


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: Request for Increased Funding and a Change of Scope for a Removal Action at the Lower Darby Creek Area Superfund Site – Clearview Landfill Site
Darby Township, Delaware County, Pennsylvania
CERCLIS ID: PASFN0305521

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I. PURPOSE

The purpose of this Action Memorandum is to request additional funding and a change of scope for a Time-Critical Removal Action at the Lower Darby Creek Area Superfund Site (LDCA Site) – Clearview Landfill Operable Unit 1 (OU1). The LDCA Site is listed on the National Priorities List (NPL). The Clearview Landfill portion of the Lower Darby Creek Area Superfund Site consists of two Operable Units (OUs): OU1 consists of the waste, soil and shallow leachate contamination while OU3 consists of contaminated groundwater. Although a large portion of OU1 is located in Delaware County, PA, the area subject to the Removal Action identified herein is primarily within the limits of the City of Philadelphia. The Removal Action identified herein specifically addresses threats posed to a portion of OU1 impacted by the Clearview Landfill referred to as the Eastwick neighborhood (a residential area) in which elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and/or lead are located within the shallow soils (a map depicting the approximate location of the area subject to the Removal Action is included as Attachment A). The contaminated soil poses an unacceptable threat to human health and environment.

A Removal Action was initiated at OU1 in 2011 pursuant to an Action Memorandum signed by EPA Region III on September 27, 2011. The Removal Action focused on an area of the Clearview Landfill known as the Southern Industrial Area with elevated concentrations of polychlorinated biphenyls (PCBs) in the soil. On April 12, 2012, the Region approved an exemption from the \$2 Million and 12-Month Statutory Limits for Removal Actions identified within the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, (CERCLA), 42 U.S.C.

§ 9604(c)(1)(C)). The Removal Action in the Southern Industrial Area of OU1 was completed September 19, 2012.

A Remedial Design for OU1 is currently underway and as such the Remedial Action will not start in the near future. Sampling conducted by the Environmental Protection Agency (EPA) as part of the Remedial Investigation (RI) of OU1 indicated the presence of numerous contaminants, including PAHs and lead in various media. As part of the OU1 Pre-Design investigation (PDI), elevated concentrations of PAHs were also detected in the shallow soils within numerous residential properties within the Eastwick neighborhood located in close proximity to the Clearview Landfill. Elevated lead concentrations were also detected in a limited portion of the same area exhibiting elevated PAH concentrations. While the PDI for OU1 is ongoing, a Removal Site Evaluation, which included additional sampling in residential properties, 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. The Removal Site Evaluation was based primarily upon the PDI data which indicated a release and threatened release of hazardous substances, primarily PAHs, from OU1 into the environment at concentrations which poses a threat to residents of the Eastwick neighborhood. Although the data indicate hazardous substance contamination throughout OU1, the OSC and RPM are at this time proposing removal response activities only within an area which includes that portion of the Eastwick neighborhood which is used for residential purposes and which is located within the historical extent of the former Clearview Landfill and its operational areas (e.g., roadways) (see Attachment A) as well as immediately adjacent residential area. This latter area is the "OU1 Residential Soil Area" for the purposes of this Action Memorandum and is still being defined by Removal Site Evaluation.

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 Benzo[a]pyrene (B[a]P), are probable human carcinogens. Lead is an element and poses a risk to human receptors via ingestion. Incidental ingestion of lead in the soil may result in increased blood lead levels. Lead is known to adversely affect the central nervous system.

Based upon current information, the OSC concludes that removal response actions separate from those already approved by EPA are necessary at the Site. The actions will require funding in addition to funding ceilings already approved and will be greater than \$2 Million. Additionally, the actions will necessitate a timeframe that will extend beyond 12 months duration. The number of affected properties, the extent of coordination required with property owners, and the limitations posed by inclement weather and growing seasons will combine to cause the duration of the action to exceed 12 months. For example, the action includes placement of vegetative cover in residential yards which cannot occur during many months of the year in southeastern Pennsylvania and during rain events without causing unnecessary damages. This significantly limits the timeframe for active response actions. Additionally, although the total number of homes that will be addressed is not presently known, the amount of funding necessary to address the estimated minimum will likely exceed \$2 Million.

However, the OSC and RPM determine and document in this Action Memorandum that the conditions in the OU1 Residential Soil Area and the actions identified herein continue to meet the

criteria for exemption from the \$2 Million and 12-Month Statutory Limits for Removal Actions identified within the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, (CERCLA), 42 U.S.C. § 9604(c)(1)(C)).¹ Section 104(c)(1)(C) of CERCLA provides that a response action may continue after \$2 Million has been obligated for the response action or 12 months have elapsed from the date of the initial response, if the continued response actions are appropriate and consistent with remedial actions to be taken at OU1. The OSC and the RPM for the LDCA Site have coordinated and consulted with Regional management. All actions proposed herein will reduce the exposure of humans to hazardous substance releases to the environment from OU1, thus facilitating and contributing to the overall success of the remedy selected for OU1.

Although the removal response actions identified herein will be appropriate and consistent with expected future remedial actions at this National Priorities List (NPL) Site, these response actions are immediately necessary to address the unacceptable risk to human health and welfare and the environment presently posed by conditions of the OU1 Residential Soil Area. These unacceptable risks are posed by PAHs and other hazardous substances in the soils comprising residential yards. While the current Selected Remedy for OU1 includes excavation of contaminated soils beyond the future landfill cover, the hazardous substances posing threats in the OU1 Residential Soil Area are located primarily within soils which were not expected to be part of the currently selected Remedial Action at OU1.

