



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III

1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SEP 19 2019

SUBJECT: Request for Funds for a Removal Action
Havertown PCP Superfund Site in Havertown, Delaware County, Pennsylvania.

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I. PURPOSE

The purpose of this Action Memorandum is to request and document approval for a Removal Action at the Havertown PCP Superfund Site ("Site"), located in Havertown, Delaware County, Pennsylvania and is managed as three operable units ("OUs"). Contamination associated with the Site originated from an area known as the National Wood Preservers ("NWP") facility. The Site was placed on the National Priority List ("NPL") in 1982. The construction and implementation of all the selected Remedial Actions (all three OUs) were completed by October 2010. The Site is in the Operation and Maintenance ("O&M") phase, which is being implemented by the Pennsylvania Department of Environmental Protection ("PADEP") under a Superfund State Contract. The Removal Action identified herein specifically addresses threats posed to a portion of a residential area impacted by the Site, at which elevated concentrations of pentachlorophenol ("PCP"), several polycyclic aromatic hydrocarbons ("PAHs"), total dioxins, dieldrin, and several inorganics compounds are located within the shallow soils, groundwater, or seep water (see Attachment A). These threats are not addressed in the Remedial Actions. The contaminated soils and groundwater pose an unacceptable threat to human health and environment.

A Removal Site Evaluation ("RSE") was conducted by the On-Scene Coordinator ("OSC") and the Remedial Project Manager ("RPM") pursuant to Section 300.410 of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. § 300.410. PADEP did not actively participate in the RSE; however, the RSE was based upon PADEP and EPA sampling data, which indicated a release or threatened release of hazardous substances, primarily PCP, benzo(a)pyrene, total dioxins, and metals, from OU2 and OU3 into the environment at

concentrations that pose a threat to residents at the Site and ecological receptors in Naylor's Run, a creek that runs through the Site.

Based upon current information, the OSC concludes that a Removal Action, separate from the Remedial Action already conducted at the Site by EPA and the O&M being performed by PADEP, is necessary at the Site.

This Action Memorandum documents the scope of work needed for the Removal Action to protect public health and the environment and represents a Funding Request of \$1,870,000 (estimated Removal Project Ceiling) for the selected Removal Action, of which \$1,500,000 is from the Regional Allowance.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Physical Location/Site Characteristics

The Site is in Havertown, Delaware County, Pennsylvania. The Site is located approximately 10 miles west of Philadelphia and is surrounded by an urban mixture of commercial establishments, industries, parks, schools and residential homes. The Site covers approximately 12 to 15 acres, with no distinct boundaries.

The three Remedial Actions implemented for the different OUs at the Site are: OU1 – Oil/Water Separator to reduce oil discharging to a local creek (Naylor's Run); OU2 – groundwater collection trench and on-site treatment facility; and, OU3 – collection and treatment of deep groundwater and a secondary area of shallow groundwater contamination. Currently, there is also a cap with geosynthetic liner over the former NWP facility that EPA installed under a Non-Time Critical Removal Action in 1996-1997.

The contamination at the Site originated from the former NWP facility. From approximately 1947 to 1963, the NWP property was used to treat wood products using PCP dissolved in diesel fuel.

The EPA identification number for this Site is PAD002338010.

EPA is the lead agency for Site activities, and PADEP is the support agency. PADEP is currently implementing O&M of the Site Remedial Action.

2. Background

a. Recent Investigations

In January 2019, EPA and PADEP were contacted by a resident who lives in an area ("the affected property") that partially sits over the groundwater contamination plume at the Site. The

resident complained of water with an oily sheen seeping from the ground surface in the resident's backyard, as well as a large volume of water seeping into the crawlspace beneath their house. This affected property contains two shallow monitoring wells related to the Site, which historically have had high concentrations of Site-related COCs, including PCP, total dioxins, and naphthalene. A 36-inch stormwater sewer line also passes beneath the affected property and eventually discharges to the nearby Naylor's Run. This storm sewer historically served as a transport pathway for Site-related contamination to the creek, and a portion of the storm sewer was lined as part of the OU2 Remedial Action. An inspection of the affected property and adjacent properties identified saturated surface soil conditions, water seepage, and subsequent surface-water drainage-flow paths across multiple residential properties. Several additional residential properties were also experiencing the water seeping into their respective basements and crawl spaces at substantially increased rates.

