DRAFT AMENDMENT TO THE FINAL NATURAL RESOURCES RESTORATION PLANS AND ENVIRONMENTAL ASSESSMENTS FOR THE CHEMICAL LEAMAN TANK LINES, INC. SUPERFUND SITE

OPERABLE UNIT 1 and OPERABLE UNIT 3

LOGAN TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

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1. Introduction

The U.S. Fish and Wildlife Service (Service), acting as the Natural Resource Trustee on behalf of the Department of the Interior (DOI), and the New Jersey Department of Environmental Protection (NJDEP), acting as the Trustee on behalf of the State of New Jersey, have prepared this Draft Amendment to the Final Restoration Plan and Environmental Assessment (RP/EA) for the Chemical Leaman Tank Lines, Inc. (CLTL) Superfund Site (Site) Operable Unit 1 and Final RP/EA for the CLTL Site Operable Unit 3. The purpose of this Draft Amendment to the RP/EAs is to identify and evaluate further restoration opportunities and determine additional preferred restoration alternatives to address natural resources, including ecological services, injured, lost, or destroyed due to releases of hazardous substances at or from the CLTL Site.

1.1 Chemical Leaman Tank Lines, Inc. Superfund Site

The CLTL Bridgeport Terminal is located approximately two miles south of the Delaware River in Logan Township, Gloucester County, New Jersey (Figure 1). The 31.4-acre property is an active terminal used for dispatching, storing, maintaining, and cleaning tanker trucks and trailers. It is bordered to the east and southeast by farmland and a forested wetland area known as Cedar Swamp. Approximately 1,000 feet north of the CLTL terminal, Moss Branch Creek drains portions of Cedar Swamp into Cooper Lake. Commercial infrastructure at the CLTL property includes the terminal building, an enclosed wastewater settling tank building, and a concrete wastewater holding tank. Former subsurface structures include several earthen settling and aeration lagoons which have been backfilled and graded.