Based upon information obtained from the Removal Site Evaluation (RSE), and upon consideration of the factors in Section 300.415(b)(2) of the NCP, the OSC has determined that a Removal Action, pursuant to Section 104(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), 42 U.S.C. § 9604(a), is appropriate and necessary to mitigate threats posed by the release and threatened release of hazardous substances from OU1. The OSC's evaluation of site conditions indicates that actions including both removal and stabilization of soil contaminated by PAHs are required to mitigate the release and threatened release of hazardous substances from OU1 which now pose unacceptable risk in the OU1 Residential Soil Area.

A Removal Action Project Ceiling of \$3,152,379 was approved for OU1 by EPA Region III on April 12, 2012. Of this amount, \$2,799,948 was from the Regional Removal Allowance. An additional \$2,092,762 is necessary to raise the Removal Action Project Ceiling to \$5,245,141, of which \$4,718,806 are from the Regional Removal Allowance. The funding is necessary to mitigate the threats identified in this Action Memorandum.

II. BACKGROUND AND SITE CONDITIONS

A. Site Description

The LDCA Site includes two landfills: 1) the Clearview Landfill and 2) the Folcroft Landfill and Annex. The Clearview Landfill is located along the eastern bank of both Darby Creek and Cobbs Creek, near the intersection of 83rd Street and Buist Avenue. The footprint of Clearview Landfill is primarily within Darby Township, Delaware County, PA, but partially within the limits of the City of

¹ Authority to approve continued removal action beyond the statutory limitations pursuant to the "Consistency Waiver" set forth in Section 104(c)(1)(C) of CERCLA, 42 U.S.C. § 9604(C)(1)(C), has been delegated to the Director of the Region III Hazardous Site Cleanup Division pursuant to EPA Delegation 14-2.

Philadelphia. OU1 includes the Clearview Landfill, the Eastwick Regional Park (a/k/a “City Park” or “Park”) which abuts the eastern limits of the present-day landfill footprint, and a portion of the Eastwick neighborhood (a residential area) located generally east of the present-day landfill area and the Park.

The Clearview Landfill was privately owned and operated without a permit from the 1950s to the 1970s by the Clearview Land Development Corporation, and used for the disposal of municipal and industrial waste collected from the City of Philadelphia and portions of adjacent Delaware County, Pennsylvania. There is no documentation of an engineered cover or functioning run-on/runoff control system at the Clearview Landfill. In addition, there are few records of the types and volume of waste materials accepted at the landfill during operation.

According to available information, landfill activities occurred in both the Darby Township and the City of Philadelphia portions of OU1. During the mid-1970s when development of the Eastwick neighborhood began, a considerable amount of waste was excavated and moved from the Philadelphia portion of the Clearview Landfill to the Darby Township portion of OU1. This excavated waste was most likely graded and then partially covered with fill. As historical aerial photographs indicate, the historic footprint of the landfill area includes present day property now comprising much of the Park and a portion of the Eastwick neighborhood.

The Record of Decision (ROD) for OU1 was signed on September 26, 2014 and included the construction of an Evapotranspiration (ET) Cover, excavation of contaminated soils outside of the planned ET Cover perimeter, and leachate collection and on-site treatment via engineered wetlands. Soils are contaminated with PAHs, PCBs, and Metals. The OU1 ROD included soil cleanup levels for several PAHs, PCBs and several heavy metals that are protective of human health and the environment. Cleanup levels were set to achieve a potential cumulative risk no greater than 1×10^{-4} (1 in 10,000) excess cancer risk.

The Removal Action identified herein addresses elevated levels of PAHs in soils on residential properties located within or immediately adjacent to the former footprint of the Clearview Landfill or its historic related operational areas (e.g., access roadways). Although PAHs are the primary driver of risk in the OU1 Residential Soil Area, other hazardous substances (e.g., lead) also contribute to the overall risk. Table 1 below identifies the cleanup levels selected in the ROD for PAHs. Table 1 below also identifies a concentration which may pose an excess cancer risk of 1×10^{-4} for each individual PAH compound in soil in a residential scenario according to the most current EPA Region III Risk-Based Concentration Table.

TABLE 1 – ROD Cleanup Levels and 10^{-4} Excess Cancer Risk Levels for PAHs

Contaminant	ROD Cleanup Level (mg/kg)	1×10^{-4} Excess Cancer Risk Level (mg/kg)
Benzo[a]anthracene	1.7	16
Benzo[a]pyrene	0.466	1.6
Benzo[b]fluoranthene	1.7	16
Benzo[k]fluoranthene	17	160
Dibenzo[a,h]anthracene	0.170	4.2
Indeno[1,2,3-cd]pyrene	1.7	16

In the ROD, EPA also selected a cleanup level of 8.754 parts per million (ppm or mg/kg) for total PAHs in the top 2 feet of soils to protect ecological receptors. The maximum total PAH concentration in the top 2 feet of soil in the Eastwick neighborhood is 118 mg/kg.

B. Quantities and Types of Substances Present

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 Benzo[a]pyrene (B[a]P), are probable human carcinogens. Incidental ingestion of lead in the soil may result in increased blood lead levels. Lead is known to adversely affect the central nervous system. Many PAHs, including B[a]P, and lead are hazardous substances within the meaning of CERCLA and are listed as such under 40 CFR Part 302.