Initial sampling of the affected property's crawl-space sump water and yard-seep water by PADEP, in consultation with EPA, in February 2019 indicated multiple Site contaminants of concern ("COCs") above OU3 groundwater Remedial Goal Objectives ("RGOs"). Additional sampling of soil, sump water, and seep water was conducted by PADEP in February 2019 at the affected property, as well as several additional properties. Results from the second round of sampling indicated concentrations of several Site-related COCs above the RGOs and Removal Management Levels ("RMLs"), including PCP (soil), benzo(a)pyrene ("BaP") (soil and seep water), and total dioxin (soil).¹ A third round of sampling was conducted by EPA in July 2019 as part of an RSE, to further define the extent of contamination posing an unacceptable risk or threat to residents or the environment. The RSE included extensive soil sampling of residential yards well beyond the initial extent of the PADEP samples and testing of additional basement or crawl space sumps, as well as surface-water drains and conveyance features in residential yards.

Multi-Increment Samples (MIS) were collected from soil within identified potential exposure areas on several properties. MIS are composite samples that provide a representative average concentration of contaminants throughout an exposure area. The MIS target the 0- to 2-centimeter ("cm") and 0- to 12-inch ("in") soil depths. Maximum detected concentrations of COCs in soil included PCP at 14,000 micrograms/kilogram ("mg/kg") (RML for PCP is 100 mg/kg), total dioxins (2,3,7,8-TCDD toxic equivalents ("TEQs")) at 1.1 mg/kg (RML for total dioxins is 0.15 µg/kg), chromium at 109 mg/kg (RML for chromium is 30 mg/kg), BaP at 2,400 mg/kg (RGO for BaP is 1,300 mg/kg), and manganese at 1,310 mg/kg (RGO for manganese in soil is 160 mg/kg).

Water from surface-water and groundwater drains at residential properties at the Site also indicated the presence of several Site-related COCs above RGOs. Maximum detected concentrations in these drains included manganese at 1,340 mg/L, lead at 21.1 mg/L, total dioxin TEQs at 0.22 mg/L, and dieldrin at 0.24 mg/L (RGO for dieldrin is 0.038 mg/L).

¹ The relevant RGOs and RMLs for the COCs at the Site are listed in Table 1 of this Action Memorandum.

Water from residential sumps included maximum detected concentrations of dieldrin at 1.2 mg/L, lead at 24.4 mg/L, manganese at 1,050 mg/kg (RGO is 50 mg/kg); and vanadium at 19.6 mg/L (RGO is 3.1 mg/L).

Periodic surface-water monitoring is conducted by PADEP from a stormwater outfall pipe that passes through an area where a groundwater collection trench ("CTR") and a deep groundwater recovery well were installed by EPA as part of the OU2 Remedial Action ("RA"). The stormwater outfall pipe was partially lined during the RA. Recent sampling by PADEP has identified elevated concentrations of PCP in both the discharged water and Naylor's Run. In December 2018, the maximum detected concentration of PCP in the discharged water from the stormwater discharge pipe was 1,450 mg/L. The maximum detected concentration of PCP in the creek water downstream of the discharge pipe was 20.2 mg/L. As recently as 2016 and going back to 2010, PCP had not been detected in discharged water from the stormwater discharge pipe. This pipe was partially repaired to address leaks in 2019. Additional leaks further up the stormwater line are suspected and may be the cause of releases of COCs to the creek. Naylor's Run represents a potential exposure point for both local resident adults and children, as well as multiple ecological receptors.

b. Past Operations at the Site

The Source Area of the Havertown PCP Superfund Site was the wood-treatment facility operated by NWP where wood products were treated from approximately 1947 to 1963. NWP reportedly disposed of waste materials, such as diesel-type oil and PCP, into a well located in the vicinity of the former Young's Produce Market, at the corner of Lawrence and Eagle Road. However, the exact location of the well has not been identified.

c. Past Response Actions at the Site

In 1962, the Pennsylvania Department of Health became aware of contamination in Naylor's Run, a small creek located to the east of the former NWP facility, and the source of its contamination was attributed to waste disposal practices at the NWP facility. In the early 1970s, the Commonwealth of Pennsylvania, Department of Environmental Resources ("PADER"), now known as PADEP, received complaints from local citizens concerning an oily substance being discharged into Naylor's Run. PADER investigated and identified contaminated groundwater discharging from a storm sewer into Naylor's Run, just east of the Philadelphia Chewing Gum ("PCG") property. In September 1972, PCP and fuel oil were also detected in groundwater samples collected from a well drilled on the NWP facility by PADER and the Pennsylvania Department of Transportation ("PennDOT").