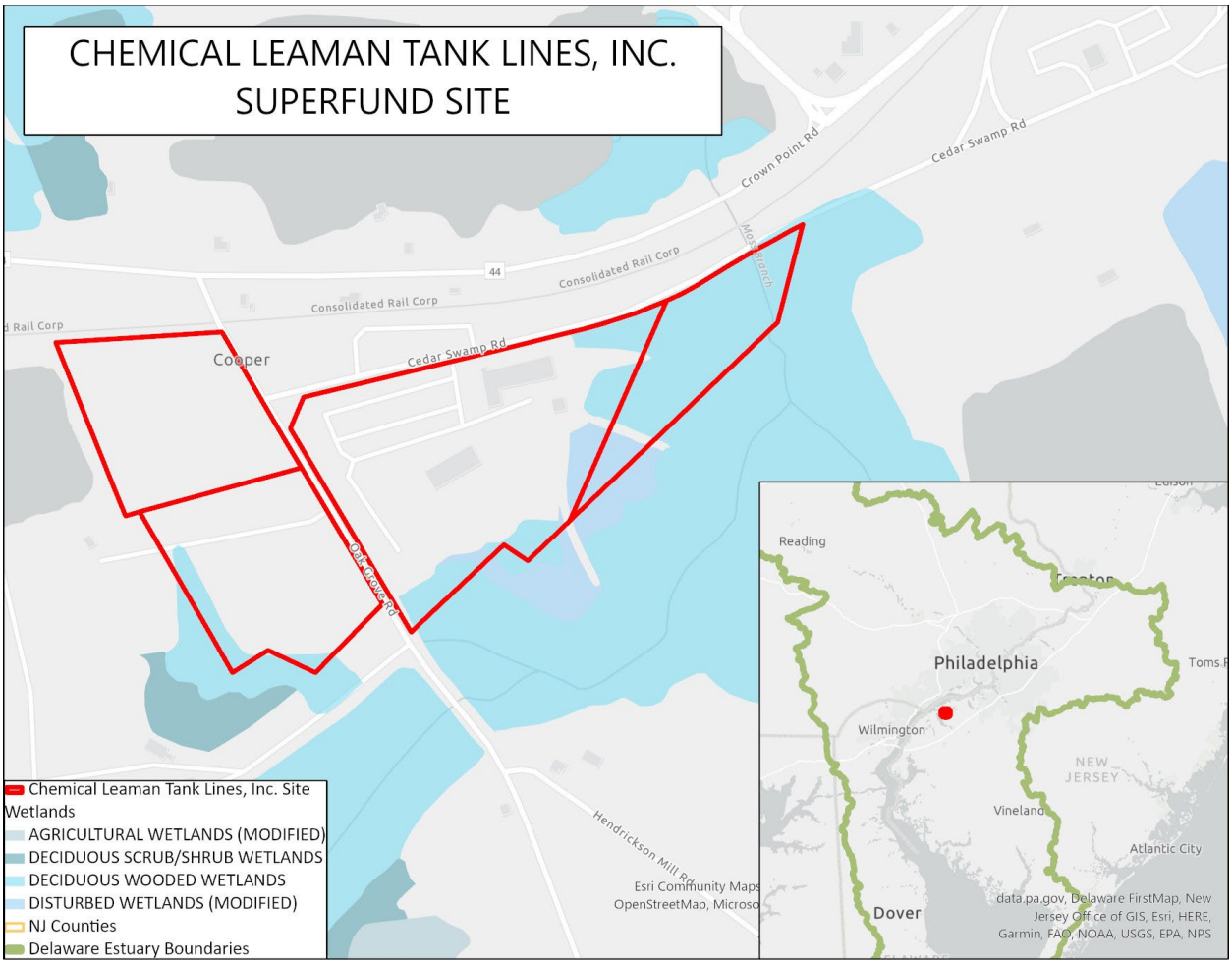

Figure 1. Map of the CLTL Superfund Site.

CLTL opened the facility in 1961 to wash and rinse tanker trucks used to transport chemical commodities, including some that are classified as hazardous in bulk quantities. Wastewater from the washing and rinsing operation was impounded in a series of seven unlined lagoons and subsequently discharged into the adjacent wetland. The lagoons were taken out of service in 1975 when CLTL was required to install a wastewater containment system at the terminal. In 1977, the sludge was removed from the primary settling lagoons and disposed of off-site, and the lagoons were backfilled with sand and construction debris. The aeration and final settling lagoons were drained, but no lagoon materials were removed prior to backfilling. In 1980 and 1981, the NJDEP found the groundwater on the site and neighboring private wells was contaminated with volatile organic compounds (VOCs). In 1982, CLTL removed sludge and contaminated soil from the former settling lagoons, and the excavation was backfilled with clean sand.

Due to the contamination of soil, groundwater, and the adjacent wetlands, the U.S. Environmental Protection Agency (EPA) added the site to the Superfund Program's National Priorities List (NPL) in September 1984. As with many Superfund sites, the environmental cleanup issues at the CLTL Site are complex. Consequently, the EPA divided site remediation

into operable units (OUs). OU1 addresses the groundwater at the Site; OU2 addresses the former lagoon soils and residual sludge; and OU3 addresses the wetlands on and adjacent to the CLTL property. An Administrative Order on Consent (AOC) (Index No. II CERCLA 50111) between EPA and CLTL was signed in July 1985. Pursuant to the AOC, CLTL agreed to conduct a Remedial Investigation and Feasibility Study (RI/FS) to delineate the nature and extent of site-related contamination in the groundwater, soils, and surface water at the CLTL Site.