Sampling and analysis of soil from the OU1 Residential Soil Area has been conducted by the EPA as part of the RI, as well as in support of a Removal Site Evaluation as summarized in this Action Memorandum. Although several hazardous substances have been identified in the soils, current data collected as part of the PDI indicate that PAHs are the primary contaminants of concern and the OSC and RPM believe that the actions proposed herein will address the majority of the threats posed by all hazardous substances (including lead) by focusing on the PAHs. Elevated lead concentrations have been detected in a very limited area of the Eastwick neighborhood; however, the lead is detected in an area also exhibiting elevated PAH concentrations.

There are numerous areas within the Eastwick neighborhood and Park in which the concentrations of PAHs exceed the cleanup levels selected in the ROD for OU1. PAHs are also found in a more limited area of the Eastwick neighborhood at concentrations above their combined or individual 1×10^{-4} excess cancer risk level. The maximum concentration of PAHs in the surface (0 to 12 inches) soil of the residential properties in the Eastwick neighborhood are 118 mg/kg (ppm or parts per million). The maximum concentration of B[a]P within these soils is 8.6 mg/kg. Elevated PAH concentrations well above the 1×10^{-4} excess cancer risk level and cleanup levels selected in the ROD are also found in subsurface soils.

It is likely that some of the PAHs throughout the Eastwick neighborhood stem from sources other than OU1 and are attributable, in part, to background. As part of the PDI, EPA has collected soil samples to represent nearby background concentrations of PAHs. The following Table identifies the

median concentration of PAHs in soil representative of the background.

TABLE 2 – Median Background Concentrations

Contaminant	Median Background Concentration (mg/kg)
Benzo[a]anthracene	0.260
Benzo[a]pyrene	0.250
Benzo[b]fluoranthene	0.400
Benzo[k]fluoranthene	0.120
Dibenzo[a,h]anthracene	0.077
Indeno[1,2,3-cd]pyrene	0.160
Total PAHs	3.038

Lead has been detected in the northern portion of the City Park in surface soil at 1,270 mg/kg in an area immediately adjacent to a residential property. Concentrations of lead as high as 5,840 mg/kg are detected in deeper soils. These concentrations exist at levels that may result in elevated blood lead concentrations to exposed individuals. However, this same area has elevated levels of PAHs.

The total volume of PAH-contaminated soil and the total number of potentially affected homes is not known since the removal site evaluation is still underway. There are approximately 70 homes located within the historic footprint of the Clearview Landfill. Another 100 homes are located immediately adjacent to the former footprint (e.g., about 1 block away) (see Attachment A).

Currently available information suggests approximately 30 homes may have levels of PAHs posing an unacceptable level of risk to exposed human receptors. However, sampling to determine the full extent of the PAH contamination is underway. Available information indicates an estimated 5000 cubic yards of shallow soil may be contaminated at levels which pose an unacceptable threat to residents of the Eastwick neighborhood, i.e., soil with PAH levels posing a 1×10^{-4} excess cancer risk to exposed human receptors.

C. Other Actions to Date

A Removal Action was conducted between 2011 and 2012 in the Southern Industrial Area of OU1. The Removal Action focused on the removal of PCBs-contaminated soils that had the potential to migrate to Darby Creek. No actions are known to have occurred in the Eastwick neighborhood area which is the subject of this Action Memorandum. EPA is presently working with the residential community to increase awareness of the presence of hazardous substances (e.g., PAHs) in the surface soils of the Eastwick neighborhood.

D. Removal Site Evaluation

The OSC and RPM have relied upon existing soil sample information (e.g., PDI) and newly collected soil analytical results to comprise a Removal Site Evaluation (RSE) and determine that elevated levels of hazardous substances are located in residential soils within the OU1 Residential Soil Area. The hazardous substances are present at levels which pose an unacceptable excess cancer risk to

exposed human receptors.

The maximum concentration of PAHs in the surface (0 to 12 inches) soil of the residential properties in the Eastwick neighborhood are 118 mg/kg (ppm or parts per million). The maximum concentration of B[a]P within these soils is 8.6 mg/kg which is well above the 1×10^{-4} excess cancer risk level. Elevated PAH concentrations are also found in subsurface soils well above the 1×10^{-4} excess cancer risk level. Based upon on-scene observation, some of the contaminated soils are poorly vegetated or mixed into garden or play areas allowing an increased chance of unacceptable exposure to elevated PAHs.

Elevated lead is found in a limited area of the Eastwick neighborhood. The area of elevated lead contamination is believed to exist within the area of elevated PAHs contamination described above.

E. National Priorities List Status

The LDCA Site was listed on the CERCLA National Priorities List (NPL) on June 14, 2001. Removal actions at OU1 within the OU1 Residential Soil Area will not impede any future remedial actions and will be coordinated between the OSC and the RPM.

F. State and Local Authorities' Roles

OU1 is currently an EPA-lead portion of the LDCA Site. The OSC and RPM are coordinating activities associated with the assessment and evaluation of OU1 with the Pennsylvania Department of Environmental Protection (PADEP). Local authorities have no current role at the Clearview Landfill other than to grant access. The OSC and RPM will continue to coordinate proposed removal actions with State and Local authorities.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Benzo[a]pyrene (B[a]P) is the primary risk driver among the detected PAH compounds at OU1. Elevated concentrations of B[a]P and other PAHs are detected in soils within the Eastwick neighborhood and adjacent City Park. The levels of PAHs pose an unacceptable risk to residential human receptors (residents of the Eastwick neighborhood exposed to contaminated soils). Elevated lead concentrations are also found within the PAH-contaminated soils. Incidental ingestion of lead in the soil may also result in increased blood lead levels. Lead is known to adversely affect the central nervous system.