PADER ordered NWP and Clifford A. Rogers, the property owner, to conduct a cleanup; however, the cleanup was never undertaken. EPA and PADER performed multiple Remedial and Response Actions in 1976. EPA subsequently performed a Removal Action under Section 311 of the Clean Water Act, 33 USC § 1321. Cleanup activities occurred in two phases. The first phase established containment operations at Naylor's Run. Filter fences were installed to remove PCP contaminated oil from the surface water. These fences were located just

downstream from the outfall of the 24-inch storm sewer pipe. Next, a 12-inch sanitary sewer was sealed; however, contaminated groundwater still discharged into Naylor's Run from the 24-inch storm sewer pipe." From 1981 to 1982, EPA performed an investigation to determine the extent of contamination in Naylor's Run and its effect on the ecosystem. A depressed aquatic community was found, showing some recovery from the acute toxicity previously observed.

The Havertown PCP Superfund Site was placed on the NPL in 1982. Subsequently, PADER signed an agreement with EPA under which PADER would conduct the Remedial Investigation/Feasibility Study ("RI/FS") at the Site. EPA issued the first Record of Decision ("ROD") for the Site in September 1989 (hereinafter, "1989 ROD"). The 1989 ROD for OU1 included provisions for an interim remedial action. It called for the installation of an oil-water separator to address the continued release of contaminants from the Site into the surface water of Naylor's Run. In addition, this ROD called for the removal and disposal of the on-site waste. The OU1 remedial action was performed as a Fund-lead action.

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

In the second ROD for the Site, dated September 30, 1991, EPA selected an interim remedy for the contaminated shallow groundwater, known as OU2. The Fund-lead action provided for the installation of free-product recovery wells on the NWP property; the rehabilitation of the existing storm sewer line; the installation of a groundwater collection drain (referred to as the CTR) adjacent to the existing storm sewer line under the backyards of residential properties; and the construction of a groundwater treatment plant adjacent to the NWP property. Phased construction began in 1997 and the treatment plant became fully operational in August 2001, with treated water being discharged to Naylor's Run.

The third ROD for the Site, dated September August 6, 2008, addressed deep groundwater with additional extraction wells, increased the capacity of the existing groundwater treatment facility and removal of contaminated soil and installation of groundwater extraction wells in the Recreation Open Space ("ROS") area of the Site ("OU3"). Construction began on November 17, 2009 and was completed in October 2010. An Ecological Study was implemented to demonstrate recovery of benthic macroinvertebrate and fish communities, and to examine the efficacy of the ROS area excavation and groundwater treatment to reduce or eliminate the contaminant releases that are the major source of risk to aquatic organisms in Naylor's Run. The Monitoring results from the Ecological Study suggests improvement in the benthic and fish communities after implementation of the selected remedy.

The OU3 ROD required that an Institutional Control Implementation and Assurance Plan ("ICIAP") be developed for the Site. Institutional Controls are required to prevent exposure to Site soils and contaminated groundwater and to protect the integrity of the engineered remedy. As part of the OU3 remedial action, eight easements have been put in place to ensure access to and allow maintenance of the engineered remedy. A Township ordinance was enacted on August 9, 2010, which restricts the installation of groundwater wells in the area of the Site. An environmental covenant was placed on the capped area covering OU1, which instituted use restrictions to protect the integrity of the OU1 remedy.

The OU3 ROD included soil and groundwater RGOs that are protective of human health and the environment for Site COCs including PCP, BaP, 2,3,7,8-TCDD TEQs, dieldrin, arsenic, as well as several other semi-volatile organic compounds ("SVOCs") and inorganics. Cleanup levels were set to achieve a potential cumulative risk no greater than 1×10^{-4} (i.e., 1 in 10,000) excess cancer risk.

Tables 1 below identify the cleanup levels selected in the OU3 ROD. Table 2 has been modified from the OU3 ROD to reflect only those COCs that have been detected during the RSE above RMLs, RGOs, or Regional Screening Levels ("RSLs").

Table 1
REMEDIAL GOAL OBJECTIVES and REMOVAL MANAGEMENT LEVELS
FOR SITE SOILS

COC	REMEDIAL GOAL OBJECTIVE (mg/kg)	REMOVAL MANAGEMENT LEVEL (mg/kg)
Benzo(a)pyrene	1.3	11
Dieldrin	1.1E-02	3.4
PCP	0.5	100
Total 2,3,7,8-TCDD TEQ	1.2E-04	1.5E-04
Aluminum	6.2E+03	2.3E+05
Iron	1.5E+04	1.6E+05
Manganese	5.7E+02	5.5E+03