A Record of Decision (ROD) for remediation of OU1 was signed in September 1990. The remedy included extraction and treatment of contaminated groundwater and discharge of the treated groundwater via pipeline to the Delaware River, along with 30 years of oversight and monitoring to ensure the effectiveness of the remedy. A full-scale groundwater extraction, treatment, and reinjection system was constructed and continues to clean up contaminated groundwater in OU1. The system removes 97-99% of all contamination and discharges the treated water into a nearby tributary of the Delaware River. EPA continues to monitor and review progress of the Contaminants of Concern (COCs) at the site. A ROD for remediation of OU3, the wetlands, was signed in October 1993. The wetlands of OU3 were excavated and backfilled with clean soil then restored with appropriate vegetation. The remedy included off-site disposal of contaminated sediments and soils; wetland restoration and construction of a berm around the active facility to protect the remediated and restored wetlands; and natural attenuation of contamination in remaining forested wetlands. This selected remedy for was completed in 2006. A ROD for remediation of OU2 was signed in September of 2009. The remedial action for OU2, which called for an Electrical Resistivity Heating ("thermal treatment") and Multi Phase Extraction (ERH-MPE) system to addresses remaining soil contamination in three former disposal areas, began in 2015 and was concluded in December 2017. The site has completed all remedial actions and remains in the Operations and Maintenance (O&M) phase.

1.2 Natural Resource Trustees and Authority

The Natural Resources Trustees for the CLTL Site include the: the Service on behalf of the DOI and the NJDEP on behalf of the State of New Jersey (collectively, the Trustees).

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) provides the Federal, state, and tribal natural resource trustees with authority to seek damages for injury to, destruction of, or loss of natural resources resulting from releases of hazardous substances. This document was prepared by the Trustees in accordance with requirements of CERCLA, the National Environmental Policy Act (NEPA), and other applicable Federal and State laws and regulations.

The goal of the Trustees' Natural Resource Damage Assessment and Restoration (NRDAR) process was to determine the nature and extent of injuries to natural resources and to quantify the resulting resource and service losses. After doing so, the Trustees examined restoration options to restore, replace, or acquire the equivalent of resources or resource services injured or lost as a result of the release of a hazardous substance.

The purpose of the proposed restoration is to compensate the public for injuries to and loss of natural resources due to the release of hazardous substances into areas at or near the CLTL Site. Identified by the Trustees according to their respective legal authorities, the natural resources of concern associated with the CLTL Site include migratory and other bird species; the upland, aquatic and wetland habitats utilized by those species (Cedar Swamp, Moss Branch Creek, and Cooper Lake); and groundwater.

1.3 Chemical Leaman Tank Lines Superfund Site Settlement and Restoration to Date

The Final Restoration Plan for OU1 addressed only injury related specifically to groundwater contamination from the CLTL Site and restoration projects conducted using the settlement funds received by the State of New Jersey (USFWS and NJDEP 2018). The Restoration Plan for OU3 addressed only injuries to CLTL Site-related wetlands, including the surface waters, soils and sediments in Cedar Swamp, Moss Branch, and Cooper Lake, and restoration projects conducted using the settlement funds received by the DOI. These injuries involved a reduction in the quality and quantity of resting, nesting, and feeding habitat for migratory birds and other wetland species (USFWS and NJDEP 2007).

To comply with NEPA, 42 U.S.C. § 4321 *et seq*., the Trustees prepared an EA for the proposed restoration in the Final Restoration Plans for OU1 and OU3. In the EA, the Trustees identified and considered the following four alternatives: taking No Action; land acquisition for groundwater recharge and preserving wetland habitat; on-site wetland restoration; and off-site wetland restoration with options for habitat restoration on the acquired properties and the biological control of invasive plant species.

Specific actions for this proposal were further identified in the Restoration Plans, which were subject to public review and comment. The Trustees determined that the preferred restoration alternatives would result in little or no change in the use of the affected areas. Accordingly, these preferred alternatives were categorical exclusions under NEPA and further assessment under NEPA were not warranted.