Conditions at OU1 and specifically within the OU1 Residential Soil Area represent a threat to public health or welfare, and the environment, and meet the criteria for a time-critical removal action. Section 300.415 of the NCP, 40 C.F.R. § 300.415, identifies factors to be considered in determining the appropriateness of a removal action. Paragraphs (b) (2) (i), (iv), (v), and (viii) apply to the need for response at the Clearview Landfill Site as follows.

§ 300.415 (b)(2)(i) “Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;”

Hazardous substances inclusive of PAHs and lead are located in the surface soils comprising residential properties and recreational areas at OU1. Without adequate vegetative cover, persons contacting the soils directly or through dusty conditions may incidentally ingest small amounts of the hazardous substances contaminating those soils. Within the surface soil of residential properties, the maximum concentrations of total PAHs is 118 mg/kg and of B[a]P is 8.6 mg/kg. Within the subsurface soil of residential property, the maximum concentration of total PAHs is 104 mg/kg and of B[a]P is 7.5 mg/kg. All but one residential property sampled to date has exceeded the cleanup level for B[a]P selected in the OU1 ROD; many properties also exceed the cleanup levels selected for other PAHs. According to EPA, B[a]P concentrations in excess of approximately 1.6 mg/kg in the soil of properties subject to residential use may pose an unacceptable cancer risk (e.g., greater than 1×10^{-4} excess cancer risk) to exposed receptors. The concentrations of PAHs (especially B[a]P) 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.

Lead has been detected in the northern portion of the City Park in surface soil at 1,270 mg/kg in an area immediately adjacent to a residential property. Concentrations of lead as high as 5,840 mg/kg are detected in deeper soils. These concentrations exist at levels that may result in elevated blood lead concentrations to exposed individuals. However, the area with elevated lead also has elevated levels of PAHs; as such, lead contamination is not the sole contaminant driving the need for removal actions to protect residents of the Eastwick neighborhood.

§ 300.415 (b)(2)(iv) “High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;”

The results from the EPA RI, PDI and RSE sampling at OU1 indicate that high levels of PAHs are present in the surface and shallow subsurface soils within the current landfill footprint, City Park and portions of the Eastwick neighborhood. Much of the soil is poorly vegetated and much of the area is subject to routine and severe flooding. The Clearview Landfill is located within the 100-year floodplain. There are a substantial number of residential properties impacted by OU1-related contaminants and which lack a sufficient cover or vegetation to prevent erosion. Even minor precipitation events have been observed to create sufficient surface water flow and sediment deposition in the City Park. As the severity of rain events increases, so does the likelihood that the high levels of PAH contamination in the surface soils are migrating and that contaminants in the shallow subsurface soils will be exposed. Steep terrain on portions of OU1 greatly increases the chances of this occurring.

§ 300.415 (b)(2)(v) “Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;”

OU1, including the Eastwick neighborhood are located entirely within the 100-year floodplain. Smaller, more frequent storms cause limited flooding in the City Park and Eastwick neighborhood. Historically, larger storms, such as Hurricane Floyd, have resulted in substantial flooding. Flooding events have the potential to cause erosion and/or mobilization of OU1-related contaminants adhered to soil particles. These contaminants can be transported into residential properties and structures as well

as the adjacent Darby and Cobbs Creeks. OU1 the and surrounding area, including the John Heinz NWR, which is adjacent to the Clearview Landfill serve as critical habitat for migratory waterfowl (herons, geese, and ducks), fish and other aquatic receptors. Transport of OU1-related contaminants during extreme weather conditions to these areas can occur.

§ 300.415 (b)(2)(viii) “Other situations or factors that may pose threats to public health or welfare of the United States or the environment; ”

OU1 is located on Darby and Cobbs Creek, both of which are tidally influenced. The combination of tide surges and storm events may act to erode the bank or residential areas adjacent to Clearview Landfill and City Park. These events can deposit or erode contaminated soils into residential areas in the Eastwick neighborhood.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances in the OU1 Residential Soil Area, if not addressed by implementing the response actions outlined in this funding request, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

The conditions at the OU1 Residential Soil Area pose a threat to human health and the environment. The unacceptable threats now identified in the residential properties adjacent to the Clearview Landfill were not known when the remedy was selected for OU1. As the Remedial Design for the OU1 is still in development and the Remedial Action is not anticipated to start in the near future, in the absence of a removal action, residents may continue to be exposed to unacceptable concentrations of PAHs now within the soils comprising the residential properties subject to this Removal Action. Present conditions at the OU1 Residential Soil Area necessitate a Removal Action for a period of time that will exceed 12 months and cost in excess of \$2 Million. As such, exemption from the 12-Month and \$2 Million Statutory Limits upon Removal Actions is required. The LDCA Site is on the NPL and EPA is now preparing to implement a Remedial Action for OU1 that does not currently address these recently identified residential soils adjacent to the current footprint of the Clearview Landfill. Removal response actions proposed herein are developed in coordination with the RPM for the LDCA Site and Regional Management and are appropriate and consistent with future remedial actions.

The Lower Darby Creek Area Site has been placed on the NPL. EPA Region III is presently completing activities which prepare OU1 for Remedial Action selected in a Record of Decision for OU1. The scope of the Remedial Action now being designed requires removal of soils containing concentrations of PAHs and other hazardous substances above specified cleanup levels to a specified depth (e.g., 2 feet). The scope of the Removal Action proposed herein is limited to addressing soils posing an unacceptable risk to humans, but the response actions to be then taken upon those soils are completely consistent with the Remedial Actions being developed. The OSC and the RPM for the LDCA Site coordinate on actions relating to the PAHs in the soil.

