) of the western branch of Neshaminy Creek flows through the southern portion of the J.W. Rex Property and continues northeast along the rail line, as shown in Figure 2. Neshaminy Creek and its tributaries generally flow eastward and ultimately discharge to the Delaware River. Generally, surface drainage at the J.W. Rex Property flows into channelized streams and then into Tributary No. 2. With the exception of the area immediately surrounding the tributary (i.e., within approximately 50 feet), the majority of the J.W. Rex Property is located outside of the 500-year flood plain.

5.2 Nature and Extent of Contamination

The OU2 RI at the J.W. Rex Property included soil, sediment, and surface water sampling, and the OU3 RI included groundwater sampling to delineate the groundwater plume. EPA has also conducted vapor intrusion sampling in the commercial spaces at the J.W. Rex Property.

5.2.1 Surface Soil

Between 1996 and 2002, three rounds of soil sampling were conducted at the J.W. Rex Property. Additional soil sampling was conducted in 2009, and again in 2016, to address data gaps identified during review of the Final Baseline Risk Assessment (BRA) Report (May 2009). Figure 4 shows the locations of the soil sampling. Soil at the J.W. Rex Property was found to be contaminated with 20 chemicals above EPA Risk-Based Concentrations (RBCs) after the first three rounds of soil sampling. Later risk assessment efforts utilized the Region 3 Regional Screening Levels (RSLs) which replaced RBCs as screening concentrations. The most significant exceedances included a family of compounds known as volatile organic compounds (VOCs). The VOCs detected at significant levels include 1,1-dichloroethene (DCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), PCE, TCE, and vinyl chloride. Metals (hexavalent chromium and vanadium) and semi-volatile organic compounds (SVOCs) (benzo(a)pyrene equivalents (BAP)) were also detected in soils above the RSLs at the J.W. Rex Property. The area of highest soil contamination is in the northern field of the J.W. Rex Property, although contamination was found in soil samples throughout the J.W. Rex Property.

In 2009, additional soil sampling was conducted to confirm the high vanadium and BAP detections from previous soil investigations. The previous high detections of these contaminants could not be duplicated in the samples collected in 2009, and the Human Health Risk Assessment (HHRA) portions of the BRA were adjusted to remove the previous high detections. The soil sampling in 2016 was performed after vapor intrusion investigations inside the industrial building indicated a possible source of contamination near a storage shed. The results

of this sampling did not locate any additional sources on the exterior of the industrial building. No soil samples have been collected from underneath the industrial building itself, although the presence of high concentrations of VOC contamination in subslab vapor intrusion samples indicates that sources of contamination may still be present underneath the building.

5.2.2 Groundwater

Five wells are located at the J.W. Rex Property: REX-1 is 385 feet deep and REX-2D (deep) is 615 feet deep. Well REX-2S (shallow) was drilled to 50 feet bgs, well REX-3S was drilled to 65 feet bgs, and REX-3I (intermediate) was drilled to 150 feet bgs. Based on previous studies, it was determined that the groundwater at the J.W. Rex Property is contaminated. The primary COC for the groundwater at the J.W. Rex Property is TCE. Per the OU3 ROD, a groundwater extraction and treatment system was installed to provide groundwater remediation of COCs at the J.W. Rex Property. The groundwater treatment strategy includes the following: groundwater is continuously pumped from wells REX-1 and REX- 2S, sent to an air stripping tower to remove contaminants, and then discharged to Neshaminy Creek via an outfall to the unnamed tributary east of the industrial building. Discharge of treated groundwater is governed by the substantive provisions of the National Pollutant Discharge Elimination System (NPDES) regulations.

5.2.3 Vapor Intrusion

VOCs that are released into the subsurface may form hazardous vapors. Those vapors can be transported through unsaturated soils and eventually enter buildings through cracks or other conduits in basement floors, walls or foundations. This phenomenon is known as vapor intrusion. VOC contamination in soils and groundwater at the Site has raised concerns for vapor intrusion as an exposure pathway.

EPA conducted vapor intrusion sampling events inside the industrial building on the J.W. Rex Property on three occasions: in April 2013, December 2014, and March 2016. In April 2013 and March 2016, indoor and outdoor air samples were collected, as well as subslab samples. During the December 2014 sampling event, only indoor air samples were collected. The indoor and outdoor air sample results were initially screened by comparing the values of the detected contaminants to their respective industrial worker air levels from the RSLs Summary Table. VOCs were detected in the indoor air at levels that exceeded the RSLs for carcinogenic effects. Subslab air results were multiplied by an attenuation factor (AF) of 0.03 to simulate potential ambient air concentrations and then compared to their respective industrial worker ambient air RSLs. VOCs were detected in the subslab at levels that exceeded the RSLs for both carcinogenic and non-carcinogenic effects based on the attenuated concentrations.

5.3 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. A CSM provides a convenient format to present an overall understanding of a site. A CSM may be developed at the

start of a project and refined and updated throughout the life of site activities. A graphical depiction of the CSM is provided as Figure 3.

The primary source of contamination at the J.W. Rex Property is chemicals used during former degreasing and disposal operations at the property which impacted the soils. In areas where the soil is covered with buildings, exposure to workers inside the building may occur via vapor intrusion. In areas where the soil is uncovered or paved over with asphalt or concrete, future exposure may occur to workers and residents via ingestion, inhalation or dermal contact if digging or other disturbance of the existing cover occurs. Contamination in soils can also migrate into groundwater via leaching. Exposure to contaminated groundwater occurs via ingestion or dermal contact with contaminated groundwater. Groundwater can be ingested or contacted when the contamination reaches drinking water supply wells or private drinking water wells. Groundwater may also contaminate surface water or sediment if it daylights through seeps. Surface water and sediment contamination may then impact either human or ecological receptors. Groundwater contamination may also contribute to vapor intrusion and affect the indoor air in buildings.

The current and likely future land use of the J.W. Rex Property is commercial/industrial. Therefore, the current exposure scenarios focus on commercial/industrial workers as human receptors. However, while the J.W. Rex Property is currently zoned for non-residential land use, there are currently no institutional controls which prevent the disturbance of the existing covers on the soil areas around the industrial buildings, or prevent the use of the property for residential purposes. Therefore, without Institutional Controls future exposure scenarios could also include exposure to contaminated soils by residents (adult and child), commercial workers, trespassers, and construction workers.

6.0 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

The J.W. Rex Property occupies 13.3 acres, is zoned as industrial, and currently contains a commercial building and the industrial building. The industrial building on the J.W. Rex Property is currently used for heat-treating various metals to achieve a change in their properties. Activities performed for heat treatment of metals include degreasing, heating, and cooling. Future land use on the Property is anticipated to be consistent with the current land use. However, the potential for land use to change has been considered in the risk assessment and during the development of the remedial alternatives.

An unnamed tributary (designated Tributary No. 2) of the western branch of Neshaminy Creek flows through the southern portion of the J.W. Rex Property and continues northeast along the rail line. Generally, surface drainage at the J.W. Rex Property flows into channelized streams and then into Tributary No. 2. With the exception of the area immediately surrounding the tributary (i.e., within approximately 50 feet), the majority of the J.W. Rex Property is located outside of the 500-year flood plain.

Residential homes are situated northwest of the J.W. Rex Property across Squirrel Lane. Railroad tracks border the eastern side of the J.W. Rex Property, and commercial and residential

properties are situated to the southwest across Eighth Street. Ground elevations in the area range from approximately 300 to 330 feet above mean sea level (msl), with the ground sloping slightly to the north.

The aquifer at the Site is designated by Pennsylvania as a Class IIA aquifer, a drinking water aquifer. Residents in the vicinity of the Site are served by the Borough of Lansdale public water supply. Continued use of groundwater as a water supply is anticipated in the future. As part of the OU3 groundwater remedial action, the groundwater at the J.W. Rex Property is currently extracted and treated via air stripping and discharged into a nearby creek. Prior to discharge, the treated water is used for non-contact cooling in the industrial processes at the J.W. Rex Property.

7.0 SUMMARY OF SITE RISKS

As part of the OU2 RI for the J.W. Rex Property, a baseline risk assessment (BRA) was undertaken to identify the potential risks to human health and the environment that could result from exposure to the hazardous substances associated with the J.W. Rex Property. The BRA is comprised of a human health risk assessment (HHRA) and an ecological risk assessment (ERA). This section summarizes the results of the Final BRA (May 2009) as well as other risk assessment activities conducted during the OU2 RI/FS.

The BRA provides the basis for taking action and identifies the contaminants, media, and exposure pathways that need to be addressed by the remedial action at the J.W. Rex Property. As part of the risk assessment, the current and future risks posed to human and ecological receptors by soil contamination at the J.W. Rex Property were evaluated. The HHRA evaluated the potential for health risks, based on current and future conditions, to people exposed to contamination at the J.W. Rex Property, such as the risk of developing cancer and the risk of non-cancer impacts (such as adverse impacts to specific organs).

The ERA evaluated contamination at the J.W. Rex Property with respect to potential risks to ecological receptors. A separate BRA was performed for groundwater at the J.W. Rex Property and other properties included in the Site as part of the OU3 RI and ROD.

What is Risk and How is it Calculated?

A Superfund human health risk assessment estimates the "baseline risk." The baseline risk is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a Superfund site, EPA undertakes a four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 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). Comparisons between site-specific concentrations and concentrations reported in past studies help EPA to determine which contaminants 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 human 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 risk 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 (1E-04). In other words, for every 10,000 people 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, given the background cancer rate. For non-cancer adverse health effects, EPA calculates a "hazard index" (HI). The key concept here is that a "threshold level" (measured usually as a hazard index of 1.0) exists below which non-cancer adverse 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.

7.1 Summary of Human Health Risk Assessment

The current land use of the J.W. Rex Property is industrial. The use of the J.W. Rex Property is expected to remain industrial in the near-future. However, the J.W. Rex Property is surrounded by a mixture of commercial and residential properties. Both industrial and residential exposure scenarios were considered in the BRA for future land use at the J.W. Rex Property, to ensure the selected alternative will remain protective into the future, in the event the use of the J.W. Rex Property changes.

The BRA identified an unacceptable human health risk associated with the contamination in the soils at the J.W. Rex Property under both industrial and residential exposure scenarios. It is EPA's current judgment that the Selected Remedial Action identified in this ROD is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances, pollutants, and contaminants into the environment. A detailed discussion of the HHRA and ERA for the J.W. Rex Property is included in the OU2 Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property. The results of the Final BRA are summarized below. Consistent with EPA Region III guidance, risk-based screening was performed initially to identify contaminants of potential concern (COPCs) in soil at the J.W. Rex Property which required further evaluation during the HHRA and ERA.

7.1.1 Identification of Contaminants of Concern

The NCP establishes a range of acceptable cancer risk for Superfund sites from one in ten thousand to one in one million additional cancer cases, expressed in scientific notation as lE-04 to lE-06, over a lifetime exposure to site-related contaminants. In comparison, the chance of a person developing cancer from other causes (e.g., smoking or excess sun exposure) has been estimated to be as high as one in three.

Additionally, chemicals that are ingested, inhaled, or absorbed through the skin may present non-cancer risks to different organs of the human body. The non-carcinogenic risks, or toxic effects, are expressed as a Hazard Quotient calculated for the effect of each COPC on each target human organ; the cumulative risk is expressed as an HI. If an HI is less than one (1.0), then exposure to site conditions is not expected to result in adverse effects during a lifetime or part of a lifetime. The NCP establishes an HI exceeding one (1.0) as an unacceptable non-carcinogenic risk.

Human health COCs are determined by performing a site-specific risk analysis for each COPC and each pathway to indicate areas of current or potential future risk that exceed EPA's acceptable risk range of lE-04 to lE-06 for carcinogens or exceed an HI of 1 for non-carcinogens. Table 1 summarizes COCs for human health risk from soil at the J.W. Rex Property by exposure pathway.

Table 1: Human Health Contaminants of Concern by Exposure Pathways

Direct Contact	Vapor Intrusion (VI)	Soil-to-Groundwater
TCE	PCE	1,1-DCE
Hexavalent Chromium Cr(VI)	TCE	*cis*-1,2-DCE
	Vinyl Chloride	PCE
		TCE
		Vinyl chloride
		Cr(VI)

7.1.2 Exposure Assessment

The CSM was used to determine the exposure pathways listed in Table 1. Both present and future potential exposure scenarios were considered when determining the exposed populations.

The direct contact exposure pathway includes risks associated with direct ingestion, inhalation, or absorption through the skin, by direct contact with soils that are contaminated with the COCs.