The selected alternatives under the previous RP/EAs for OU1 and OU3 were the acquisition of land in Watershed Management Area 18 (Lower Delaware River Tributaries) to improve groundwater recharge (OU1), and the acquisition land to preserve wetland habitat and the biological control of mile-a-minute (*Persicaria perfoliata*) in Gloucester and Salem counties (OU3).

As discussed in the OU1 Final Restoration Plan, land parcels providing high-quality groundwater recharge were acquired using settlement funds. These properties were transferred to a Federal or state natural resource agency, local municipality, or environmental non-profit organization to be managed as a conservation area to prevent future injury or degradation. The properties acquired to date include the Daniels property in South Harrison, the Deringer property in Greenwich Township, the Kejidan property in Somerdale, the Liberty property in Logan Township, the Roselin Bridge property in Gloucester Township, and the Signal Hill property in Clementon (NJDEP 2018; Figure 2).

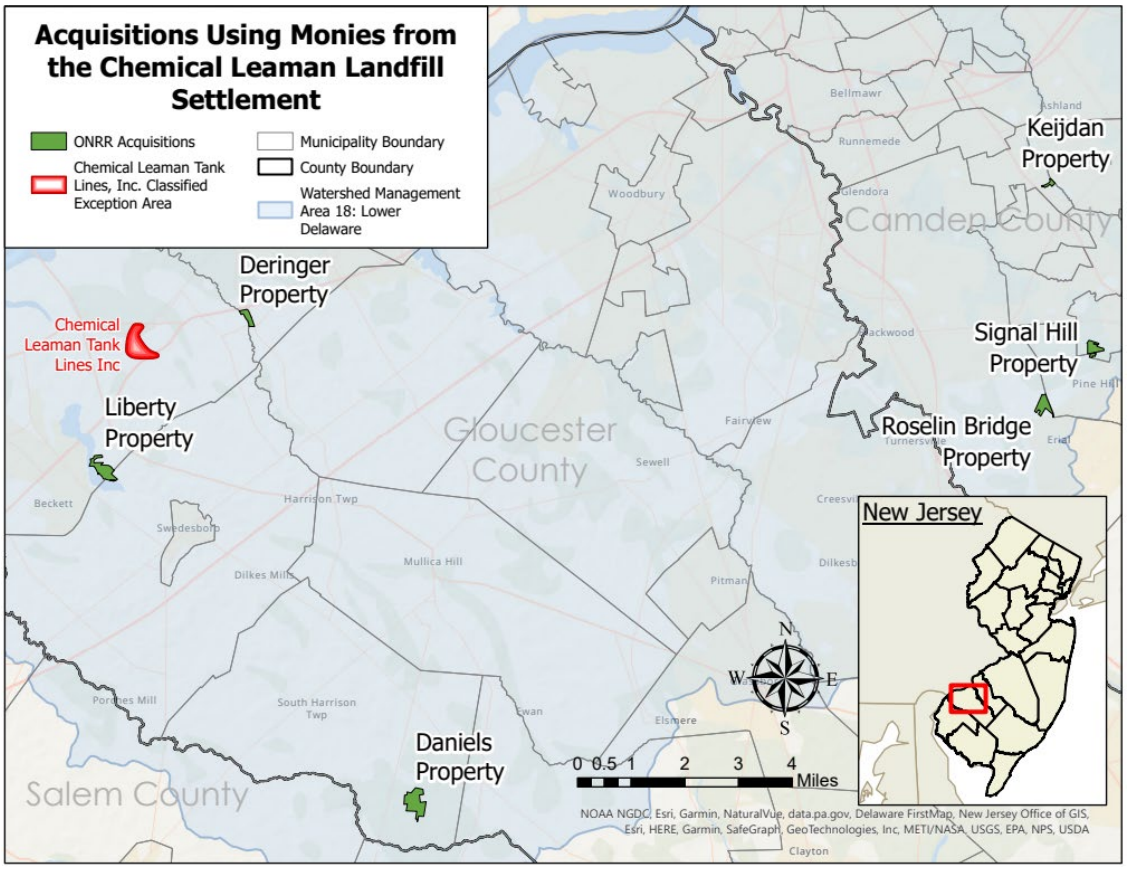

Figure 2. Map of acquisitions using monies from the CLTL settlement under the RP/EA for OU1.