The Removal Action includes activities to reduce the foreseeable threats posed by OU1, including threats not specifically addressed by the Remedial Action being developed, and serves to both minimize unacceptable risk to human receptors in the nearby Eastwick neighborhood and minimize the further migration of hazardous substances into the environment. The Removal Action will significantly decrease the risk posed by OU1 to the nearby residents and the potential for a release of hazardous substances by decreasing the concentration and volume of the OU1-related hazardous substances. The Removal Action also protects the integrity of the Remedial Action by minimizing the potential for exposure to and migration of OU1-related hazardous substances which were not known at the time the remedy was selected for OU1. As such, the Removal Action is appropriate and consistent with the Remedial Action to be taken and meets the requirements for exemption from the statutory limits for Removal Actions identified in Section 104(c)(1)(C) of CERCLA. OU1, thus, meets the requirements set forth in Section 104(c)(1)(C) of CERCLA, 42 U.S.C. § 9604(c)(1)(C), for an exemption from the statutory limits for Removal Actions.

VI. PROPOSED ACTIONS AND COSTS

The Removal Action focuses upon soils with PAH contamination likely attributable to the OU1 at levels which exceed a 1×10^{-4} excess cancer risk to exposed human receptors. The area contaminated by elevated concentrations of lead is also contaminated by elevated concentrations of PAHs which exceed a 1×10^{-4} excess cancer risk level; as such lead is not a trigger for removal activities. Benzo[a]pyrene at relatively low concentrations (1.6 mg/kg) poses a 1×10^{-4} excess cancer risk level. Evaluation of the available analytical data indicate that B[a]P is the contaminant most likely to pose the most risk to residents exposed to contaminated soils.

The need for removal actions in the OU Residential Soil Area will be determined as follows:

1. Area is subject to residential use (e.g., play areas, gardens, socializing)
2. Area is characterized by exposed surface soils (e.g., surface soil lacking full vegetative cover)
3. Area is characterized by concentrations of contaminants exceeding Removal Trigger Levels (RTLs), which consider possible contributions from background, in the surface soil. When considering RTLs, any of the following three conditions will trigger a removal action:
 - a. The first condition is an area with an exceedance of any RTLs in Table 3 below:

TABLE 3 – Removal Trigger Levels

Contaminant	ROD Cleanup Level (mg/kg)	Median background concentration (mg/kg)	1×10^{-4} Excess Cancer Risk Concentration (mg/kg)	Removal Trigger Level (mg/kg)
Benzo[a]anthracene	1.7	0.260	16	16.26
Benzo[a]pyrene	0.466	0.250	1.6	1.85
Benzo[b]fluoranthene	1.7	0.400	16	16.4
Benzo[k]fluoranthene	17	0.120	160	160.1
Dibenzo[a,h]anthracene	0.170	0.077	4.2	4.28
Indeno[1,2,3-cd]pyrene	1.7	0.160	16	16.16

- b. The second condition is an area with an exceedance of the ecological receptor-based Total PAHs RTL concentration of 11.792 mg/kg in association with 10^{-4} concentration of B[a]P. (Note: The Total PAHs RTL of 11.792 mg/kg is combination of the OU1 ROD ecological cleanup level of 8.754 mg/kg plus the median background concentration of 3.038 mg/kg)
- c. The third condition is an area with an exceedance of the ecological receptor-based Total PAHs RTL concentration of 11.792mg/kg and B[a]P less than the 10^{-4} concentration that, after a toxicological evaluation is conducted, it is determined that the area exceeds a 1×10^{-4} excess cancer risk level.

The Removal Action is further limited to the yards of the residential properties in the Eastwick neighborhood within or close to the former footprint of the Clearview landfill (i.e., OU1 Residential Soil Area). The majority of exposure potential appears to occur in rear and side yards based upon observations of the OSC and RPM. Much of the backyard space is set up with chairs, landscaping, gardens, play areas, dog runs, etc. while most of the front yards are simple grass. Utilities, sidewalks, and well-maintained vegetation in the front yards appears to limit the potential for exposure. Removal activity will be limited to the top 6 inches of soil in the portions of yards with underlying subsurface utilities in the immediate vicinity. Additional samples may be collected during removal activities to further evaluate contaminant concentrations.

The actions proposed in this Funding Request are intended to remove (or otherwise minimize exposure to) high concentrations of hazardous substances from areas in which they now pose unacceptable risk to exposed human receptors. The action will not result in the complete removal of hazardous substances from the OU1 Residential Soil Area. Instead, the response action focuses on and prioritizes high concentrations of PAHs or lead which are exposed at the surface in a residential setting.

Post Removal Site Controls are not required at this time since OU1 is still undergoing EPA investigation and remedial design activities under the NPL process. It is expected that any staged soil left on the Clearview Landfill at the completion of the Removal Action for the OU1 Residential Soil Area will be addressed during the OU1 Remedial Action.

The Removal Action specifically addresses threats posed by a portion of OU1 which includes a residential area (Eastwick neighborhood) that is presently located in the historical footprint of the former Clearview Landfill, its operational areas (e.g., roads)(see Attachment A) and immediately adjacent areas.

A. Proposed Actions

1. Mobilize/demobilize personnel and equipment.
2. Establish and secure Command Post, access routes, staging areas for equipment and materials, and temporary erosion and sedimentation controls.
3. Continue removal site evaluation (RSE) inclusive of the collection and analysis of soil samples

to identify and delineate areas of soil contamination.