Table 2
REMEDIAL GOAL OBJECTIVES and
FOR SITE GROUNDWATER

COC	REMEDIAL GOAL OBJECTIVE (mg/L)
Benzo(a)pyrene	0.2
Dieldrin	3.8E-02
Pentachlorophenol	1
Total 2,3,7,8-TCDD	3.0E-05
Aluminum	50-200
Chromium	100
Manganese	50
Iron	300
Vanadium	3.1

3. Quantities and Types of Substances Present

PCP is a synthetic substance, made from other chemicals, and does not occur naturally in the environment. Long-term exposure to low levels of PCP can cause damage to the liver, kidneys, blood, and nervous system. Studies in animals also suggest that the endocrine system and immune system can also be damaged following long-term exposure to low levels of PCP. All these effects increase as the level of exposure increases. EPA has classified PCP as a probable human carcinogen.

BaP and other PAHs are a class of organic compounds that can bioaccumulate in fatty tissue and pose a threat to environmental (e.g., fish) and human receptors through ingestion and other exposure pathways. EPA has determined that several PAHs, including BaP, are probable human carcinogens.

Exposure to low levels of total dioxins have been shown to cause a variety of effects in animals, such as weight loss, liver damage, and disruption of the endocrine system, weakening of the immune system, reproductive damage and birth defects. The World Health Organization ("WHO") has determined that 2,3,7,8-TCDD is a human carcinogen. The Department of Health and Human Services (DHHS) has determined that 2,3,7,8-TCDD may reasonably be anticipated to cause cancer.

Dieldrin is an insecticide appearing as a white powder with a mild chemical odor. The less pure commercial powders have a tan color. Because of concerns about damage to the environment and potentially to human health, EPA banned all uses of dieldrin in 1974, except to control

termites. In 1987, EPA banned all uses. Dieldrin is a bioaccumulative compound. Animals exposed to high amounts of dieldrin had nervous system effects. In animals, oral exposure to lower levels for a long period also affected the liver and decreased their ability to fight infections. Studies in animals have given conflicting results about whether dieldrin affects reproduction in male animals and whether these chemicals may damage the sperm. EPA has determined that dieldrin is a probable human carcinogen.

Chromium is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid, or gas. The most common forms are chromium (0), chromium (III), and chromium (VI). Chromium (VI) and chromium (III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving. The main health problems seen in animals following ingestion of chromium (VI) compounds are irritation, ulcers in the stomach and small intestine, and anemia. Sperm damage and damage to the male reproductive system have also been seen in laboratory animals exposed to chromium (VI). Skin contact with certain chromium (VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium (VI) or chromium (III). Allergic reactions consisting of severe redness and swelling of the skin have been noted. DHHS, IARC and EPA have determined that chromium (VI) compounds are known human carcinogens.

Manganese is a naturally occurring metal that is found in many types of rocks. Noted health effects from manganese exposure include behavioral changes and other nervous system effects, which include movements that may become slow and clumsy. Other less severe nervous system effects such as slowed hand movements have been observed in some workers exposed to lower concentrations in the work place. Nervous system and reproductive effects have been observed in animals after high oral doses of manganese. EPA has concluded that existing scientific information cannot determine whether or not excess manganese can cause cancer.

Vanadium is an element that occurs in nature as a white-to-gray metal compound and is often found as crystals. Nausea, mild diarrhea, and stomach cramps have been reported in people who have been exposed to some vanadium compounds. A number of effects have been found in animals ingesting vanadium compounds, including decreases in the number of red blood cells, increased blood pressure, and mild neurological effects. The IARC has classified vanadium pentoxide as possibly carcinogenic to humans based on evidence of lung cancer in exposed mice. The DHHS and EPA have not classified vanadium as to its human carcinogenicity.

PCP, BaP, 2,3,7,8-TCDD, dieldrin, chromium compounds, vanadium compounds, and manganese compounds are hazardous substances within the meaning of CERCLA and are listed as such under 40 CFR Part 302.

There is an extensive area of groundwater contamination resulting from the Site Source Area. This plume extends beneath portions of the residential areas of the Site. Several monitoring wells and groundwater collection points exist on or are adjacent to residential properties or areas used for recreational purposes (e.g., Haverford Area YMCA). The most recent data from Site wells indicate a maximum PCP concentration of 4,910 mg/L in well HAV-05. Total dioxins were 0.036E-4 mg/L in this same well.