The vapor intrusion pathway is associated with inhalation of hazardous vapors which are formed when certain chemicals such as VOCs are released into the subsurface. Those vapors can be transported through unsaturated soils and eventually enter buildings through cracks or other

conduits in basement floors, walls, or foundations. The vapor intrusion pathway was evaluated by collecting samples of air from the interior and beneath the foundation of the industrial building.

The soil-to-groundwater pathway is associated with the migration of contamination from the soil to the groundwater via infiltration. Groundwater that becomes contaminated can then present a risk to receptors that are exposed via direct contact to the contaminated groundwater.

7.1.3 Risk Characterization

The potential human health risks associated with exposure to contaminated soils found at the J.W. Rex Property are summarized in Table 2. Table 2 includes the risks calculated for populations that exceed the acceptable risk range in the media and potential pathways for exposure. Potential carcinogenic risks exceed the acceptable risk range for future industrial workers and future residents (child + adult). The carcinogenic risks are associated with the VI pathway. Potential non-carcinogenic risks exceed an HI of 1.0 for future industrial workers, future resident children, and future resident adults. The non-carcinogenic risks for these populations are associated with VI and, in the case of future resident children, also with direct contact with contaminated soils. Note that the soil-to-groundwater pathway is not included in Table 2. Table 2 only includes risk from VI and direct contact with soil. Risk from the soil-to-groundwater pathway results from contact with groundwater contaminated by the soil, which is not evaluated in the OU2 BRA. The soil-to-groundwater pathway was evaluated by comparing contaminant concentrations in the soil to the EPA Region III soil-to-groundwater soil screening levels (SSLs). Table 1 includes a list of the COCs that had exceedances of the soil-to-groundwater SSLs. More detailed discussions of the soil-to-groundwater screening can be found in the OU2 Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property

The carcinogenic or cancer risk to future industrial workers at the J.W. Rex Property due to exposure to contaminated soil from the VI pathway was calculated at 2.7E-03, or about 27 additional cancer cases for every 10,000 people exposed. The HHRA also calculated a total HI for non-carcinogenic risk for future industrial workers for the VI pathway at 250. The cumulative carcinogenic risk to future residents (child + adult) due to exposure to contaminated soils for the VI pathway was calculated at 3.5E-02, or about 35 additional cancer cases for every 1,000 people exposed. The HHRA calculated total HIs for non-carcinogenic risk for future adult and child residents for the VI pathway at 1,100. For the direct contact pathway, an HI for non-carcinogenic risk for the future child resident was calculated at 3.7. Each of these exposure scenarios exceeded the acceptable range established in the NCP of lE-04 to lE-06 for carcinogenic risk or an HI of 1.0 for non-carcinogenic risk.

Table 2: Human Receptor Population Exposures to Contaminated Soil that Exceed Acceptable Risk Range

Receptor Population	Exposure Pathway	Total Hazard Index (HI) Non-Carcinogenic Risk	Cumulative Carcinogenic Risk
Future Industrial Worker	Vapor Intrusion*	250	2.7E-03
Future Resident Child	Direct Contact	3.7	--**
Future Resident Child	Vapor Intrusion*	1,100	N/A***
Future Resident Adult	Vapor Intrusion*	1,100	N/A***
Future Resident (Child + Adult)	Vapor Intrusion*	N/A****	3.5E-02

* Future vapor intrusion risks were calculated by applying an attenuation factor of 0.03 to subslab sampling results.
** The direct contact carcinogenic risk for the future child resident was calculated. However, the value did not exceed the acceptable risk range and is therefore not included in this table.
*** For future residential carcinogenic risk, a 30-year exposure beginning at birth (child + adult) is evaluated in the HHRA.
**** For non-carcinogenic risk, future residential child and future residential adult are evaluated independent of each other in the HHRA.

7.2 Summary of Ecological Risk Assessment

An ERA evaluates the potential for risks due to exposure to site contaminants by ecological receptors (such as small mammals, birds, and plants). The ERA for the J.W. Rex Property was performed to identify the potentially affected natural environment, distribution of contamination, fate and transport of contaminants, and exposure pathways, and to develop a list of contaminants of potential ecological concern (COPECs).

The ERA consisted of a screening level assessment to identify COPECs and a more detailed examination of potential effects of the COPECs on site-specific flora and fauna. The Screening-Level Ecological Risk Assessment (SLERA) incorporated site-specific exposure assumptions and conditions to quantitatively demonstrate whether unacceptable risks are associated with exposure of ecological receptors to soils at the J.W. Rex Property. The ERA considered both direct exposure of soil invertebrates and plants as well as food chain exposure of two herbivorous mammals (white footed mouse and deer mouse) and an insectivorous avian receptor (American robin) to bioaccumulative compounds. The results of the SLERA evaluation support the conclusion that exposure to soil COCs is not resulting in adverse effects in plants, soil invertebrates, and small mammal and bird populations at the J.W. Rex Property. As a result, no further assessment of ecological risk was performed beyond the SLERA and no ecological COCs were identified. A complete discussion of the SLERA can be found in the OU2 Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property.

8.0 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) have been developed to address the COCs and exposure pathways listed in the previous section. These RAOs will be the basis for evaluation of remedial alternatives.

The RAOs describe both the exposure pathway to be addressed as well as the acceptable risk criteria that serve as the basis for the cleanup level. The RAOs developed for soil at the J.W. Rex Property are as follows:

- Prevent direct contact with soils contaminated with COCs at levels which are associated with a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent potential future exposure to COCs via vapor intrusion which poses a 1E-04 excess cancer risk or hazard index greater than 1.0 for non-cancer risk.

- Prevent continued migration of contaminants in soil to the underlying groundwater that would result in groundwater contamination in excess of the applicable federal MCL or other risk-based standard if there is no MCL for a particular contaminant.

With the exception of hexavalent chromium (Cr(VI)), all of the COCs associated with the soil-to-groundwater pathway have an applicable MCL that is used to determine their respective soil cleanup level. MCLs, codified at 40 C.F.R. Part 141, are the maximum permissible levels of a contaminant in public water supplies under the federal Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq. Because Cr(VI) does not have an MCL, the EPA Region III risk-based Regional Screening Level for Tapwater using a 1E-05 excess cancer risk endpoint was used to determine the soil cleanup level for Cr(VI).

Soil cleanup levels were calculated for the direct contact and soil-to-groundwater RAOs. The final cleanup level was determined by comparing the direct contact and soil-to-groundwater cleanup levels for each COC and selecting the lower of the two. This provides the most conservative approach for the protection of public health. For all COCs, the soil-to-groundwater cleanup level was lower than the direct contact number. Therefore, all final soil cleanup levels are based on the soil-to-groundwater pathway. Table 3, below, summarizes the final soil cleanup levels for each COC.

Table 3: Soil Cleanup Levels

COC	Cleanup Level (mg/kg)
1,1-Dichloroethene (1,1-DCE)	0.162
cis-1,2-Dichloroethene (*cis*-1,2-DCE)	1.52
Tetrachloroethene (PCE)	0.162
Trichloroethene (TCE)	0.129
Vinyl chloride	0.043
Hexavalent chromium Cr(VI)	0.44

Figure 4 shows the approximate areas that are expected to exceed the soil cleanup levels in Table 3. These areas are depicted in Figure 4 as "Area[s] of Soil Remediation," and are based on the locations of soil samples from the OU2 RI that exhibited concentrations of COCs above their respective cleanup levels. These areas in Figure 4 were used in the development of the remedial alternatives as the areas that are anticipated to require remediation. The depths of the excavation will range from 2 to 12.5 feet below ground surface.

9.0 DESCRIPTION OF REMEDIAL ALTERNATIVES

The alternatives evaluated below will be designed to meet the RAOs listed in the previous section. Superfund law and regulations require that the alternative chosen to clean up a contaminated site meet several criteria. The alternative must protect human health and the environment and meet legally applicable and relevant and appropriate Federal and State cleanup requirements (ARARs). Permanent solutions to contamination, which reduce the volume, toxicity, or mobility of the contaminants, should be developed wherever possible. Emphasis is also placed on treating the wastes at a site whenever possible, and on applying innovative technologies to clean up the contaminants.

The remedial alternatives evaluated for the OU2 remedial action for soils at the J.W. Rex Property are presented below in Table 4. The selected alternative (Selected Remedial Action) is Alternative 5: Excavation, Off-Site Disposal, and Institutional Controls.

Table 4: Remedial Alternatives Evaluated for Soils at J.W. Rex Property

Alternative	Description
1	No Action
2	Clay Cap and Institutional Controls (ICs)
3	Concrete/Asphalt Cap and ICs
4	Geomembrane Cap and ICs
5	Excavation, Off-Site Disposal, and ICs

Common Elements

Other than the No Action alternative, all alternatives include an institutional controls (IC) component to address potential Site-related contamination that is not addressed directly through the other components of the remedy. The ICs are discussed below as they relate to contamination underneath the existing buildings, and construction of any new habitable buildings at the J.W. Rex Property. Specific performance standards for these ICs are provided in section 11.2.

Existing Buildings

There are two existing buildings on the J. W. Rex Property; the main industrial building and a smaller commercial building. ICs are necessary for the existing buildings on the J. W. Rex Property due to the lack of data available regarding the soil contamination underneath the buildings. Because physical access to the soils underneath the existing buildings on the J. W. Rex Property could not be obtained, no data has been collected for these soils. Therefore, ICs are required to prohibit the disturbance of subsurface soils underneath the existing buildings unless a future building modification allows access to sample such soils and an investigation is conducted to characterize the extent of subsurface soil contamination. If the investigation indicates levels of contaminants that exceed the soil cleanup levels in Table 3, the areas with exceedances shall be excavated and soils shall be disposed in accordance with the Selected Remedial Action.

ICs are also necessary to prevent unacceptable exposure to COCs from potential vapor intrusion in the existing buildings in the future. The indoor air sampling conducted thus far in the existing buildings does not indicate that there is an unacceptable risk to the workers inside the buildings. However, the results of sampling conducted beneath the industrial building (i.e., vapor intrusion subslab sampling) suggest the potential for future risk if the use of the industrial building were to change or if the slab is disturbed or breached. Therefore, ICs will be required for the existing buildings to prohibit (1) any change in the use of either of the existing buildings, and (2) any structural modification or renovation that disturbs or breaches the slab of either of the existing buildings, unless the following actions are conducted:

1. If either the use of an existing building changes, or if the building undergoes structural modification or any type of renovation where the slab is disturbed or breached, subslab and indoor air samples will be collected.

2. If the detected indoor air concentrations equal or exceed EPA acceptable risk criteria (greater than 1E-04 cumulative cancer risk or HI greater than or equal to 1.0), a vapor mitigation system will be installed, maintained, and monitored until EPA determines that the soil and groundwater contamination no longer poses a vapor intrusion risk.

New Buildings

There is a potential for vapor intrusion throughout the entire J.W. Rex Property due to soil and groundwater contamination. Therefore, ICs are necessary to prevent unacceptable exposure to COCs from vapor intrusion if any new buildings are constructed on the J.W. Rex Property. ICs will be implemented to prohibit construction of any new buildings on the J.W. Rex Property unless the following actions are conducted:

1. Any new habitable buildings constructed on the J.W. Rex Property will include, at a minimum, a foundation vapor barrier and the subsurface piping for a subslab depressurization system.

2. Prior to occupancy, the indoor air in all new habitable buildings will be tested to determine if the vapor barrier and subsurface piping are effective at reducing the indoor air concentrations to within EPA acceptable risk criteria (less than 1E-04 cumulative cancer risk and HI less than 1.0).

3. If indoor air concentrations are equal to or exceed EPA acceptable risk criteria, a subslab mitigation system which actively withdraws vapors from the subslab and removes them away from the indoor space will be operated and maintained to ensure indoor air concentrations are within EPA's acceptable risk criteria (less than 1E-04 cumulative cancer risk and HI less than 1.0) while the building is inhabited and until EPA determines that the soil and groundwater contamination no longer poses a vapor intrusion risk.

The ICs will be implemented through an enforceable mechanism such as, but not limited to, a judicial consent decree, administrative order, or an Environmental Covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501-6517 ("UECA").

All alternatives rely on a description of the J.W. Rex Property developed during the OU2 risk assessment which divides the Property into three exposure areas (EAs). The process for development of these EAs is summarized as follows: Analytical results of soil samples were compared against screening levels. Soil samples with exceedances of the screening levels were grouped into Areas of Concern (AOCs). Initially six AOCs were identified. Subsequent sampling

efforts were conducted on other portions of the J.W. Rex Property and these soil sampling results were grouped into two areas, known as "None Inside Fence" (NIF) and "None Outside Fence" (NOF). During the development of the BRA, these soil sample groups were combined into EAs for the purpose of calculating risk. These three EAs are known as the Facility EA, Non-Facility-1 EA, and Non-Facility-2 EA.