As proposed in the OU3 Final Restoration Plan, the Trustees partnered with the New Jersey Department of Agriculture (NJDA) to release propagated Chinese weevils (*Rhinoncomimus latipes*) in suitable areas to control mile-a-minute and monitor effectiveness using NJDA protocols. A 20.7-acre property in Pennsville was acquired and transferred to the NJDEP to become a part of Fort Mott State Park. A 252.6-acre conservation easement was also established on a private property abutting the Supawna Meadows National Wildlife Refuge (SMNWR) in Pennsville.

2. Purpose and Need for Action

The purpose of the restoration proposed in this Draft Amendment, as in the OU1 and OU3 Final Restoration Plans, is to make the environment and the public whole for injuries to wetlands and groundwater resulting from the release and resulting impacts, by implementing restoration actions that restore and compensate for injured natural resources. The ecological restoration alternatives that the Trustees selected in the original Restoration Plans were implemented as described above, though a portion of the funds allocated for restoration and acquisition remains. Several properties were acquired using settlement funds, but it has become increasingly difficult to acquire additional parcels due to rising real estate prices and increased development throughout Watershed Management Area 18.

Using funding from the CLTL settlement, Chinese weevils were released at several sites infested with mile-a-minute in Gloucester and Salem counties. In addition to these releases, the NJDA has released weevils throughout the state since 2007. The weevils have spread from these restoration sites and are now found naturally reproducing in every county throughout New Jersey, except for Ocean County (NJDA 2017). The Trustees have determined that the benefits of this restoration alternative have been fully realized and therefore the actions under this alternative have been completed.

The restoration alternatives selected in the OU1 and OU3 Restoration Plans have proven challenging to implement and/or have been fully implemented. Since there are restoration funds remaining, the Trustees have determined that it is appropriate to consider other options for compensating the public for losses due to the release. The Trustees propose to amend both RPs, proposing the addition of an off-site wetland restoration alternative, and providing the State of New Jersey the option of utilizing funds originally planned for land acquisition on suitable wetland restoration projects.

3. Public Involvement

This Draft Amendment provides the public with information on the Trustees' restoration planning progress to date, the Trustees' restoration objectives, the restoration alternatives considered, and the preferred restoration alternative identified for public review and comment.

This Draft Amendment to the Final Restoration Plan is being released and circulated for public comment by the Trustees, electronically and through a DOI web-based posting (*https://www.cerc.usgs.gov/orda_docs/DocHandler.ashx?task=get&ID=10828*), for a 30-day comment period. This document is available for public review and comment for a period of thirty (30) days, from the date of publication. Written comments or requests for additional information on the Draft RP/EA should be sent via e-mail or U.S. mail to:

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Following the public review period, the Trustees will evaluate and respond to any substantive public comments received, and subsequently issue a Final Amendment to the Final Restoration Plans (Final Amendment).

4. Administrative Record

This document will be retained in the formal administrative record for the case, which currently resides with the U.S. Fish and Wildlife Service at the New Jersey Field Office, 4 E. Jimmie Leeds Road, Suite 4, Galloway, NJ 08205, and can also be located within the online administrative record at (*https://www.cerc.usgs.gov/orda_docs/CaseDetails?ID=126*).