PADEP sampling of groundwater that has discharged onto the surface of one affected residential property at the Site identified the following contaminant concentrations: PCP – 1,590 mg/L; BaP – 329 mg/L; and, total dioxins – 5.5E-04 mg/L. Total cumulative risks from groundwater that had seeped to the ground surface at various residential properties at the Site was calculated for each property tested. The maximum cumulative potential cancer risk from this groundwater was calculated to be 4.9E-01. The maximum potential non-cancer hazard was calculated to be 4.2E+03 (child) and 2.5E+03 (adult).

Several residential crawl spaces and basements at the Site have recently experienced increased water seepage or flooding. Sampling results have shown a maximum detected concentration of PCP in sump water of 6.2 mg/L.

Water samples from the RSE collected from surface water or groundwater drains in residential properties indicated the presence of several contaminants above RGOs. Maximum detected concentrations in these drains included manganese at 1,340 mg/kg, lead at 21.1 mg/L, total dioxin TEQs at 0.22 mg/L, and dieldrin at 0.24 mg/L (RGO is 0.038 mg/L).

Water from residential sumps included maximum detected concentrations of dieldrin at 1.2 mg/L, lead at 24.4 mg/L, manganese at 1,050 mg/kg (RGO is 50 mg/L), and vanadium at 19.6 mg/L (RGO is 3.1 mg/L).

Soil sampling results from residential properties showed the presence of multiple Site COCs in several areas. Maximum detected concentrations in surface soil from the initial PADEP discrete soil samples (0 to 6 inches) included PCP at 3,560 mg/kg, total dioxins at 1.39E-4 mg/kg, and BaP ranging from 27 to 34 mg/kg. Potential risks from the presence of multiple Site COCs in soil exceed the 1E-04 excess cancer risk level or a Hazard Index greater than 3. Specifically, the maximum cumulative potential cancer soil risk from these initial samples was calculated to be 4.4E-04, and the maximum potential non-cancer hazard was calculated to be 3.2 (child).

Maximum detected concentrations of COCs in soil from the EPA RSE included PCP at 14,000 mg/kg (RML is 100 mg/kg), total dioxins (2,3,7,8-TCDD toxic equivalents (TEQ)) at 1.1 mg/kg (RML is .15 mg/kg), chromium at 109 mg/kg (RML is 30 mg/kg), BaP at 2,400 mg/kg (RGO is 1,300 mg/kg), and manganese at 1,310 mg/kg (RGO is 160 mg/kg). This more extensive soil sampling conducted as part of the RSE showed maximum cumulative potential cancer risks of 7.3E-04 and potential non-cancer hazard of 7.0 (child).

The total volume of contaminated soil is not known since the RSE is still underway and additional sampling results are pending. Currently available information establishes that at least eight residential properties have levels of Site COCs in soil posing an unacceptable level of risk to exposed human receptors. There are approximately three additional residential properties that may have soil impacted by Site COCs at concentrations that would present an unacceptable risk to human health and the environment (see Attachment A). Unacceptable risks are also present in several sumps and drains on these properties. As result of unacceptable risks present in both surface soil as well in groundwater in residential basement sumps and yard drains, there are currently a minimum of ten residential properties at the Site requiring response action.

Regular surface-water monitoring from the stormwater outfall pipe discharging into Naylor's Run identified elevated concentrations of PCP both in the discharged water, as well as in the creek. The EPA Region 3 Biological Technical Assistance Group ("BTAG") Freshwater Screening Value for PCP is 0.5 mg/L. PCP was detected in both, the outfall pipe discharging into Naylor's Run and in the creek, in December 2018 at 1450 mg/L. The maximum detected concentration of PCP in the creek water downstream of the discharge pipe was 20.2 mg/L. This pipe passes beneath several residential properties, as well as the CTR which was constructed as part of the OU2 RA. The pipe was partially lined during the Remedial Action. After detecting the elevated PCP concentrations, PADEP repaired an area where groundwater was found to be leaking into one of the stormwater pipe manholes. PCP was still detected in the discharge, albeit at lower concentrations, after the repairs were made. Additional leaks further up the stormwater line outfall pipe are suspected. Naylor's Run represents a potential exposure point for both local resident adults and children, as well as for multiple ecological receptors.

4. National Priorities List

The Site was placed on the NPL in 1982. It is divided into three OUs and is currently in the O&M phase, which is being implemented by PADEP.

5. State and Local Authorities' Roles

PADEP has conducted two rounds of residential yard sampling at EPA's request. The sampling events were conducted in February 2019 and included collection of surface soil, seep water, sump water, and air samples. Results from these samples were the basis for EPA conducting the current RSE. PADEP has also collected surface water and sediment samples to evaluate the potential for discharge of Site COCs from a stormwater-conveyance outfall pipe, which passes through the residential area, CTR area, and eventually discharges to Naylor's Run.