- Facility EA consists of AOC 1, AOC 2, AOC 3, and NIF
- Non-Facility-1 EA consists of AOC 4, AOC 5, and AOC 6
- Non-Facility-2 EA consists of NOF

The Facility EA roughly comprises all soil samples collected around the main industrial facility on the J.W. Rex Property within the fence line. The Non-Facility-1 EA comprises soil samples that exceeded screening levels which were located outside the facility fence line in the northern portion of the J.W. Rex Property where a historic dump is purported to have been located. The Non-Facility-2 EA includes all remaining soil samples on the J.W. Rex Property outside the facility fence line which are not included in the Non-Facility-1 EA. Because all soil samples in the Non-Facility-2 EA were below screening levels, the Non-Facility-2 EA was not evaluated further for risk. Figure 4 shows the locations of the Facility EA and Non-Facility-1 EA. Further discussion of the alternatives utilizes this terminology when discussing how the respective alternatives will be implemented.

All capping alternatives (Alternatives 2, 3, and 4) share many similar features. All caps would require the installation of the cap over soils exceeding the soil cleanup levels set forth in Table 3. The purpose of all the caps would be to provide a physical barrier to prevent direct contact with contaminated soils and to minimize continued migration of contaminants to the groundwater. The cap alternatives would include a 25-foot buffer around the areas of contamination to minimize infiltration at the cap edges and to allow for necessary sloping and drainage. All caps would require installation of a stormwater management system to limit erosion of the cap and yearly inspections and maintenance to ensure the cap is functioning as designed. Construction of each of the caps would require compliance with substantive requirements of Resource Conservation and Recovery Act (RCRA) ARARs and related State ARARs to ensure permeability standards are met. The technology and materials required for construction of the caps are readily available and reliable. Construction of all the cap alternatives would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 6. Each of the capping alternatives would require ICs, including activity and use restrictions, to ensure the caps are not disturbed and remain protective.

Further details regarding each of the alternatives can be found in the OU2 FS, which is located in the Administrative Record file for the Site.

In addition to the common elements of the remedial alternatives discussed above, the following sections describe the additional components of each remedial alternative that EPA considered.

The total present worth cost for each alternative was calculated using a 7% discount rate and an operation and maintenance (O&M) period of 30 years (unless otherwise noted).

ALTERNATIVE 1: NO ACTION

Estimated Capital Cost:	$0
Estimated Present Worth O&M Cost:	$0
Estimated Total Present Worth Cost:	$0
Estimated Construction Timeframe:	None

Consideration of a no action alternative is required by the NCP and CERCLA. Alternative 1 would require no additional remedial action to be taken at the J.W. Rex Property. The No Action alternative serves as a basis against which the effectiveness of all the other proposed alternatives can be compared. Under this alternative, the J.W. Rex Property would remain in its present condition, and soil contamination would be subject to natural remediation processes only.

ALTERNATIVE 2: CLAY CAP AND INSTITUTIONAL CONTROLS

Estimated Capital Cost:	$3,148,200
Estimated Present Worth O&M Cost:	$55,600
Estimated Total Present Worth Cost:	$3,204,800
Estimated Construction Timeframe:	Six months
Estimated Time to Achieve RAOs:	30 years

Alternative 2 would require installation of a compacted clay cap over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 5). The clay cap would be installed in the Non-Facility-1 EA over existing soil. In the Facility EA, where there is currently concrete or asphalt cover, the concrete or asphalt would be removed and a clay cap would be installed. A stormwater management system would be installed to limit erosion of the cap, and yearly inspections and maintenance would be necessary to ensure that the cap is functioning as designed. Figure 5 presents the approximate sizes and shapes of the clay cap areas for Alternative 2.

ALTERNATIVE 3: CONCRETE/ASPHALT CAP AND INSTITUTIONAL CONTROLS

Estimated Capital Cost:	$2,105,200
Estimated Present Worth O&M Cost:	$33,000
Estimated Total Present Worth Cost:	$2,138,500
Estimated Construction Timeframe:	Six months
Estimated Time to Achieve RAOs:	30 years

Alternative 3 would require the installation of a concrete and/or asphalt cap in the Non-Facility-1 EA over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 6). Concrete and/or asphalt currently exists in the Facility EA as parking lots and access

roads around the industrial building (see Figure 6); the concrete and/or asphalt areas act as an impervious surface, preventing infiltration of groundwater throughout the area. Surface re-grading may be required in specific areas. A stormwater management system would be installed in the Non-Facility-1 EA to limit erosion of the cap, and yearly inspections and maintenance would be necessary to ensure that the cap is functioning as designed. Figure 6 presents the approximate sizes and shapes of the concrete and/or asphalt cap areas for Alternative 3.

ALTERNATIVE 4: GEOMEMBRANE CAP AND INSTITUTIONAL CONTROLS

Estimated Capital Cost:	$2,673,500
Estimated Present Worth O&M Cost:	$55,600
Estimated Total Present Worth Cost:	$2,729,100
Estimated Construction Timeframe:	Six months
Estimated Time to Achieve RAOs:	30 years

Alternative 4 would require installation of a geomembrane cap over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 7). The geomembrane cap would be installed in the Non-Facility-1 EA over existing soil. In the Facility EA, where there is currently concrete or asphalt cover, the concrete or asphalt would be removed and a geomembrane cap would be installed. Some re-grading of the geomembrane cap areas may be required to meet stormwater drainage requirements. Clean fill would be placed over the geomembrane cap and re-vegetated as a protective layer for the geomembrane cap. A stormwater management system would be installed to limit erosion of the geomembrane cap, and yearly inspections and maintenance will be necessary to ensure that the geomembrane cap is functioning as designed. Figure 7 presents the approximate sizes and shapes of the geomembrane cap areas for Alternative 4.

ALTERNATIVE 5: EXCAVATION, OFF-SITE DISPOSAL, AND INSTITUTIONAL CONTROLS

Estimated Capital Cost:	$5,173,600
Estimated Present Worth O&M Cost:	$22,800
Estimated Total Present Worth Cost:	$5,196,400
Estimated Construction Timeframe:	Six months
Estimated Time to Achieve RAOs:	30 years

Alternative 5 would require excavation of soils exceeding the soil cleanup levels in Table 3. This alternative would eliminate the human health risks posed by direct contact with soils exceeding the soil cleanup levels and would protect the environment by removing the soils impacted by COCs to prevent further transport of COCs from the soil to the groundwater. Soil would be mechanically excavated by an excavator or front-end loader using conventional construction methods. Excavation activities would be scheduled during normal business hours (to the greatest extent practicable) to minimize disruption to surrounding residential areas, and the excavated areas would be protected with temporary fencing and warning signs at the conclusion of daily activities. In the portion of the Facility EA where there is currently concrete or asphalt cover over

the "Area[s] of Soil Remediation" depicted in Figure 8, the concrete or asphalt would be removed, and soils exceeding the soil cleanup levels in Table 3 would be excavated. Excavation in the Facility EA would be conducted in stages to minimize the footprint impact on the operations associated with the industrial building. Excavation activities in the Facility EA and the Non-Facility-1 EA would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 6, including perimeter air monitoring to ensure the surrounding residential and commercial areas are not adversely impacted by the excavation activities. Figure 8 presents the approximate excavation areas in the Facility EA and the Non-Facility-1 EA, and the soil staging (stockpile) area for Alternative 5.

Soil samples would be collected from soil in the excavated areas and analyzed to confirm the complete excavation of soil exceeding the soil cleanup levels. Additional excavation may be required based on the results of the confirmation sampling. One bottom confirmation sample would be collected for every 25-foot by 25-foot excavation area. One sidewall confirmation will be collected for every 25 feet of excavated sidewall.

Excavated soil would be properly stockpiled on-site for RCRA disposal classification. Stockpiled soils would be covered at the conclusion of daily operations to minimize dust and erosion. Silt fencing would be placed around the staged soils. Disposal actions would require compliance with action-specific ARARs for identification of hazardous wastes and, if any soil is characterized as hazardous waste, disposal actions would require compliance with action-specific ARARs for generators of hazardous waste (Table 6). Options for off-site disposal of soil would depend on the results of the RCRA disposal classification. Any soil exceeding RCRA Toxicity Characteristic Leaching Procedure (TCLP) criteria would qualify as characteristic hazardous waste. Soil characterized as hazardous waste would be transported in accordance with applicable U.S. Department of Transportation regulations and disposed of at a RCRA Subtitle C facility in accordance with applicable RCRA regulations. Soil characterized as non-hazardous waste would be disposed of at a RCRA Subtitle D facility. It is estimated that roughly 4,422 cubic yards of soil would be disposed at a RCRA Subtitle C facility and 13,389 cubic yards of soil would be disposed at a RCRA Subtitle D facility.

Upon completion of confirmation sampling and analysis, reconstruction activities would be conducted at the J.W. Rex Property to mitigate the impacts of excavation. Reconstruction activities would include placement and compaction of clean soil to stabilize the excavation area. The clean soil used would be "clean fill" as defined in PADEP's "Management of Fill" policy, dated August 7, 2010. Revegetation efforts would consist of site-appropriate grasses. Reconstruction areas would be covered at the conclusion of daily operations to minimize dust and erosion. A landscaping mesh would be laid down just prior to the application of site-appropriate grasses to minimize erosion while the grasses are rooting. Areas that were not originally covered with grass would be repaired using the original cover material (e.g., if the area was concrete, then the final repair for that area would be concrete). Reconstruction activities would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 6. The "Area[s] of Soil Remediation" depicted in Figure 8 are the approximate areas of soil excavation for Alternative 5.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

In this section, the remedial alternatives summarized above are compared to each other using the criteria set forth in the NCP at 40 C.F.R. § 300.430(e)(9)(iii). In the remedial decision-making process, EPA profiles the relative performance of each alternative against the evaluation criteria, noting how each compares to the other options under consideration. A detailed analysis of alternatives can be found in the OU2 FS which is in the Administrative Record supporting selection of the Selected Remedial Action.

These evaluation criteria relate directly to requirements of Section 121 of CERCLA, 42 U.S.C. § 9621, for determining the overall feasibility and acceptability of a remedial action. The nine criteria fall into three groups described as follows:

Threshold criteria must be satisfied in order for a remedial action to be eligible for selection. The first two criteria are threshold criteria: (1) overall protection of human health and the environment, and (2) compliance with ARARs. The Selected Remedial Action must meet the first and the second criteria (unless an ARARs waiver is invoked).

Primary balancing criteria are used to weigh major tradeoffs between remedies. The next five criteria are the primary balancing criteria: (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume through treatment; (5) short-term effectiveness; (6) implementability; and (7) cost.

Modifying criteria are formally taken into account after public comment is received on the PRAP. The modifying criteria are the remaining two criteria: (8) State acceptance and (9) community acceptance.

The following discussion summarizes the evaluation of the remedial alternatives developed for the remedial action at the J.W. Rex Property portion of OU2 at the Site against the nine evaluation criteria.

Overall Protectiveness of Human Health and the Environment

Alternative 1 (No Action) does not include measures to prevent current and future receptors from exposure to contaminated soil. The Final BRA indicates that contaminants would present unacceptable risk if human receptors were exposed to the contaminated soil. If action is not taken, contaminated soil could expose the public to unacceptable levels of Site-related contaminants via the direct contact and vapor intrusion pathway. Movement of contaminants from the soil to groundwater also has the potential to expose human receptors to contaminants via direct contact with contaminated groundwater if no action is taken. Therefore, Alternative 1 would not be protective of human health and the environment. Because the No Action alternative would not be protective of human health and the environment and fails the threshold criteria, it is eliminated from further consideration under the remaining eight criteria.

Alternatives 2, 3, and 4 would provide adequate protection of human health and the environment by creating a physical barrier between the contaminated soil and human receptors. The caps in

these alternatives would prevent potential direct contact with contaminated soil at the J.W. Rex Property portion of the Site, and prevent exposure to contaminants via the vapor intrusion pathway. These alternatives would also minimize the infiltration of contamination through the soil, which would reduce the potential for contaminants to migrate to the groundwater and expose the public via direct contact with contaminated groundwater. The ICs in these alternatives would ensure that the caps are maintained and continue to remain protective. The ICs would also prevent future potential exposure to contaminants via administrative controls on future land use and development.