5. Proposed Restoration

5.1 Criteria for Identifying and Evaluating Additional Potential Restoration Projects

In accordance with NRDAR regulations (43 CFR Part 11), and NEPA guidance and regulations, the Trustees identified and evaluated multiple restoration alternatives to compensate for natural resource injuries, including a "No Action" alternative. The Trustees considered the following criteria to evaluate the restoration alternatives:

5.1.1 Primary Evaluation Criteria

To ensure the appropriateness and acceptability of restoration options addressing ecological loss, the Trustees used the following primary criteria to evaluate each restoration alternative, as established in 43 CFR § 11.82:

1. Technical Feasibility. Proposed action can be successfully accomplished with available technology and management skills in an acceptable period of time.
2. Cost/Benefit: The relationship of the expected costs of the proposed actions to the expected benefits from the restoration, rehabilitation, replacement, and/or acquisition of equivalent resources.
3. Cost Effectiveness: When two or more activities provide the same or a similar level of benefits, the least costly activity providing that level of benefits will be selected. 40 C.F.R. § 11.14(j).
4. Response Action Results: The results of any actual or planned response actions.
5. Additional Injury: Potential for additional injury resulting from the proposed actions, including long-term and indirect impacts, to the injured resources or other resources.
6. Recovery Period: Consideration of the time required for injured resources to recover if no action is taken.
7. Recovery Ability: Ability of the resources to recover with or without alternative actions.
8. Public Health and Safety: Potential effects of the action on human health and safety.
9. Policy Consistency: Consistency with relevant Federal, state, and tribal policies.
10. Regulatory Compliance: Compliance with applicable Federal, state, and tribal laws.

These criteria remain appropriate for use in this Draft Amendment.

5.1.2 Secondary Evaluation Criteria

In the OU1 and OU3 Final Restoration Plans, the Trustees have identified the following as secondary criteria for evaluating potential projects:

1. Priority is given to project(s) in relative proximity (approximately 25 miles) to the CLTL Site.
2. Priority is given to project(s) that involve the purchase (acquisition) of property, as specified in the Consent Decree (CD) and Memorandum of Agreement (MOA).
3. Priority is given to project(s) involving the acquisition of land that provides groundwater recharge potential and that could provide similar services to the injured habitat at the CLTL Site before it was impacted.
4. Priority is given to project(s) that provide long-term or perpetual benefits to the injured natural resource.

In seeking to identify and evaluate alternatives in this Draft Amendment, the Trustees prioritized identifying similar types of projects with comparable benefits to the original project not implemented, to the extent practicable. Additionally, the Trustees have added the following secondary criteria for evaluating potential projects under this Draft Amendment:

5. Priority is given to restoration project(s) that have momentum and impetus, expediting the time to recovery of the injured resources.
6. Priority is given to a restoration project(s) where the landowner has capacity to perform long-term stewardship to increase likelihood of perpetual benefits.

5.2 Description of Proposed Restoration Alternatives

5.2.1 Alternative A: On-Site Wetland Restoration

The Trustees considered the alternative of restoring emergent and/or forested wetlands at the same location as the injury. Possible restoration activities ranged from the promotion of vegetative succession to intensive management actions to restore, replace, or enhance natural resources and the services they provided prior to contamination at the CLTL Site.

5.2.2 Alternative B: Off-Site Wetland Restoration

The Trustees are considering the alternative of restoring emergent and/or forested wetlands at an off-site location. Priority will be given to projects in relative proximity to the CLTL Site that provide long-term or perpetual benefits to the injured natural resource. Under this alternative, the Trustees are evaluating possible restoration activities ranging from promotion of vegetative succession to intensive management actions to restore, replace, create, or enhance natural resources and the services they provided beyond the boundaries of the CLTL Site. Restoration activities would be on land that could be afforded long-term or permanent protection through ownership by a Federal or state natural resource agency, or by a conservation easement or other legally binding agreement.