4. Coordinate response actions with property owners and prepare properties to enable efficient soil excavation activity required by the removal action. Activities may include removal of vegetation, removal or re-location or temporary staging of fencing, landscaping, outdoor furnishings or other items, and temporary structures such as swing sets; establishment of nearby access routes to allow ingress and egress from property in such a way that damage and disturbance to public roadways and utilities are minimized; and, temporary fencing to secure excavation areas.
5. Remove soil to a depth of 1 foot from residential properties which exceed the Removal Trigger Levels (RTLs) specified below and which meet the following criteria:
 1. Area is subject to residential use (e.g., play areas, gardens, socializing)
 2. Area is characterized by exposed surface soils (e.g., surface soil lacking full vegetative cover)
 3. Area is characterized by concentrations of contaminants exceeding Removal Trigger Levels (RTLs) which consider possible contributions from background, in the surface soil as indicated in the following Table

Contaminant	Removal Trigger Level (mg/kg)
Benzo[a]anthracene	16.26
Benzo[a]pyrene	1.85
Benzo[b]fluoranthene	16.4
Benzo[k]fluoranthene	160.1
Dibenzo[a,h]anthracene	4.28
Indeno[1,2,3-cd]pyrene	16.16
Total PAHs (eco-based)	11.792 see note

Note: See discussion in Section VI above regarding conditions relative to the RTLs that will trigger a removal action.

Removal of soil will be limited to the top 6 inches of soil in the portions of yards with underlying subsurface utilities in the immediate vicinity.

6. Removal of soil shall proceed to a depth of 2 feet if such soil between 1 and 2 feet in depth exceeds the ROD OU1 Cleanup Levels indicated in Table 3 of Section VI and below.

Contaminant	ROD Cleanup Level (mg/kg)
Benzo[a]anthracene	1.7
Benzo[a]pyrene	0.466
Benzo[b]fluoranthene	1.7
Benzo[k]fluoranthene	17
Dibenzo[a,h]anthracene	0.170
Indeno[1,2,3-cd]pyrene	1.7
Total PAHs (eco-based)	8.754

7. Place a visible marker layer, e.g., plastic fencing, at the base of any excavation below which hazardous substances will remain above ROD OU1 Cleanup Levels specified in Items #5 and #6.
8. Replace soil or fill the excavated area with clean soil back to the original grade of the property and in such a manner that water is drained to the nearest designed drainage structure or away from the residential structure and such that the top 6 inches of soil is a combination of soil classified as topsoil suitable for planting and vegetative cover.
9. Restore or replace property back to as-found condition meaning that landscaping, fences, and other items addressed above in Item #4 are returned to their pre-removal location and condition, where reasonably possible. To the extent a large tree or other vegetation are removed, it may be replaced by a smaller versions of a similar trees or vegetation.
10. Implement operational and storm water management controls during the removal action which will minimize the potential for migration of storm water into the area subject to response activity and prevent the migration of potentially PAH-contaminated storm water; actions may include minimizing the area of operation, construction of berms or trenches, and pumping and temporary containment of potentially PAH-contaminated storm water.
11. Treat waters which may be accumulated during activities identified in Item #10 and discharge such waters to local sewage treatment plant. Or, if such treatment is not feasible, dispose waters off-Site in accordance with CERCLA 121(d)(3) and 40 C.F.R 300.440.
12. Prepare and maintain a staging area for soil contaminated by hazardous substances generated during the Removal Action at a location upon the Clearview Landfill identified and approved by the RPM such that it does not hinder implementation of future Remedial Actions. Staging area shall have both stormwater run-on and run-off controls.
13. Stage and manage soil contaminated with hazardous substances generated in Items #5 and #6 such that soil piles are routinely covered and protected against weather which may cause such hazardous substances to migrate via wind or precipitation run-off.
14. At the conclusion of the Removal Action, cover soil identified in Item #13 with 1 foot of clean fill and/or suitable synthetic cover which will prevent further migration of hazardous substances from the staged soil pile. Alternatively, if a suitable location for a staged soil pile can't be

identified as indicated in Item #12, dispose off-site the hazardous substances (e.g., PAH-contaminated soil) identified above in Items #5, #6 and #13, and other wastes associated with the Removal Action, in accordance with CERCLA 121(d)(3) and 40 C.F.R 300.440. Activities may include sampling, consolidating, or otherwise handling the hazardous substances and wastes to ensure that they are properly transported.

15. Remove temporary access, erosion and sedimentation control, security measures and Command Post.
16. Provide at least 2 weeks of activity (e.g., routine watering) necessary to ensure the establishment of any new vegetative cover.

B. Contribution to Remedial Performance

The proposed Removal Action is not expected to be inconsistent with or hinder any Remedial Actions at OU1. The Remedial Action for the Clearview Landfill will include removal of soil exceeding Cleanup Levels specified in the ROD for OU1. Further, the ROD specifies a depth of 2 feet in which total PAH concentrations pose a threat to ecological receptors. The currently available data examined does not indicate that significant amounts of deeper soil (e.g., greater than 2 feet) will contain contaminant levels above OU1 ROD Cleanup Levels in the area subject to the Removal Action.

C. Compliance with ARARs

The Removal Action will attain applicable or relevant and appropriate requirements (ARARs) to the extent practicable given the exigencies of the situation. ARARs have been identified for the Clearview Landfill Remedial Action which includes excavation of soil and construction of a cover over the landfill. In general, on-site actions need comply only with the substantive aspects of ARARs, not with the corresponding administrative requirements. The ARARs for the Clearview Landfill are attached.