Alternative 5 would also provide protection of human health and the environment. Excavation and off-site disposal of soils exceeding the soil cleanup levels would eliminate risks associated with direct contact with contaminated soils and prevent further migration of COCs to the Site groundwater. Confirmation sampling will be used to verify that Alternative 5 is effective in attaining the RAOs. As with Alternatives 2, 3, and 4, ICs would also prevent future potential exposure to contaminants via administrative controls on future land use and development.

Compliance with ARARs

This criterion addresses whether a remedial action will meet applicable or relevant and appropriate requirements of federal environmental and state environmental and facility siting laws (ARARs) and/or whether there are grounds for invoking a waiver.

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 to-be-considered material (TBCs) along with ARARs. TBCs are non-promulgated advisories or guidance issued by Federal or State governments that are not legally binding and do not have the status of ARARs. EPA may use TBCs in determining the necessary level of cleanup for protection of human health or the environment.

For Alternatives 2, 3, and 4, as required under Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), all the components of the caps would comply with Federal and State ARARs. Major ARARs include relevant and appropriate RCRA requirements for landfill caps under 25 Pa. Code §§ 273.232-236; substantive requirements for erosion and sediment control under 25 Pa. Code §§ 102.4(b)(1) and (4), 102.11, and 102.22; and substantive requirements for fugitive air emissions under 25 Pa. Code §§ 123.1(a) and (c), and 123.2. The standards for landfill caps under 25 Pa. Code §§ 273.232-236 (40 C.F.R. §§ 264.300-317) are relevant and appropriate to construction of a cap to prevent exposure to contaminants. The Pennsylvania erosion and sediment control regulations apply to construction activities that will disturb the ground surface, including clearing, grading, and cap installation. The Pennsylvania fugitive dust regulation for particulate matter applies to construction activities involving ground disturbance, including clearing, grubbing, and cap installation.

Alternative 5 would also comply, as required under Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), with Federal and State ARARs. The ARARs include identification of hazardous waste under RCRA, and standards for generators of hazardous waste under RCRA that govern how excavated soil is handled and disposed. The RCRA regulations governing the identification of hazardous waste apply to construction activities when soils are excavated and sent to an off-site disposal facility. If the excavated soils to be sent for off-site disposal are determined to be hazardous waste, then the RCRA regulations applicable to generators of hazardous wastes are applicable. These regulations include standards applicable to initiating shipments of hazardous waste and requirements applicable to temporary on-site storage of hazardous waste. Other ARARs include standards for erosion and sediment control and fugitive air emissions. The Pennsylvania erosion and sediment control regulations apply to construction activities that will disturb the ground surface, including clearing, excavation, and grading. The Pennsylvania fugitive dust regulation for particulate matter applies to construction activities involving ground disturbance, including clearing, grubbing, and excavation.

A description of the ARARs is provided in Table 6.

Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence addresses expected residual risk and the ability of a remedial action to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. Alternative 5 is preferable to the other alternatives for this balancing criterion.

Alternatives 2, 3, and 4 would effectively reduce the potential for long-term and recurrent direct contact exposures for human receptors. These alternatives would also be effective in reducing the long-term environmental risk by minimizing infiltration and reducing contaminant migration. RAOs could be achieved in the long-term as all current exposure scenarios are prevented.

However, long-term monitoring and maintenance of the caps would be required to ensure the adequacy and reliability of these alternatives over time. The IC components of these alternatives would provide long-term effectiveness and permanence by creating administrative controls to prevent future potential risks associated with vapor intrusion and potential risks from the soil beneath the buildings.

Alternative 5 removes soil with contaminant levels above the soil cleanup levels, thus providing greater long-term effectiveness and permanence in the areas of soil excavation. Alternative 5 is more effective than Alternatives 2, 3, and 4 in achieving long-term effectiveness and permanence because under Alternative 5, no residual risk associated with the direct contact and migration of contaminants from soil to groundwater pathways would remain after this alternative is implemented. The IC components of Alternative 5 would provide long-term effectiveness and permanence by creating administrative controls to prevent future potential risks associated with vapor intrusion and potential risks from the soil beneath the buildings.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Reduction of toxicity, mobility, or volume through treatment addresses the anticipated performance of the treatment technologies a remedial action may employ. None of the alternatives includes treatment technologies. Technologies which employ treatment were identified during the technology screening portion of the OU2 FS, but none were carried forward due to significant issues with cost and implementability. Therefore, the alternatives are compared based on reduction of toxicity, mobility, or volume of the contamination.

Alternative 5 is preferable to the other alternatives for this balancing criterion.

As stated above, Alternatives 2, 3, and 4 do not include treatment of contaminants. As a result, no amount of hazardous materials would be destroyed or treated, and no reduction in the toxicity or volume of the contaminants would be expected. However, these alternatives would reduce the mobility of the contaminants by preventing infiltration of precipitation from mobilizing contamination towards the groundwater.

Alternative 5 also does not employ treatment as a component. However, the excavation and off-site disposal of the contaminated soils would significantly and permanently reduce the toxicity, mobility, and volume of contamination at the J.W. Rex Property portion of OU2 at the Site. Any residual contamination would be below levels that would present a threat via either the direct contact or soil to groundwater pathway.

Short-term Effectiveness

Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup levels are achieved.

Alternatives 2, 3, and 4 require construction activities to build the cap and stormwater management system. The community and workers would be protected during this construction

through monitoring of the site perimeter and adherence to a health and safety plan. The health and safety plans for each of these alternatives would include requirements for the use of personal protective equipment (PPE), environmental monitoring, and site access controls during implementation to ensure workers and the public are not exposed to potentially unacceptable levels of contamination. These alternatives would not generate additional on-site or off-site adverse environmental impacts. It is anticipated that construction of these alternatives would take approximately one and one-half months.

Alternative 5 requires disturbance of the subsurface soils and staging of contaminated soils on-site. As a result, workers and the public would potentially be at greater risk during this time to exposure to contamination via direct contact. However, the community and workers would be protected during this construction through adherence to a health and safety plan. The health and safety plan would include requirements for the use of PPE, environmental monitoring, and site access controls during the implementation of Alternative 5 to ensure workers and the public are not exposed to potentially unacceptable levels of contamination. The alternative would not generate additional on-site or off-site adverse environmental impacts. Excavation, disposal, and restoration activities are expected to meet performance standards described in Section 11.2 within a six-month time frame.

Implementability

Implementability addresses the technical and administrative feasibility of a remedial action, including the availability of materials and services needed to implement a particular option. Alternatives 2, 3, 4, and 5 all use technology and materials that are readily available and reliable.

For Alternatives 2, 3, and 4, construction of the caps and monitoring and maintenance activities are not expected to present difficulties. For Alternative 5, soil excavation and off-site disposal is a commonly employed technique that utilizes readily available equipment. A number of vendors are readily available for the excavation, transportation, landfill disposal activities, and site reconstruction. Monitoring the effectiveness of the remedial action would be accomplished through confirmation sampling, which is also easily implemented. ICs associated with all alternatives could be readily implemented.

Cost

Cost information for Alternatives 2, 3, 4, and 5 is presented below. O&M costs shown are the 30-Year Present Worth costs calculated using a 7% discount rate. Detailed cost estimates and associated assumptions are included in the OU2 FS.

Table 5: Cost Estimates for Remedial Alternatives

Alternative	Description	Capital	O&M	Total
2	Clay Cap and ICs	$3,148,200	$55,600	$3,203,800
3	Concrete/Asphalt Cap and ICs	$2,105,200	$33,300	$2,138,500
4	Geomembrane Cap and ICs	$2,673,500	$55,600	$2,729,100
5	Soil Excavation, Off-Site Disposal, and ICs	$5,173,600	$22,800	$5,196,400

State/Support Agency Acceptance

PADEP concurred with the selection of Alternative 5 in a letter dated September 26, 2018.

Community Acceptance

EPA held a 30-day public comment period from March 30, 2018 through April 30, 2018, to accept public comments on the remedial alternatives presented in the PRAP and on the other documents contained in the Administrative Record file compiled in support of this remedial action. On April 12, 2018, EPA held a public meeting to discuss the PRAP and accept comments. A transcript of this meeting is included in the Administrative Record. No comments were received during the public meeting, nor were any written comments received via postal mail during the public comment period. A discussion of the public comment period is included in the Responsiveness Summary which is a part of this ROD.

Principal Threat Wastes

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, pollutants, or contaminants, and acts as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile, which would present a significant risk to human health or the environment should exposure occur. The soils at the J.W. Rex Property may be characterized as source material because the soils contain hazardous substances, act as a reservoir for migration of contamination to groundwater and air, and act as a source for direct contact exposure. The soils at the J.W. Rex Property may be considered principal threat wastes because they would present a significant threat to human health or the environment should exposure occur. The following section discusses in greater detail the risks to human health and the environment from exposure to contamination in the soils at the J.W. Rex Property. The selected OU2 remedial action at the J.W. Rex Property is intended to permanently reduce the toxicity, mobility, and volume of those source materials that constitute the principal threat wastes at the J.W. Rex Property.

11.0 SELECTED REMEDY

Following review and consideration of the information in the Administrative Record supporting selection of this remedial action, the requirements of CERCLA and the NCP, public comments, and State acceptance, EPA has selected Alternative 5, Excavation, Off-Site Disposal, and Institutional Controls as the Selected Remedial Action at the J.W. Rex Property portion of OU2 at the Site.

11.1 Summary of the Rationale for the Selected Remedy

The Selected Remedial Action for the J.W. Rex Property portion of OU2 is Alternative 5, Excavation, Off-Site Disposal, and Institutional Controls. EPA has selected Alternative 5 because it is more effective in the long-term, is more permanent, and provides greater reduction of toxicity, mobility, and volume of contamination.

Alternative 5 is considered more effective in the long-term and more permanent because it removes contamination from the J.W. Rex Property by excavating contaminated soil and disposing of it off-site. By removing the contamination from the J.W. Rex Property, Alternative 5 prevents the continued migration of contamination to groundwater at levels that would present an unacceptable risk to the public, eliminates the risks associated with direct contact with contaminated soils, and reduces the potential for vapor intrusion in the future. Alternatives 2, 3, and 4 leave soil contamination in place and require maintenance of the caps in order to ensure long-term protectiveness. Future land uses at the J.W. Rex Property may be hindered by requirements to maintain the caps under these alternatives. While Alternative 5 is the most expensive alternative, it ensures permanent protectiveness after the anticipated six-month time frame needed to implement the alternative.

The soils at the J.W. Rex Property may be considered a principal threat waste and the NCP establishes an expectation that EPA will use treatment to address principal threat wastes whenever practicable. Technologies which employ treatment were identified during the technology screening portion of the OU2 FS, but none were carried forward due to issues with cost and implementability. While none of the alternatives employ treatment, Alternative 5 provides greater reduction in toxicity, mobility, and volume of contamination by removing the soil contamination permanently from the J.W. Rex Property and disposing of it off-site at an appropriate permitted facility.

11.2 Description of the Selected Remedy and Performance Standards

Based on the comparative analysis of the alternatives under the nine criteria, EPA's Selected Remedial Action at the J.W. Rex Property portion of OU2 at the Site is Alternative 5 (Soil Excavation, Off-Site Disposal, and ICs). The total present worth cost of EPA's Selected Remedial Action is $5,196,400. The major components of the Selected Remedial Action are:

- Excavation of soils contaminated above the clean-up levels
- Off-site disposal of contaminated soils
- Backfill of excavated areas with clean fill and restoration of impacted areas
- Institutional Controls to prevent future exposure to remaining contaminated soils and vapor intrusion

11.2.1 Excavation of Contaminated Soils

The excavation area has been determined based on comparison of historical detections of COCs in the soil with the soil cleanup levels in Table 3. Excavation of soil with COCs above the cleanup levels will ensure RAOs for direct contact and soil-to-groundwater are met. Figure 8 presents the approximate excavation areas and soil staging (stockpile) area for Alternative 5. The excavation area includes the former disposal area in the northern corner of the J.W. Rex Property and several non-contiguous "hot-spots." The Selected Remedial Alternative includes taking steps necessary to permit continued use of the J.W. Rex Property by the current commercial and industrial operations and to minimize disruption to surrounding residential areas. Excavation, staging, monitoring, and sampling will be performed in a manner that minimizes, to the extent practicable, adverse impacts on the operation of businesses located at the J.W. Rex Property. Excavated areas will be protected with temporary fencing and warning signs at the conclusion of daily activities. Dust suppression techniques will be used to minimize exposure to airborne contaminants during excavation. Air monitoring will be performed to ensure the effectiveness of these techniques. Excavation will be conducted in stages to minimize the footprint impact on the operations associated with the industrial building. Post-excavation soil sampling will be conducted in order to ensure that all material that exceeds the soil cleanup levels set forth in the ROD has been removed.