PADEP took over Site O&M activities from EPA in June 2013, pursuant to the Site Superfund State Contract ("SSC"). These activities include continual implementation of the selected remedies for the three OUs. EPA will continue to coordinate efforts with PADEP and other Federal, State and local authorities regarding developments at the Site.

B. Actions to Date

- Initial sampling of affected properties by PADEP on 01/31/19.
- PADEP collected additional soil and water samples from residential properties in coordination with EPA on 02/19/19.
- Deployment of granular activated carbon ("GAC") background samplers on 04/09/19.
- GAC background sampling conducted on 04/16/19.
- Nine temporary wells installed on 04/16/19.
- Dye injection conducted on 04/17/19.

- First week of post-dye injection GAC sampling conducted on 04/23/19.
- Second week of post-dye injection GAC sampling conducted on 05/01/19.
- Third week of post-dye injection GAC sampling conducted on 05/08/19.
- Fourth week of post-dye injection GAC sampling on 05/15/19.
- Fifth week of post-dye injection GAC sampling conducted on 05/30/19.
- First round of MIS soil sampling conducted the week of 06/17/19.
- First round of sump water and surface-water sampling conducted on 06/26/19.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (“NCP”), 40 C.F.R. § 300.415(b)(2), identifies factors to be considered in determining the appropriateness of a removal action. Subparagraphs (i), (ii), (iv), (v) and (vii) of Section 300.415(b)(2) directly apply as follows to the conditions at the Site:

A. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants. 40 C.F.R. § 300.415(b)(2)(i).

Hazardous substances, including PCP; 2,3,7,8-TCDD; and BaP, are present in the surface soil and groundwater that has seeped and ponded on residential properties at the Site. Without adequate vegetative cover, persons contacting the soils directly or through dusty conditions may incidentally ingest or inhale the hazardous substances contaminating those soils. Ponded water on residential properties presents an exposure threat to residential receptors through potential dermal contact and incidental ingestion. The area has many adolescent children who frequently utilize the area for recreational activities.

The concentrations of Site COCs in the residential soil at OU1 are well above levels deemed to pose an acceptable level of risk to exposed residential receptors in a typical residential scenario.

PCP has been detected at a maximum concentration of 6.2 mg/L in a residential sump. This exceeds the OU3 RGO and MCL of 1 mg/L and shows that contaminated groundwater related to the Site is migrating into residential structures.

B. Actual or potential contamination of drinking water supplies or sensitive ecosystems. 40 C.F.R. § 300.415(b)(2)(ii).

Shallow groundwater in this area discharges to Naylor's Run or onto the ground surface through natural flow patterns. Further, water that has leaked into the underground stormwater conveyance outfall line, which discharges to Naylor's Run, has demonstrated elevated concentrations of PCP with a maximum level of 1,450 mg/L at the outfall and 20.2 mg/L in the surface water. Additionally, numerous small drains exist throughout this residential area and discharge to Naylor's Run. These drains represent a potential pathway for contaminated soil or

groundwater to migrate to Naylor's Run. PCP is a bioaccumulative compound with an EPA Region 3 Biological Technical Assistance Group ("BTAG") Freshwater Screening Value of 0.5 mg/L.

Actual migration and discharge of PCP to Naylor's Run has been documented well in excess of the EPA BTAG screening value. Multiple additional contaminant-transport pathways exist that may potentially further impact Naylor's Run, which has shown substantial improvement in ecological health since the completion of the OU3 RA.

C. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate. 40 C.F.R. § 300.415(b)(2)(iv).

The results from the PADEP sampling and EPA's RSE sampling indicate that high levels of PCP, total dioxins, and BaP are present in the surface and shallow subsurface soils within several residential properties impacted by the Site. Portions of the yards are poorly vegetated and are subjected to regular saturation due to the elevated water table and precipitation events. Ponding water in the residential area of the Site travels through an ephemeral swale that potentially conveys contaminated soils, groundwater, or seep water onto other properties via overland flow. This contaminated soil and water likely enters one or more of the multiple drains present in the backyards of these properties. These drains eventually discharge to Naylor's Run and, as a result, highly contaminated soils are potentially being transported onto other residential properties and adjacent surface water bodies.

D. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released. 40 C.F.R. § 300.415(b)(2)(v).