5.2.3 Alternative C: Acquisition of Land for Groundwater Recharge

The Trustees considered an alternative to restore groundwater recharge through the acquisition of land that would be protected in perpetuity. While acquisition may result in the preservation of existing resource values rather than the replacement of lost resource values, protection can be an appropriate mechanism to secure restoration gains over time by decreasing future direct and indirect impacts to resources in areas facing imminent threats of development, which would adversely affect groundwater recharge or groundwater quality. Under Alternative C: Acquisition of Land for Groundwater Recharge in the OU1 Restoration Plan, property containing wetlands similar to those injured at or adjacent to the CLTL Site offered at fair-market value would be acquired and the title transferred to a natural resource agency or local municipality for use as open space. The acquired property would be protected with a perpetual conservation easement, deed restriction, or other legally binding mechanism, and managed to conserve, protect, and promote the natural resource values of the property.

5.2.4 Alternative D: No Action/Natural Recovery Alternative

This alternative is addressed to fulfill requirements under the NEPA and DOI's Natural Resource Damage regulations, 43 C.F.R. Part 11. Under this alternative, no action would be taken to restore natural resources injured or destroyed due to contamination at the CLTL Site or to replace or acquire additional natural resources to restore the lost ecological and human services which would have been provided by those injured or destroyed natural resources. Restoration of the resources and their function would be completely dependent upon natural processes. The funds recovered for DOI's Natural Resource Damages claim for the CLTL Site would not be spent. This alternative would result in no benefit from the settlement funds specifically recovered for restoration of resources injured at this Site and would result in the Trustees' failure to meet their obligations pursuant to the Consent Decree.

5.3 Evaluation of Proposed Restoration Alternatives

5.3.1 Evaluation of Alternative A: On-Site Wetland Restoration

The EPA's selected remedial action (e.g., the cleanup) for OU3 addressed 7.3 acres of contaminated wetlands and consists of the removal of 11,500 cubic yards of contaminated soil and sediment. This contaminated soil and sediment was excavated and disposed of at an approved facility. Although the selected remedial action substantially addressed the ecological risk posed by contamination in the wetlands, it did not address all wetland areas impacted by CLTL-related contamination. The selected cleanup action addressed areas of contamination that pose the greatest risk to ecological receptors. Furthermore, the selected cleanup action was designed to restore higher functional value through revegetation to the most damaged and degraded portions of the wetland adjacent to the CLTL facility while leaving the higher quality wetland intact, but still contaminated in perpetuity. The EPA's estimated capital cost for the

selected remedial action was $6,314,101. The EPA determined that the selected cleanup action was cost-effective, both financially and environmentally. Contamination in the unremediated wetlands was left to natural attenuation because cleanup activities would likely have caused more damage to the red maple swamp habitat than could be realized by the subsequent and costly restoration actions.

Given the above circumstances, the Trustees did not identify additional restoration actions that would not deleteriously affect the proper functioning of the remedial action. Therefore, this alternative would do nothing to offset injuries due to the release(s) of hazardous substances at and near the CLTL Site. As such, the On-Site Wetland Restoration Alternative is inconsistent with the intent of the Consent Decree and the NRDAR guidance, and further evaluation of this alternative is unnecessary.

5.3.2 Evaluation of Alternative B: Off-Site Wetland Restoration

Under the Final Restoration Plan for OU3, the Trustees considered two options for Off-Site Wetland Restoration: (1) Habitat Restoration on Land Acquired for OUI-Related Groundwater Recharge and (2) Biological Control of Invasive Plant Species. Option 1 was eliminated from consideration and Option 2 was selected as a preferred alternative. The Trustees have re-evaluated the original preferred option from the OU3 Restoration Plan, which involved partnering with the New Jersey Department of Agriculture (NJDA) for the biological control of invasive mile-a-minute in Gloucester and Salem counties. The Trustees and NJDA collaboratively identified suitable project areas to release the propagated Chinese weevil to control mile-a-minute infestations and monitor effectiveness using accepted NJDA protocols. This alternative addressed the loss of OU3 wetlands at and adjacent to the CLTL Site due to disturbances that resulted in the infestation of non-native plants.