Performance Standards for Excavation of Contaminated Soils

1. All the soil that is included in the pre-determined excavation areas (Figure 8) or fails to meet the Remedial Action Objectives set forth in Section 8.0 of this ROD, will be excavated.

2. Staging of materials may be required if excavation and sampling activities do not allow for immediate off-site transport of soil. Any temporary storage of hazardous

substances excavated at the Site will meet the substantive requirements of 25 Pa. Code § 262a.34 (as described in Table 6).

3. Excavation will be conducted in accordance with the substantive portions of Pennsylvania regulations governing erosion and sediment control (25 Pa. Code §§ 102.4(b)(1) and (4), 102.11, 102.22).

4. Air monitoring will be conducted during excavation activities. Emission controls will be implemented to comply with Pennsylvania regulations governing fugitive air emissions (25 Pa. Code §§ 123.1(a) and (c), 123.2).

11.2.2 Off-Site Disposal of Contaminated Soils

Contaminated soils excavated under Section 11.2.1 above will be disposed off-site. Hazardous substances removed from the J.W. Rex Property will be disposed of in accordance with Section 121(d)(3) of CERCLA and 40 C.F.R § 300.440. Soil determined to be hazardous waste based on exceedance of RCRA Toxicity Characteristic Leaching Procedure (TCLP) criteria will be sent to a RCRA permitted Subtitle C facility for treatment and disposal in accordance with the RCRA Land Disposal Restriction standards. Soil determined not to be hazardous waste will be disposed at a RCRA Subtitle D facility.

Performance Standards for Off-Site Disposal of Contaminated Soils

1. Prior to disposal, contaminated soils will be sampled and analyzed to determine if the soil should be considered a hazardous waste based on the characteristic of toxicity under regulations governing the identification of hazardous waste in 25 Pa. Code § 261a.1 (40 C.F.R. §§ 261.20 and 261.24), as described in Table 6.

2. Procedures for initiation of shipments of contaminated soils off-site will comply with the substantive portions of regulations applicable to generators of hazardous wastes (25 Pa. Code §§ 262a.10, 11, and 12 (40 C.F.R. §§ 262.10(a) and (h), 262.11(c)(1), and 262.12), as described in Table 6.

11.2.3 Backfill of Excavated Areas with Clean Fill

Excavated areas will be backfilled with clean fill. The clean fill will meet the standards for clean fill as defined in the PADEP "Management of Fill Policy," dated April 7, 2010 (see Table 6). Areas will be graded appropriately to manage stormwater. Parking surfaces removed as a result of soil excavation will be reinstalled.

11.2.4 Institutional Controls to Prevent Future Exposure to Remaining Contaminated Soils

The IC portion of the remedial action is described in detail in Section 9.0 of this ROD. The ICs are discussed below as they relate to contamination underneath the existing buildings, and construction of any new habitable buildings at the J.W. Rex Property.

Performance Standards for ICs for Existing Buildings

ICs related to soil contamination are required for all existing buildings at the J.W. Rex Property. ICs will be implemented to prohibit the disturbance of soils underneath the existing buildings unless a future building modification allows access to sample such soils and the following actions are conducted:

1. Perform an investigation of subsurface soils to characterize the extent of soil contamination underneath the building if any future building modifications allow for access to sample the soils.

2. Soils will be sampled in accordance with an EPA-approved soil sampling plan and quality assurance plan.

3. Soils which exceed the soil cleanup levels in Table 3 will be excavated in accordance with performance standards for these actions listed in Section 11.2.1.

4. Contaminated soils will be disposed in accordance with performance standards listed in Section 11.2.2.

5. Excavated areas will be backfilled as set forth in Section 11.2.3.

ICs related to vapor intrusion are also required for all existing buildings at the J.W. Rex Property. ICs will be implemented to prohibit (1) any change in the use of either of the existing buildings, and (2) any structural modification or renovation of either of the existing buildings that disturbs or breaches the slab unless the following actions are conducted:

1. Collect indoor air and subslab samples if the use of an existing building changes, or if the building undergoes structural modification or any type of renovation where the slab is disturbed or breached.

2. Indoor air and subslab samples will be collected in accordance with an EPA-approved sampling plan and quality assurance plan.

3. If the detected indoor air concentrations equal or exceed EPA acceptable risk criteria (greater than 1E-04 cumulative cancer risk or HI greater than or equal to 1.0), a vapor mitigation system will be installed, maintained, and monitored until EPA determines that the soil and groundwater contamination no longer poses a vapor intrusion risk.

4. If a vapor mitigation system is installed, indoor air sampling will be performed to confirm that the system has reduced the risk from indoor air to within EPA acceptable risk criteria (less than 1E-04 cumulative cancer risk and HI less than 1.0).

5. If a vapor mitigation system is installed, the system will maintain a pressure of 1 Pascal across the slab area.

Performance Standards for ICs for New Buildings

ICs related to vapor intrusion are required for any future habitable buildings constructed on the J.W. Rex Property. ICs will be implemented to prohibit construction of any new buildings on the J.W. Rex Property unless the following actions are conducted:

1. Any new habitable buildings constructed on the J.W. Rex Property will include, at a minimum, a foundation vapor barrier and the subsurface piping for a subslab depressurization system.

2. Prior to occupancy, the indoor air in all new habitable buildings will be tested in accordance with an EPA-approved sampling plan and quality assurance plan to determine if the vapor barrier and subsurface piping are effective at reducing the indoor air concentrations to within EPA acceptable risk criteria (less than 1E-04 cumulative cancer risk and HI less than 1.0).

3. If indoor air concentrations are equal to or exceed EPA acceptable risk criteria (greater than 1E-04 cumulative cancer risk or HI greater than or equal to 1.0), a vapor mitigation system will be installed, maintained, and monitored until EPA determines that the soil and groundwater contamination no longer poses a vapor intrusion risk.

4. If a vapor mitigation system is installed, indoor air sampling will be performed to confirm that the system has reduced the risk from indoor air to within EPA acceptable risk criteria (less than 1E-04 cumulative cancer risk and HI less than 1.0).

5. If a vapor mitigation system is installed, the system will maintain a pressure of 1 Pascal across the slab area.

11.3 Summary of the Estimated Remedy Costs

The estimated present worth cost of the Selected Remedial Action is $5,196,400. The information in the cost summary table (Table 5) is based on the best available information regarding the anticipated scope of the response action. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. Changes in the cost elements may occur as a result of new information and data collected during the engineering design of the Selected Remedial Action.

11.4 Expected Outcomes of the Selected Remedy

This section presents the expected outcomes of the Selected Remedial Action in terms of resulting land and groundwater uses and risk reduction achieved as a result of the remedial

action. Following the completion of the soil excavation, it is anticipated that no unacceptable health risk to residents or workers due to exposure to soil at the J.W. Rex Property will exist.

The removal of the source area soils, which represent a principal threat, will prevent further migration of hazardous substances into groundwater from such soils and may potentially reduce the time it will take to clean up contaminated groundwater at the J.W. Rex Property.

The Selected Remedial Action will allow for the continued use of the J.W. Rex Property as a commercial/industrial facility and is consistent with the OU3 remedial action which addresses contaminated groundwater.

12.0 STATUTORY DETERMINATIONS

Under CERCLA, a selected remedy must protect human health and the environment, comply with ARARs that are not waived, be cost-effective and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Additionally, CERCLA includes a preference for remedial actions that use treatment to significantly and permanently reduce the volume, toxicity, or mobility of hazardous substances, pollutants, and contaminants as their principal element. The following sections discuss how the Selected Remedial Action for the J.W. Rex Property portion of OU2 at the Site meets these statutory requirements.

12.1 Protection of Human Health and the Environment

The Selected Remedial Action is protective of human health and the environment. Excavation and off-site disposal of soils exceeding the soil cleanup levels will eliminate risks associated with direct contact with contaminated soils and prevent further migration of COCs to groundwater. Confirmation sampling will be used to verify that the Selected Remedial Action is effective in attaining the RAOs. ICs will prevent future potential exposure to contaminants via administrative controls on future land use and development.

12.2 Compliance with Applicable or Relevant and Appropriate Requirements

The Selected Remedial Action will comply, as required under Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), with Federal and State ARARs. The ARARs include identification of hazardous waste under RCRA, and standards for generators of hazardous waste under RCRA that govern how excavated soil is handled and disposed. Other ARARs include standards for erosion and sediment control and fugitive air emissions. The Selected Remedial Action will attain all ARARs that are identified in Section 10.0 and specified in Table 6 of this ROD.

12.3 Cost Effectiveness

Section 300.430(f)(1)(ii)(D) of the NCP, 40 C.F.R. § 300.430(f)(1)(ii)(D), requires EPA to evaluate cost-effectiveness by comparing all the alternatives meeting the threshold criteria - protection of human health and the environment and compliance with ARARs - against long-

term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness (collectively referred to as "overall effectiveness"). The NCP further states that overall effectiveness is then compared to cost to ensure that the remedial action

is cost effective, and that a remedial action is cost effective if its costs are proportional to its overall effectiveness.

EPA concludes, following an evaluation of these criteria, that the Selected Remedial Action is cost-effective in providing overall protection in proportion to cost and meets all other requirements of CERCLA. The estimated present worth cost for the Selected Remedial Action is $5,196,400.

12.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The Selected Remedial Action utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Excavation and off-site disposal of contaminated soils will permanently eliminate the threats to human health and the environment from such soils. Alternative treatment technologies were considered for this remedial action during the OU2 FS, but were not carried forward due to cost and implementation issues relating to the proximity of residential areas and active commercial and industrial operations. For this remedial action, risk reduction and protectiveness are achieved in a cost-effective manner using proven technologies that do not include alternative treatment technologies.

12.5 Preference for Treatment as a Principal Element

The Selected Remedial Action does not employ treatment as a principal element because of cost and implementability issues associated with treating contamination at the J. W. Rex Property. EPA considered treatment options to address contaminated soils. While proven technologies exist for treatment of the COCs, the cost of implementing these technologies as well as implementation issues relating to the proximity of residential areas and the active commercial and industrial operations on the J.W. Rex Property prevented these technologies from being carried forward in the OU2 FS.

12.6 Five-Year Review Requirements

Because the Selected Remedial Action will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure (i.e., contaminated soils on the J.W. Rex Property beneath the footprint of the buildings, contaminated soil outside the J.W. Rex Property, and contaminated groundwater), a statutory review will be conducted every five years after initiation of the remedial action to ensure that the remedial action is protective of human health and the environment pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c), and the NCP, 40 C.F.R. §300.430(f)(5)(iii)(C).

13.0 DOCUMENTATION OF SIGNIFICANT CHANGES

No public comments were submitted during the public comment period. Therefore, there have been no significant or fundamental changes to the Selected Remedial Action as a result of public comments. However, there have been changes to the IC requirements with respect to protection from vapor intrusion in any new buildings constructed on the J.W. Rex Property. The ICs require that for any new habitable buildings, vapor barriers and piping for passive mitigation must be installed. This change reflects current EPA guidance on vapor intrusion.

III. RESPONSIVENESS SUMMARY

NORTH PENN AREA 6 SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

RECORD OF DECISION

NORTH PENN AREA 6 SUPERFUND SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE, MONTGOMERY COUNTY, PENNSYLVANIA

RESPONSIVENESS SUMMARY

The U.S. Environmental Protection Agency (EPA) prepared this Responsiveness Summary to provide a summary of any significant public comments and concerns regarding the Proposed Remedial Action Plan at the J.W. Rex Property portion of Operable Unit 2 (OU2) at the North Penn Area 6 Superfund Site (Site) and EPA's responses to those comments. After not receiving any public comments during the public comment period, EPA determined that no significant changes to the proposed remedial action, as originally identified in the Proposed Remedial Action Plan, were necessary or appropriate, and EPA has selected a remedial action to address soil contamination at the J.W. Rex Property.