The following is a summary of the ARARs identified to date that may be applicable or relevant and appropriate to the Removal Action:

- Pennsylvania Water Quality Standards (25 PA Code, Chapter 93) are surface water quality standards promulgated for protection of human health and aquatic life. These may be used to assess need for remediation of discharges to surface water.
- 25 PA Code Chapter 123 and 131 establish standards and requirements for particulate emissions.
- Clean Water Act Effluent Limitations for Point Source Discharge (40 C.F.R. Part 122) establishes National Pollutant Discharge Elimination System (NPDES) program requirements for discharge of treated water to a point source.
- Erosion Control Regulations (25 PA Code, Chapter 102) provides requirements for erosion and sedimentation control plans, permits, etc.

- Stormwater Management Act of 1978 (Act 167) requires the implementation of measures to control stormwater runoff.
- Federal Water Pollution Control Act (40 C.F.R. Part 116.3) is potentially applicable to any discharges at the site.
- 25 PA Code Chapter 106 addresses modification of land elevation within a 100-year floodplain.
- National Archeological and Historic Preservation Act (132 C.F.R. 229) may be applicable if any prehistoric, historic, or archeological artifacts are encountered during site remediation.

Note: The on-site disposal of the excavated soil will not trigger RCRA potential ARARs, because the excavated material will be placed within a defined Area of Contamination existing at the Site.

D. Estimated Costs

The proposed distribution of funding is as follows and considers available amounts not yet applied to the Removal Action completed in 2012:

Extramural Costs	Previous	This Action	Total
Regional Allowance Costs: (ERRS contractors and subcontractors)	\$2,799,948	\$1,918,858	\$4,718,806
Other Extramural Costs Not Funded from the Regional Allowance: START Contractor / ERT	\$ 352,431	\$ 173,904	\$ 526,335
TOTAL REMOVAL ACTION PROJECT CEILING	\$3,152,379	\$2,092,762	\$5,245,141

VII. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no action is taken or the action is delayed, the potential exposure PAHs which pose an unacceptable risk will continue and may present an imminent and substantial endangerment to residents. Further, if no action is taken or the action is delayed, the threat of additional or potential release of hazardous substances from the residential portions of the Eastwick Neighborhood in OU1 into the environment is inevitable.

VIII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues pertaining to the Lower Darby Creek Area Superfund Site – Clearview Landfill Site.

IX. ENFORCEMENT

The EPA Region III Office of Enforcement has been provided with all background information available regarding this Removal Action to pursue enforcement actions pertaining to the Lower Darby Creek Area Superfund Site – Clearview Landfill OU1 (See attached Confidential Enforcement Addendum).

The total EPA costs for the Removal Action relating to the OU1 Residential Soil Area based upon full-cost accounting practices that will be eligible for cost recovery are estimated to be \$ 12,129,511.¹

Direct Extramural Costs	\$ 5,245,141
Direct Intramural Costs	\$ 450,000
Total, Direct Costs	\$ 5,695,141
Indirect Costs (112.98 % x Direct Costs)	\$ 6,434,370
Estimated EPA Costs for a Removal Action	\$ 12,129,511

X. RECOMMENDATION

This Action Memorandum describes the recommended Removal Action for the Clearview Landfill OU1 Residential Soil Area located in Philadelphia and Darby, Pennsylvania, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. Conditions at the Clearview Landfill OU1 Residential Soil Area meet the NCP Section 300.415(b)(2) factors for a removal and I recommend your approval of the Removal Action. The total project ceiling specific to the removal response actions identified herein will be \$5,245,141. Of this, an estimated \$4,718,806, comes from the Regional Removal Allowance.

¹Direct 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.

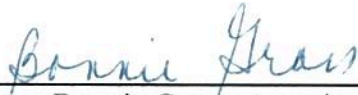
Action by the Approving Official:

This Action Memorandum describes the selected Removal Action for that portion of the Lower Darby Creek Area Superfund Site – Clearview Landfill Site Operable Unit 1 (OU1) identified herein as the OU1 Residential Soil Area located in the City of Philadelphia and Darby Township, Pennsylvania, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record.

Pursuant to Section 113(k) of CERCLA, 42 U.S.C. 9613(k) and EPA delegation No. 14-22, I hereby establish the documents identified in Attachment B hereto as the Administrative Record supporting the issuance of the Action Memorandum.

I have reviewed the above-stated facts and based upon those facts and the information compiled in the documents described above, I hereby determine that the release or threatened release of hazardous substances at and/or from OU1 Residential Soil Area presents or may present an imminent and substantial endangerment to the public health or welfare or to the environment. I concur with the Removal Action at the OU1 Residential Soil Area as outlined in the Action Memorandum.

APPROVED:



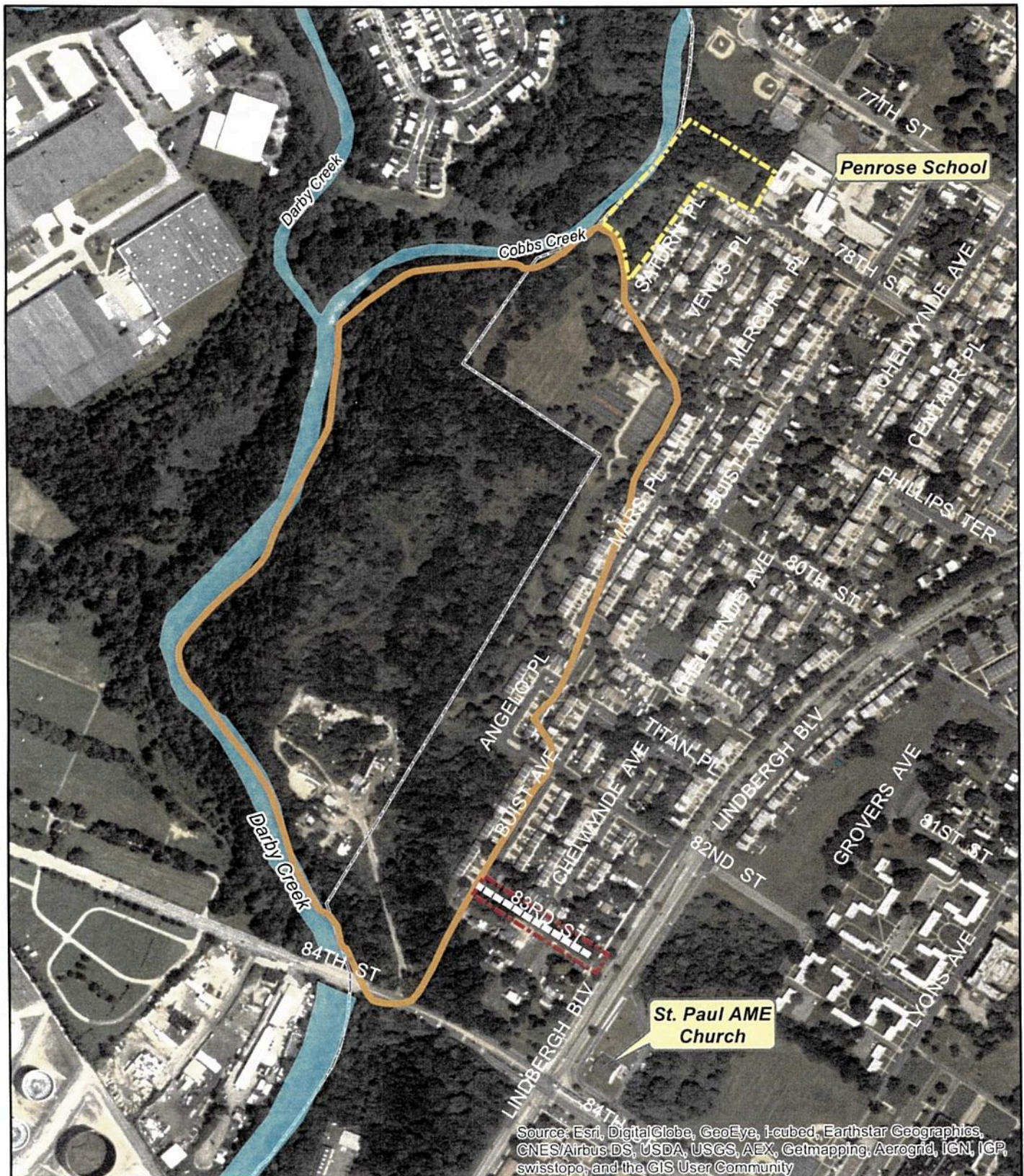
Bonnie Gross, Associate Director
Office of Preparedness and Response
EPA Region 3

DATE:

7/21/16

Attachments:

- A. Site Figure
- B. Administrative Record documents
- C. Enforcement Confidential Memo



Legend

- Former Landfill Access Road
- Secondary Dumping Area
- Former Landfill Access Road Area
- Historical Extent of Clearview Landfill
- County Boundary Line

Data Sources
Imagery: ESRI Bing Service

Coordinate System:
State Plane Pennsylvania South FIPS 3702
Linear Unit: Foot US

Datum: D North American 1983 (NAD 83)



Lower Darby Creek Area Site
Delaware and Philadelphia Counties, PA

Attachment A Clearview Landfill Site Features

TDD#: W501-16-06-001
Contract: EP-S3-15-02
Prepared: 7/5/2016



ATTACHMENT B to the Request for Increased Funding and a Change of Scope for a Removal Action at the Lower Darby Creek Area Superfund Site – Clearview Landfill OUI Residential Soil Area

Administrative Record List of Documents

1. Final Record of Decision, Operable Unit 1, Lower Darby Creek Area Superfund Site Clearview Landfill dated 9-26-14 (Doc ID 2189665)
2. Final Sampling and Analysis Plan for Remedial Design – Field Sampling Plan & Quality Assurance Project Plan, Lower Darby Creek Area Superfund Site Clearview Landfill - Operable Unit 1 dated 8-1-15 (Doc ID 2217252)
3. Final Remedial Investigation Report (Appendices not included), Lower Darby Creek Area Superfund Site Clearview Landfill dated 5-1-11 (Doc ID 2156097)
4. Validated Soil Contaminant Data collected in support of the Lower Darby Creek Area Superfund Site, Clearview Landfill Operable Unit 1 – Pre-Design Investigation – collected November 2015 to June 2016
5. Figure – Pre-Design Investigation Sampling Units Polycyclic Aromatic Hydrocarbons (PAHs) Results, Lower Darby Creek Area Superfund Site Clearview Landfill - Operable Unit 1 dated 6-8-16
6. Figure – Pre-Design Investigation Sampling Units Polychlorinated Biphenyls (PCBs) and Metals Results, Lower Darby Creek Area Superfund Site Clearview Landfill - Operable Unit 1 dated 6-14-16
7. POLREP 24 (Final) Figure – Pre-Design Investigation Sampling Units Polycyclic Aromatic Hydrocarbons (PAHs) Results, Lower Darby Creek Area Superfund Site Clearview Landfill dated 1-12-13