Water table elevations have been higher than average for approximately 12 to 18 months, beginning in early 2019. In some areas, water elevations are 3- to 5-feet higher than average water table heights. This condition is likely attributable, in part, from higher volumes of precipitation, including an increase far above the annual average rate of precipitation in 2018. The Remedial Action for OU3 includes the injection of treated water from the groundwater treatment plant beneath the cap to enhance flushing of Site COCs. This injection has been implemented for approximately 10 years with no apparent impacts to the water table. However, the recent regional increases in water table elevations due to the increased precipitation likely magnified the impacts from the injection wells on the water table. The injection wells were temporarily idled in June 2019 to evaluate this potential effect. The wet conditions in some yards appeared to abate after the idling of these wells; however, intermittent, as well as more persistent, areas of saturated surface soils in several yards continued to exist. The persistent nature of these wetter-than-normal conditions suggests that, while the injection wells may have contributed to these conditions, they were not the sole or primary cause. Further, these injection wells are currently a required component of the Remedial Action. Cessation of their operation would require evaluation of potential impacts by EPA and PADEP.

Water table elevations remain elevated thorough the residential area to a lesser degree. Increased precipitation may result in additional saturated conditions, including ponded and flowing water

through ephemeral swales and ditches, as well as increased flows of water into residential basements and crawl spaces. These conditions have been demonstrated to be transporting hazardous substances, pollutants or contaminants from the Site into previously unimpacted residential areas. Continued future occurrence would result in potential additional transport of Site COCs.

E. The availability of other appropriate Federal or State response mechanisms to respond to the release. 40 C.F.R. § 300.415(b)(2)(vii).

The Site is currently in the O&M phase and PADEP is responsible for the current implementation of the Site Remedial Actions. This work is performed in accordance with the SSC, which provides for the performance of specific activities and responsibilities by PADEP. This newly discovered release of contamination onto residential properties is not within the scope of the SSC and cannot be addressed by PADEP. In June 2013, as provided by the SSC, EPA transferred to PADEP the responsibility for O&M and for implementation of the Long-Term Remedial Action ("LTRA"). As a result, EPA Region 3 does not currently have access to RA funds for the Site, nor are any additional RA funds currently allocated for future expenditures at the Site. The known potential threat that currently exists warrants implementation of this Removal Action.

IV. ENDANGERMENT DETERMINATION

Releases or threatened releases of hazardous substances or pollutants or contaminants from this Site, if not addressed by implementing the response actions outlined in this Action Memorandum, may present an imminent and substantial endangerment to the public health, welfare or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The Removal Action will address soil that is impacted by hazardous substances, pollutants, or contaminants at concentrations exceeding the RGOs or result in an exceedance of cumulative potential cancer risk in excess of 1E-04 or a HI greater than 3 to which residential or recreational receptors could be exposed.

The Removal Action will also address groundwater that is impacted by hazardous substances, pollutants, or contaminants exceeding RGOs or resulting in an exceedance of cumulative potential cancer risk in excess of 1E-04, a HI greater than 3, or which exceed EPA BTAG freshwater screening levels. The contaminated groundwater has the potential to discharge into residential structures (e.g., basements, crawl spaces), onto ground surfaces, drainage features, or surface water bodies.

A. Proposed Action Description

1. Mobilize personnel and equipment to the Site.

2. Remove soil to a minimum depth of 1 foot from residential areas of the Site and any other areas of the Site where concentrations of hazardous substances, pollutants, or contaminants exceed RGOs or result in an exceedance of cumulative potential cancer risk in excess of 1E-04 or a HI greater than 3.
3. Conduct necessary confirmatory soil sampling.
4. Conduct additional soil and groundwater sampling to fill in any data gaps from the RSE, to delineate the extent of contamination.
5. Restore and/or replace all contaminated property, as closely as possible, to the original condition in which EPA found it.
6. Dispose of off-site the hazardous substances, pollutants, or contaminants (e.g., Site-related COC-contaminated soil and other wastes) associated with the Removal Action, in accordance with CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440.
7. Install additional lining and perform other stormwater pipe repair activities to ensure that hazardous substances, pollutants, or contaminants are not entering the stormwater pipe and releasing to Naylor's Run.
8. Make interior and exterior modifications to residential structures at the Site to prevent or minimize groundwater containing hazardous substances, pollutants, or contaminants from entering the residential structures.
9. Implement groundwater capture-and-extraction points for any portion of the groundwater contaminant plume that, based on data collected during the RSE and the sampling conducted under Section V.A.4 above, poses a threat of release of a hazardous substance, pollutant or contaminant to residential areas of the Site. New capture-and-extraction points would be connected to the existing treatment system that is part of the Remedial Action.
10. Demobilize personnel and equipment.