The Proposed Remedial Action Plan and supporting documentation were made available to the public in the Administrative Record file compiled to support selection of this remedial action and accessible at https://semspub.epa.gov/src/collections/03/AR/PAD980926976. EPA provided notice to the public that the Administrative Record file could also be viewed at the following locations:

EPA Administrative Records Room, Attention: Administrative Coordinator 1650 Arch Street Philadelphia, PA 19103-2029 (215) 814-3157 Hours: Monday through Friday, 8:30 am to 4:30 pm; by appointment only.	Lansdale Public Library 301 Vine Street Lansdale, PA 19446 Hours: Call (215) 855-3228

EPA issued a public notice in *The Reporter*, a Lansdale newspaper, on March 30, 2018, which contained a list of the components of EPA's preferred alternative, information relevant to the duration of the public comment period, the date of the public meeting, and the availability of the Proposed Remedial Action Plan and the Administrative Record file. The 30-day comment period began on March 30, 2018, and ran through April 30, 2018. In addition, EPA sent a fact sheet summarizing EPA's preferred alternative to residences and businesses near the J.W. Rex Property in April 2018.

EPA conducted a public meeting in Lansdale, Pennsylvania to inform local officials, interested citizens, and other stakeholders in attendance about EPA's proposed cleanup plan and the Superfund process, to respond to questions, and to receive comments on the Proposed Remedial Action Plan. The public meeting was held by EPA on April 12, 2018, at the Lansdale Borough Hall located at One Vine Street, Lansdale, Pennsylvania. A complete transcript of the public meeting has been included in the Administrative Record file. No comments were received at the public meeting and no comments were received during the public comment period. Therefore, no responses are included in this Responsiveness Summary.

IV. TABLES

NORTH PENN AREA 6 SUPERFUND SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

RECORD OF DECISION

[Tables 1 to 5 are in the text of the ROD. See the Table of Contents, p. ii, for the location of Tables 1 to 5]

TABLE 6: LIST OF APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARS)

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Detail Regarding ARARS in the Context of the Remedy
Chemical Specific				
EPA Region 3 Regional Screening Level Table, May 2016 (including TCE toxicity value changes, February 2012)	https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables	To Be Considered (TBC)	EPA Region III utilizes this table as a risk-based concentration screening tool.	This table was used to compare historical screening to a common screening point for contaminants, and to evaluate risk identified in site risk assessment for 1,1 dichloroethene (DCE), cis 1,2-DCE, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride. This table was also used in the development of the site-specific soil cleanup level for hexavalent chromium[Cr(VI)].
Risk Assessment Guidance for Superfund – Volume 1 Human Health Manual Part A, December 1989	EPA Office of Emergency and Remedial Response EPA/540/1-89/002	TBC	EPA guidance for calculating baseline human health risk and establishing risk-based performance standards for Superfund cleanups.	This guidance document was considered when establishing risk based soil cleanup standards for TCE.
National Primary Drinking Water Regulations, Maximum Contaminant Levels	40 Code of Federal Regulations (CFR) § 141.61	Relevant and Appropriate	Establishes primary drinking water regulations pursuant to section 1412 of the Public Health Service Act, as amended by the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq.	This regulation was considered when establishing the soil-to-groundwater cleanup standards for 1,1-DCE, cis 1,2-DCE, PCE, TCE, and vinyl chloride.
Pennsylvania Department of Environmental Protection (PADEP) Management of Fill Policy, April 7, 2010	Pennsylvania E-Library Document Number 258-2182-773 http://www.depgreenport.state.pa.us/elibrary/GetFolder?FolderID=4647	TBC	Provides PADEP's procedures for determining whether material is clean fill or regulated fill.	Fill that is used for backfilling excavated areas will meet the standards for clean fill as defined in this document.
Location Specific				
There are no location specific ARARs identified.				

TABLE 6: LIST OF APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARS)

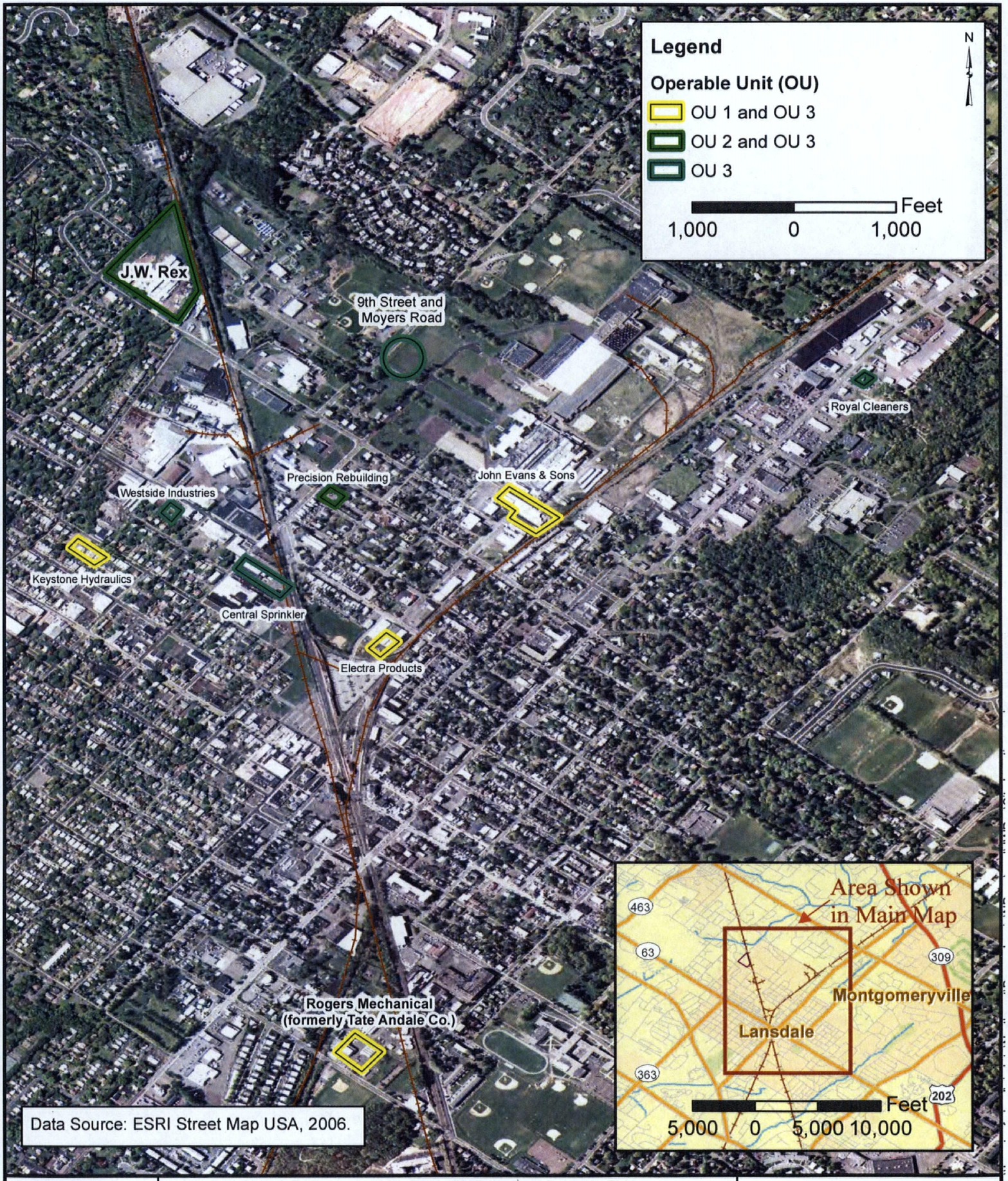
ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Detail Regarding ARARS in the Context of the Remedy
Action Specific				
Erosion and Sediment Control	25 Pa. Code §§ 102.4(b)(1) and (4), 102.11, 102.22	Applicable	Identifies erosion and sediment control requirements and criteria for activities involving land clearing, grading, and other earth disturbances, and establishes erosion and sediment control criteria.	The substantive requirements of these regulations apply to construction activities at the site which disturb the ground surface, including clearing, grading, excavation, and cap installation.
Identification of Hazardous Wastes	25 Pa. Code § 261a.1 (40 CFR §§ 261.20 and 261.24)[1]	Applicable	Defines hazardous waste and describes the process for identifying hazardous wastes based on toxicity characteristic.	This regulation applies to site activities where soils are excavated from the site and sent to an off-site disposal facility or landfill.
Standards applicable to Generators of Hazardous Wastes	25 Pa. Code §§ 262a.10, 11, and 12 (40 CFR §§ 262.10(a) and (h), 262.11(c)(1), and 262(12))[1]	Applicable	These regulations establish standards for generators of hazardous wastes, including standards for determining if a waste is a hazardous waste and initiating shipments of hazardous waste.	The substantive requirements of these regulations apply to site activities when excavated soils that are determined to be hazardous waste are to be transported for offsite disposal.
Standards applicable to Generators of Hazardous Wastes	25 Pa. Code § 262a.34 (40 CFR § 262.34)[1]	Applicable	Establishes requirements for generators of hazardous wastes, including temporary storage of hazardous wastes on-site.	The substantive requirements of these regulations apply to site activities when excavated soils are determined to be hazardous wastes and need to be temporarily stored on-site.
Fugitive Air Emissions	25 Pa. Code §§ 123.1(a) and (c); 123.2	Applicable	Establishes the fugitive dust regulation for particulate matter.	The substantive requirements of these regulations apply to construction activities which disturb the ground surface, including clearing and grubbing, excavation, and cap installation.
Standards for Landfill Caps	25 Pa. Code §§ 273.232-273.236 (40 CFR §§ 264.300-317)[1]	Relevant and Appropriate	Contains requirements for landfills including requirements for caps.	Portions of this regulation are relevant and appropriate to alternatives that include construction of a cap to prevent exposure to contaminants.

[1] Pennsylvania has an EPA-authorized hazardous waste management program; therefore, the Pennsylvania hazardous waste management regulations are identified here as the Federal ARAR. The parenthetical reference to the Code of Federal Regulations (CFR) is provided for informational purposes.

V. FIGURES

NORTH PENN AREA 6 SUPERFUND SITE
OPERABLE UNIT 2
J.W. REX PROPERTY
LANSDALE BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

RECORD OF DECISION



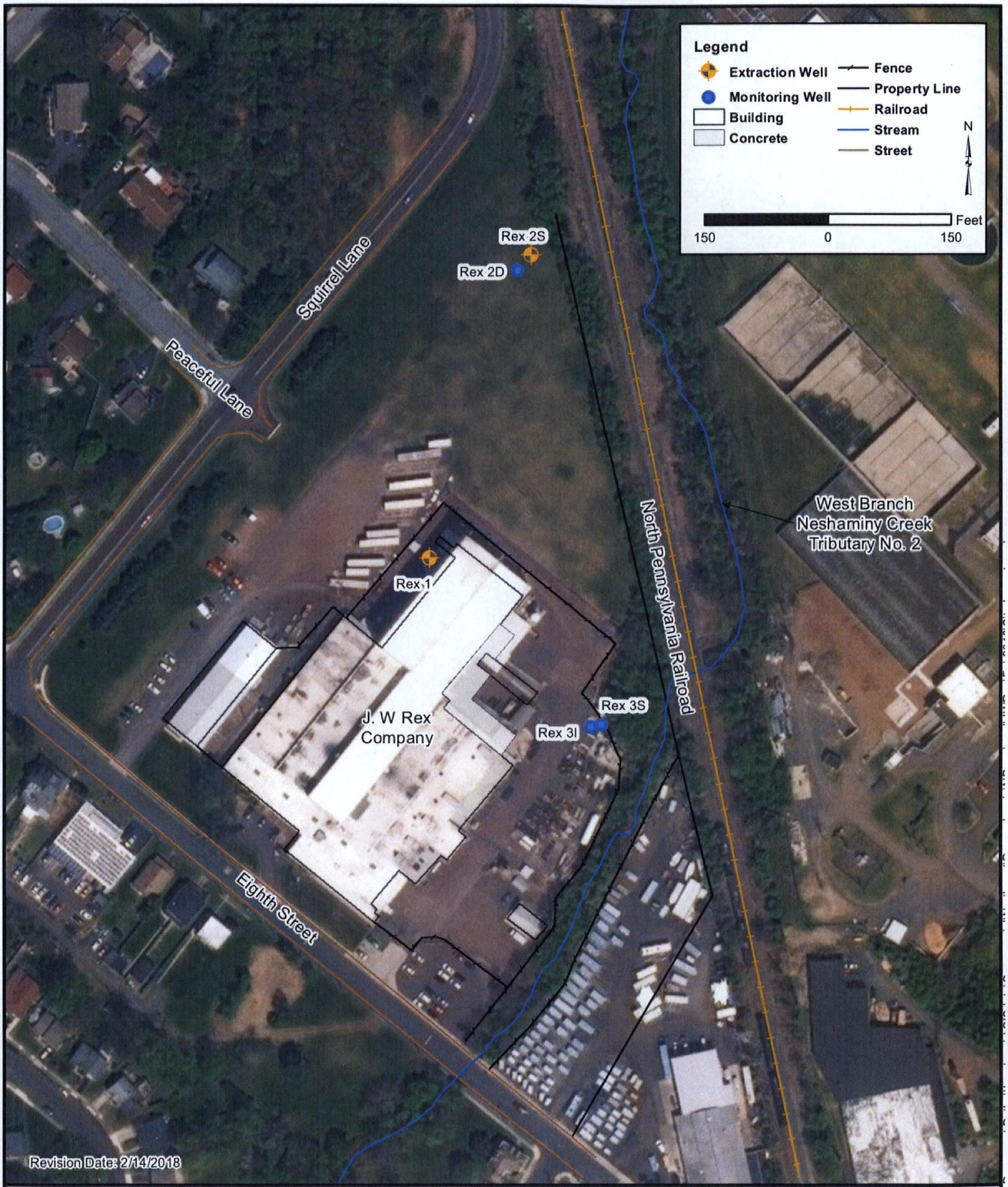
EA Engineering, Science, and Technology, Inc.

North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 1: SITE LOCATION



North Penn Area 6 Superfund Site

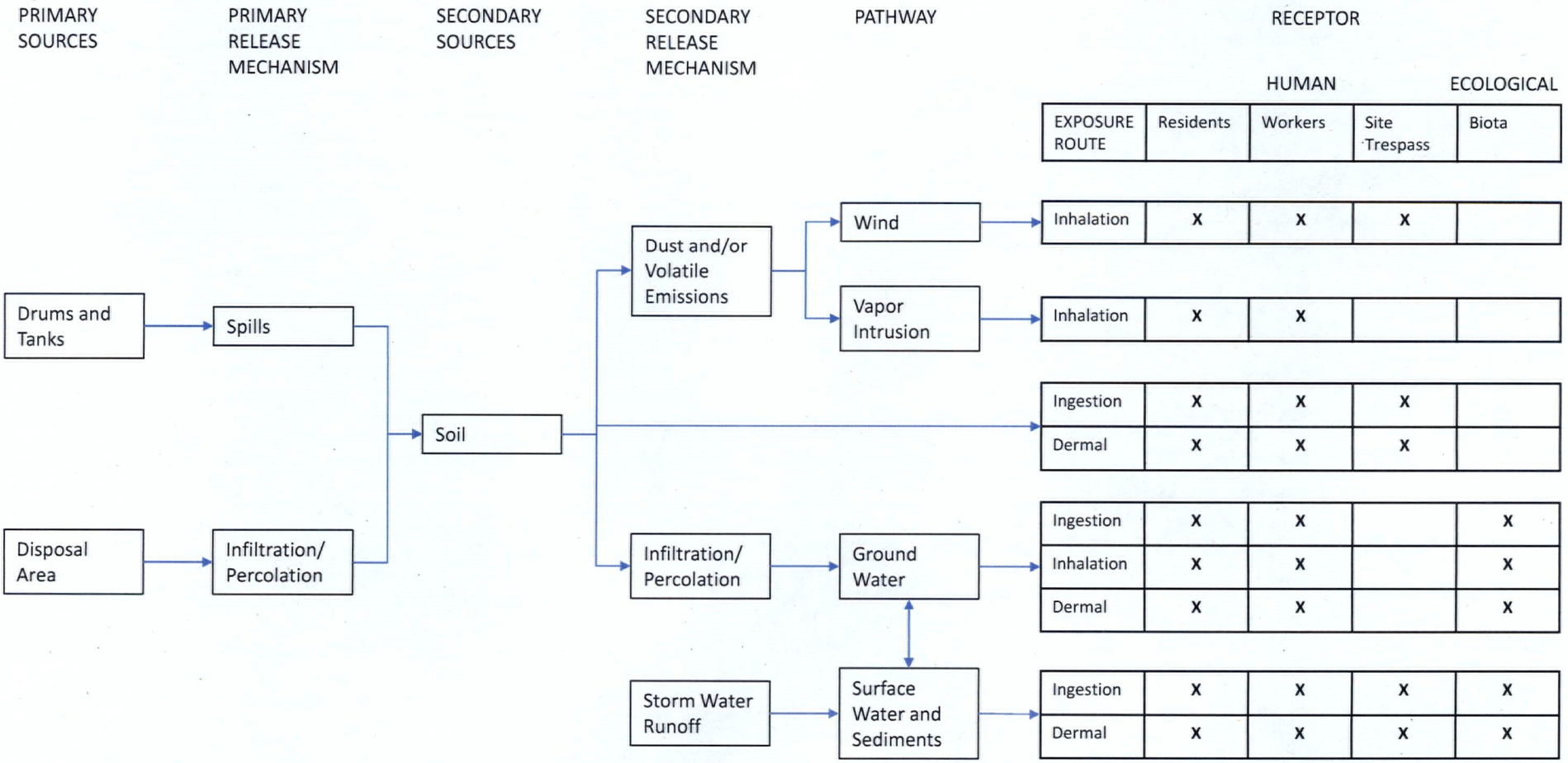
J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

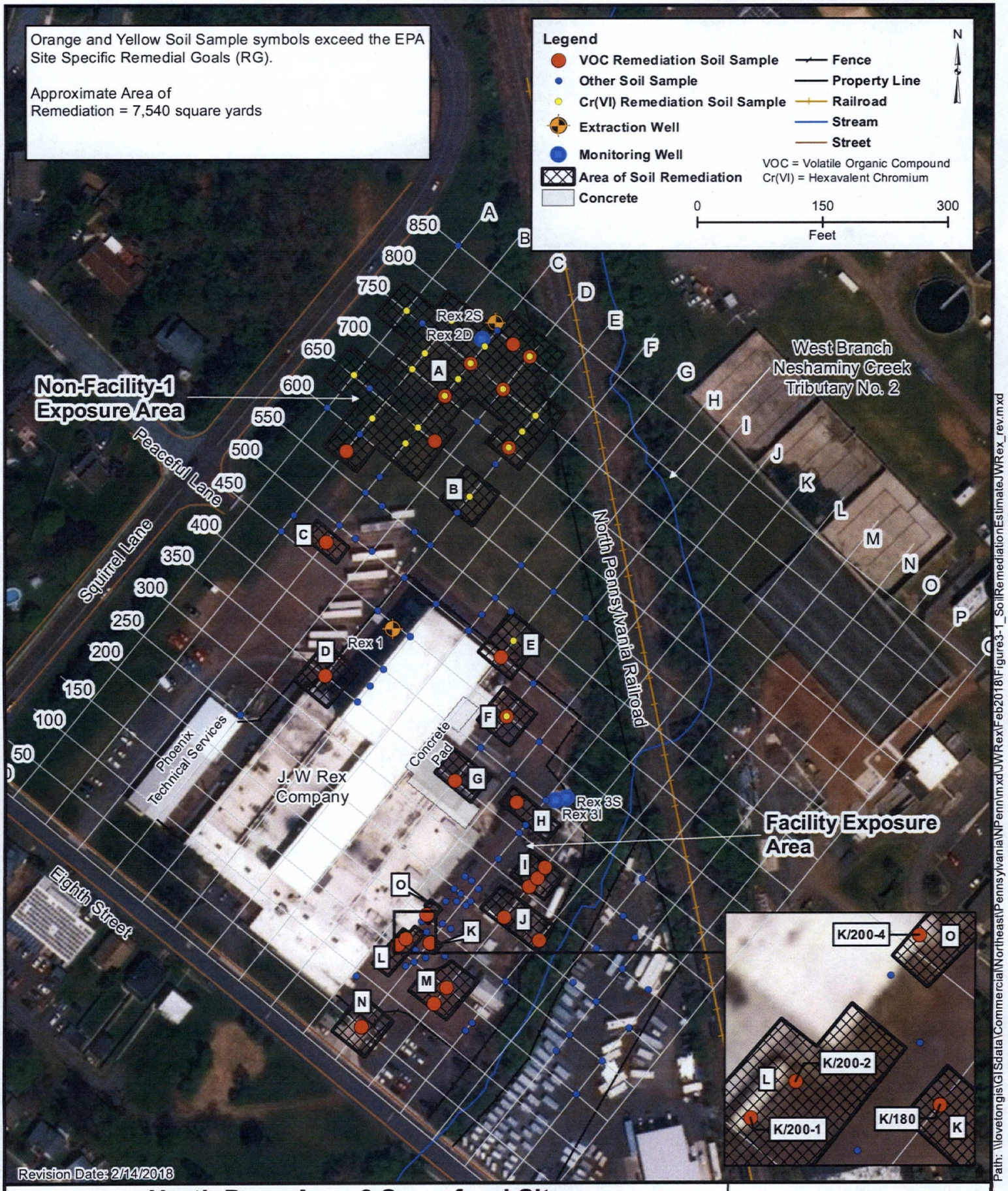
AR301467

FIGURE 2
J. W. REX PROPERTY LAYOUT

Figure 3: Conceptual Site Model for Contaminated Soil at J. W. Rex Property



EXPOSURE ROUTE	Residents	Workers	Site Trespass	Biota
Inhalation	X	X	X	
Inhalation	X	X		
Ingestion	X	X	X	
Dermal	X	X	X	
Ingestion	X	X		X
Inhalation	X	X		X
Dermal	X	X		X
Ingestion	X	X	X	X
Dermal	X	X	X	X

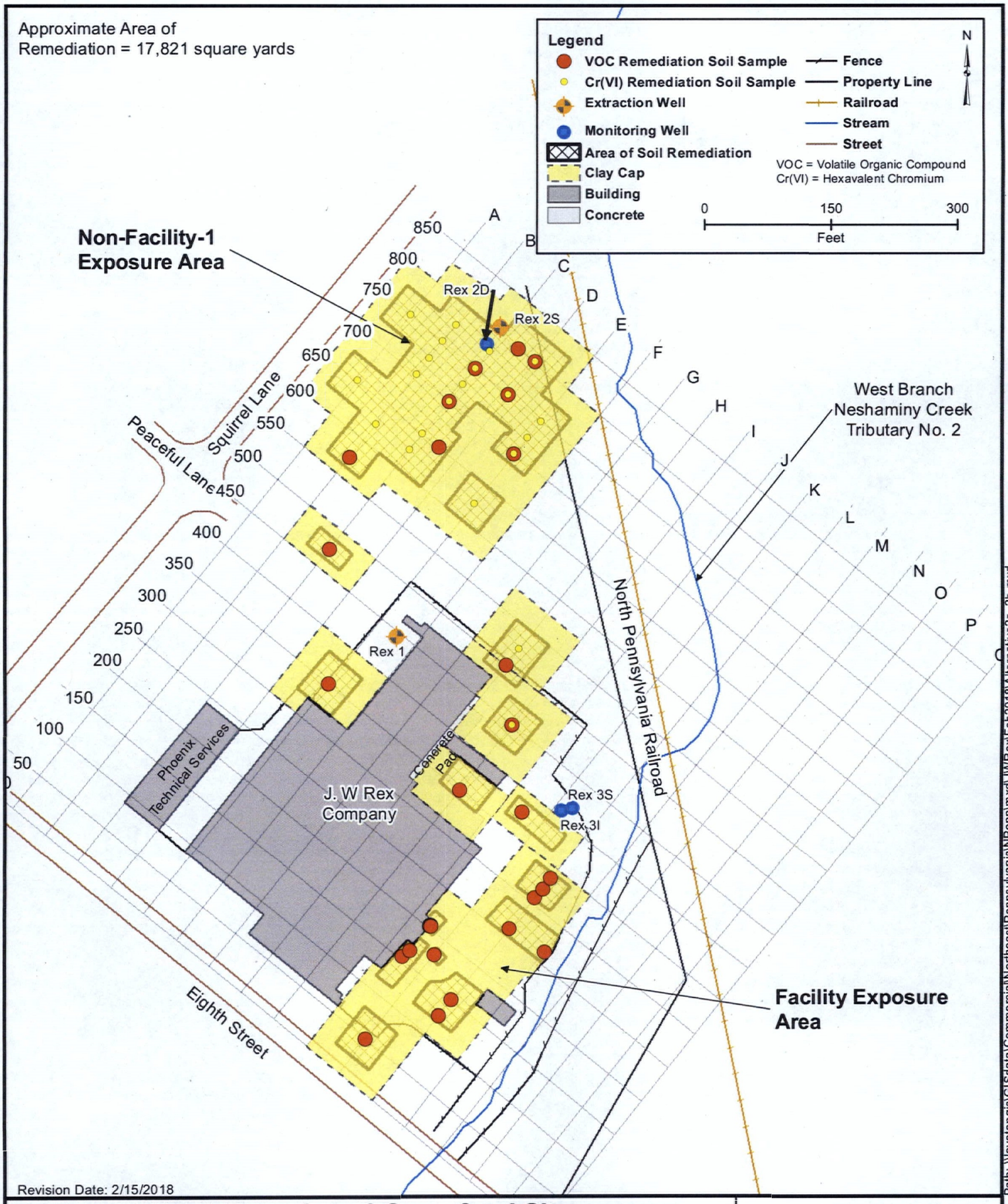


North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 4
SOIL AREAS EXCEEDING SOIL CLEANUP LEVELS