B. Contribution to Remedial Performance

The Site is on the NPL. The Removal Action proposed in this funding request will not interfere with Remedial Actions that are currently in the O&M phase or that may occur in the future. Any Removal Action performed at the Site will be consistent with the requirements of Section 104(a)(2) of CERCLA, which states that a Removal Action should contribute to the efficient performance of any long-term Remedial Action with respect to the release or threatened release concerned. 42 U.S.C. § 104(a)(2).

TOTAL REMOVAL ACTION PROJECT CEILING	\$1,870,000	\$1,870,000
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VII. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no action is taken at the Site, or if action is delayed, the hazardous substances, pollutants, or contaminants at the Site will continue to be released or will pose a threat of release to the residential and other areas of the Site.

VIII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues pertaining to the Site.

IX. ENFORCEMENT

Based on the information currently available, it is recommended that Superfund monies be allocated to complete the Removal Action at the Site.

A confidential Enforcement Addendum has been prepared and is included as an attachment to this document.

Based upon full-cost accounting practices, the total EPA costs for this Removal Action that will be eligible for cost recovery are estimated below as follows:

Direct Extramural Costs:	\$1,870,000
Direct Intramural Costs:	\$112,200
Total Direct Costs ²	\$1,982,200
Indirect Costs	\$1,288,804
Estimated EPA Costs for the Removal Action	\$3,271,004

² Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

C. Applicable or Relevant and Appropriate Requirements (“ARARs”)

In accordance with Section 300.415(j) of the NCP, the Removal Action will comply with all Applicable or Relevant and Appropriate Requirements (“ARARs”) to the extent practicable, considering the exigencies of the situation. 40 C.F.R. § 300.415(j). A determination of whether compliance with ARARs is practicable will be based on appropriate factors, including the urgency of the situation and the scope of the removal action to be conducted. 40 C.F.R. §§ 300.415(j)(1) and (2).

Some ARARs for this Removal Action may be the same as those previously selected in the RODs. EPA requested ARARs from PADEP on August 6, 2019. As of when this Action Memoranda was prepared, EPA had not received a response from PADEP.

D. Project Schedule

If approved, the proposed actions listed above will commence in Fall 2019.

E. Estimated Costs

The proposed distribution of funding is as follows:

	Ceiling	Total
<u>Extramural Costs:</u>		
<u>Regional Removal Allowance Costs:</u>		
Total Cleanup ERRS Contractor Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and IAGs with other Federal Agencies. It includes a 20% contingency).	\$1,500,000	\$1,500,000
Total Regional Removal Allowance Costs	\$1,500,000	\$1,500,000
<u>Other Extramural Costs Not Funded from the Regional Allowance:</u>		
Total START, including multiplier costs	\$150,000	\$150,000
Total CLP	\$50,000	\$50,000
Subtotal	\$200,000	\$200,000
Subtotal Extramural Costs	\$1,700,000	\$1,700,00
Extramural Costs Contingency (10% of Subtotal, Extramural Costs)	\$170,000	\$170,000

X. RECOMMENDATION

This Action Memorandum represents a Funding Request of \$1,870,000 for the selected Removal Action, which was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP.

Because conditions at the Havertown PCP Site meet the Removal Action requirements of Section 300.415 of the NCP, as described above, I recommend you approve the proposed Removal Action. Please indicate your approval or disapproval below. The total Removal Action Project Ceiling, if approved, will be \$1,870,000. Of this, an estimated \$1,500,000 comes from the Regional Removal Allowance.

By signing this Action Memorandum, you are also hereby establishing the documents listed below as the Administrative Record supporting the issuance of this Action Memorandum, pursuant to Section 113(k) of CERCLA, 42 U.S.C. § 9613(k), and EPA Delegation No. 14-22.

1. RSE Sampling Results
 - a. MIS soil sampling – 06.17.19 to 06.20.19.
 - b. Water sampling – 06.26.19.
2. Message from homeowner of affected property – January 11, 2019.
3. Administrative records of interim ROD 1, 2 and 3.

Action by the Approving Official:

I have reviewed the above-stated facts and, based upon those facts and upon the information in the administrative record supporting selection of the underlying actions, I hereby determine that the release or threatened release of hazardous substances or pollutants or contaminants at or from the Site presents or may present an imminent and substantial endangerment to the public health or welfare or to the environment. I concur with the recommended Removal Action as outlined above.

APPROVED: _____



Paul Leonard, Acting Director
Superfund & Emergency Management Division
EPA Region III

DATE: SEP 19 2019

DISAPPROVED: _____

Paul Leonard, Acting Director
Superfund & Emergency Management Division
EPA Region III

DATE: _____