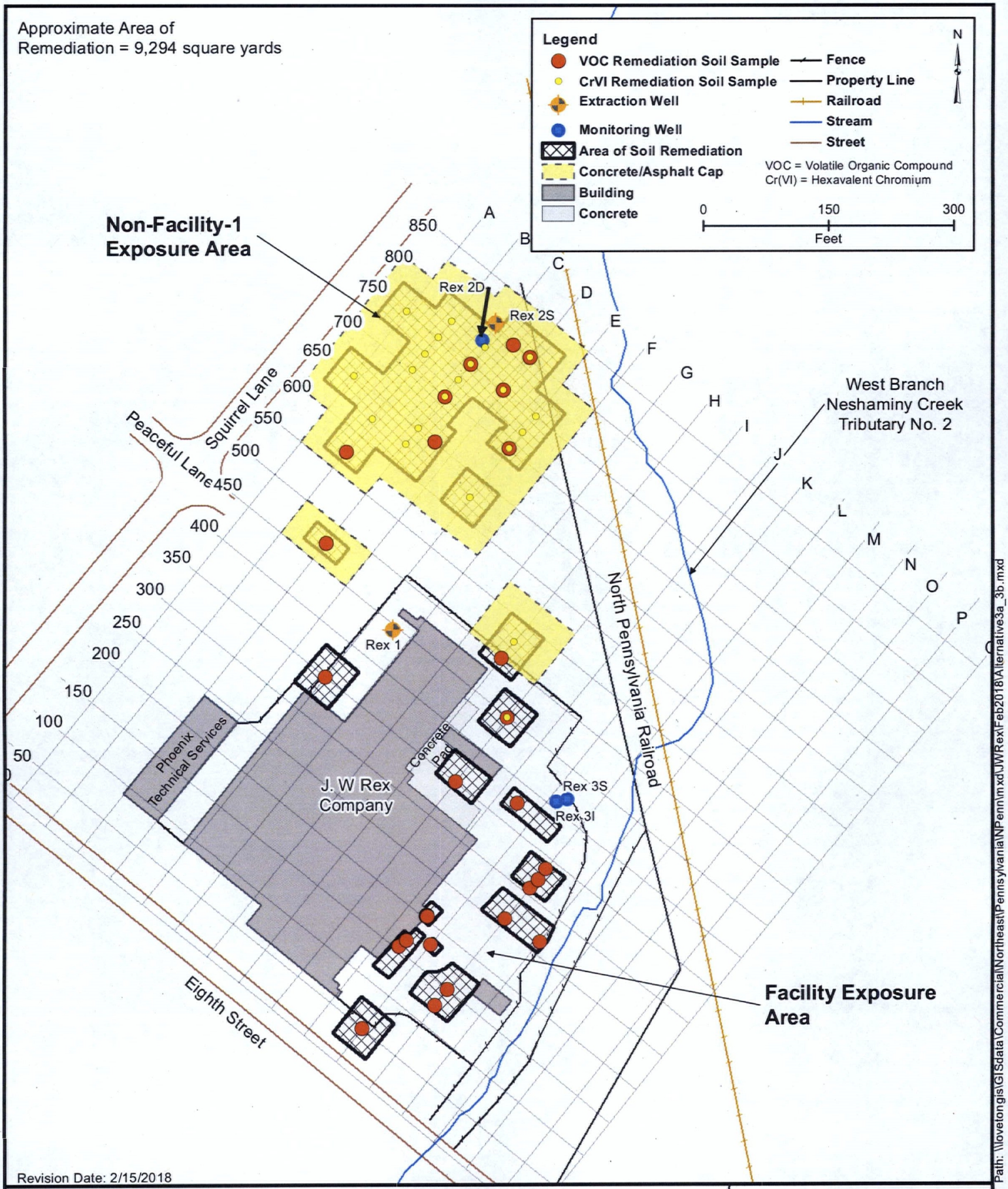


North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 5
ALTERNATIVE 2
CLAY CAP

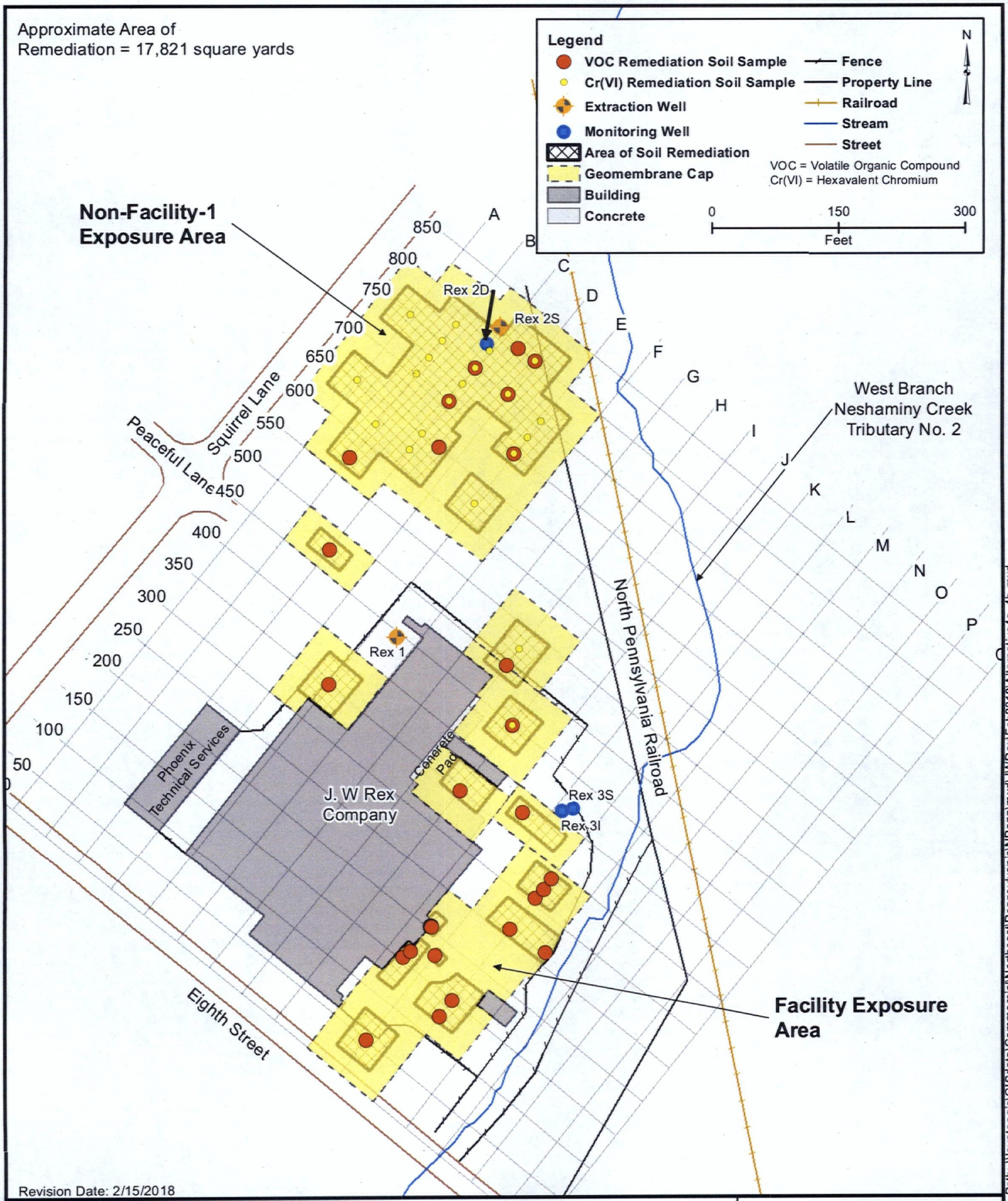


North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 6
ALTERNATIVE 3
CONCRETE/ASPHALT CAP



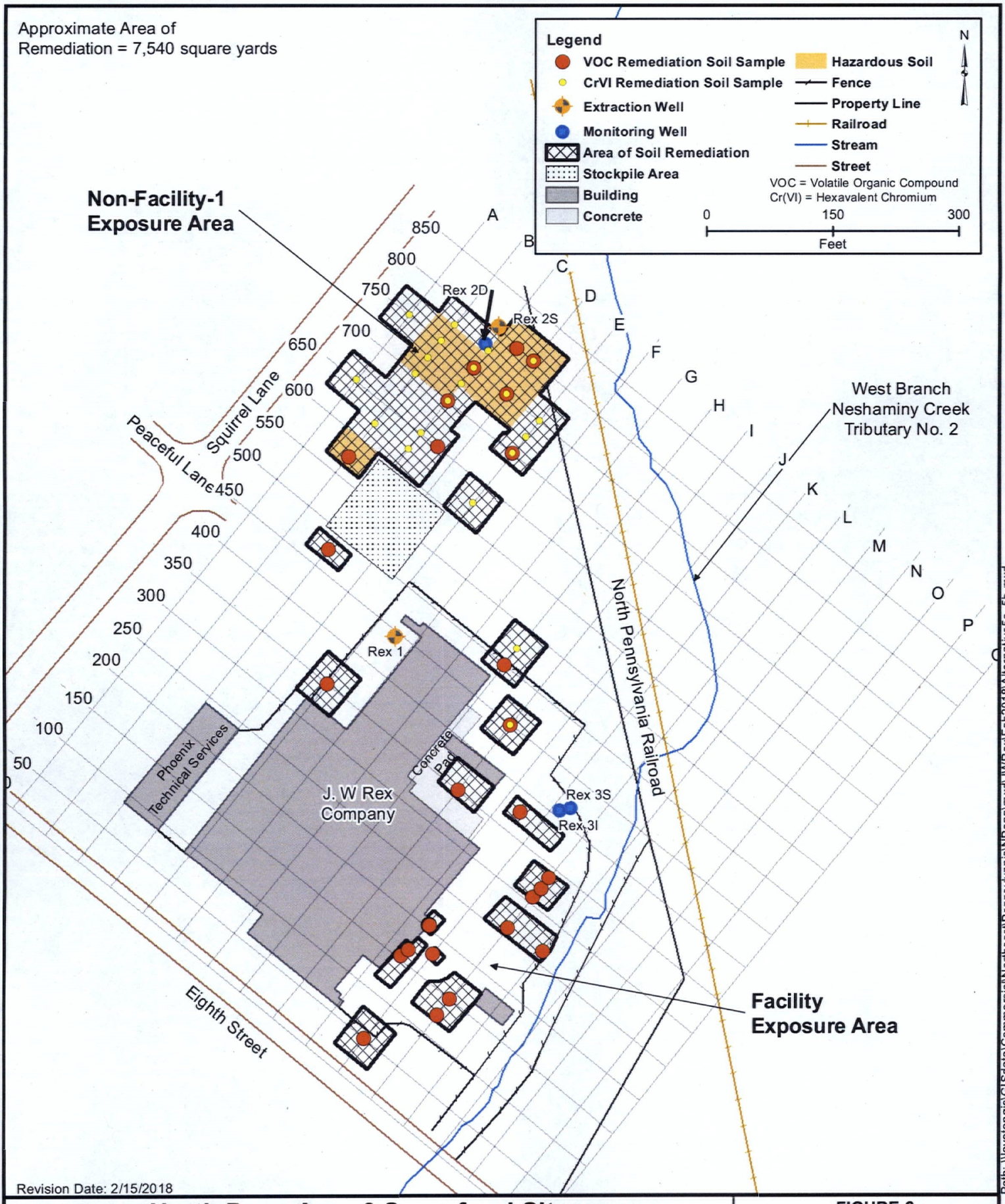
North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 7
ALTERNATIVE 4
GEOMEMBRANE CAP

AR301472



North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 8
ALTERNATIVE 5
SOIL EXCAVATION AND
OFF-SITE DISPOSAL