Mile-a-minute, also known as Devil's tearthumb, is a highly invasive, fast-growing vine native to eastern Asia. It can grow up to six inches per day and has the tendency to sprawl over vegetation more than 20 feet tall. The U.S. Department of Agriculture (USDA) classifies this species as facultative, or able to thrive in wetland or upland habitat. Thickets of mile-a-minute can reduce plant diversity in natural areas and degrade wildlife habitat. It is particularly aggressive in riparian areas (land adjacent to rivers and streams), a habitat type that many species depend on. Mile-a-minute is a threat to tree regeneration in open meadows and along edge habitat and is most aggressive in areas with ample sunlight and moist soils. Where established, it is often found along woodland edges, stream corridors, riverine islands, fencerows, roadsides, uncultivated fields, and other similar areas. Shade appears to be a limiting factor for this species; climbing over other plants is a strategy that helps the mile-a-minute reach sunnier areas while blocking out sunlight and outcompeting other plants. Infestations of mile-a-minute currently extend from New Hampshire to North Carolina and west to Indiana; there are also reports of mile-a-minute infestations in Iowa and Oregon.

According to the NJDA, Gloucester and Salem counties were among the worst mile-a-minute infested areas in the State at the time the OU3 Final Restoration Plan was published. It should be noted that biological control of mile-a-minute by the NJDA was already in progress at other locations throughout New Jersey. A principal advantage of biological control over mechanical

and chemical methods is that once established, the effects of biological controls (i.e., insects) can expand beyond the initial restoration site, controlling the targeted invasive plant species over a larger area with little or no further management intervention. In recent years, Chinese weevils spread from these initial restoration sites and have now been found at every site infested with mile-a-minute throughout the state. As a result, the Trustees determined that releasing additional weevils for biological control will not yield substantial restoration benefits.

The Trustees have considered another option under this alternative, the restoration of emergent and/or forested wetlands. Restoration actions under this option may include:

- Modifying site hydrology by removing dikes, levees, riprap, and/or tiles; diverting water flow toward or away from the site; facilitating a more natural tidal hydrology (in coastal wetlands); and/or regulating the site's hydrologic regime (through flooding and drawdown).
- Modifying site pedology (soil morphology) by excavating and grading site topography to a desirable elevation; salvaging and relocating wetland soils; enhancing elevation utilizing hydraulically dredged sediments; and/or adding organic matter or other soil supplements.
- Modifying vegetative cover by allowing natural revegetation; seeding or planting desirable species; removing or controlling invasive plant species; controlling herbivores and disease; enhancing marsh accretion and mitigating erosion (increasing coastal resiliency); and/or installing buffers and protective structures.
- Monitoring the ecological response to restoration actions and making mid-course corrections as warranted.

Offsite wetland restoration will restore the same resource types that were injured (migratory and other birds, the aquatic and wetland habitats utilized by those species, groundwater). Under this alternative, priority would be given to project locations within approximately 25 miles of the CLTL Site.

5.3.3 Evaluation of Alternative C: Acquisition of Land for Groundwater Recharge

The Trustees re-evaluated the original preferred alternative for the OU1 Restoration Plan to restore groundwater recharge through the acquisition of land that would be protected in perpetuity. Under this alternative, six properties containing wetlands similar to those injured at or adjacent to the CLTL Site and offered at fair-market value were acquired. The titles were transferred to a natural resource agency, local municipality, or environmental non-profit organization for use as open space. The acquired properties were protected with a perpetual conservation easement, deed restriction, or other legally binding mechanism, and are managed to conserve, protect, and promote the natural resource values of the property.

Development pressures and increased urbanization along the Lower Delaware River are adding to the loss of open space and wildlife habitat. Some estimates suggest that New Jersey may reach full build-out in approximately 20 to 30 years. Acquiring and holding undeveloped land in perpetuity ensures the preservation and conservation of the New Jersey's natural resources. Acquisition also provides habitat for a wide variety of wildlife species, including rare or

endangered flora and fauna. By virtue of their inherent privacy and natural settings, parcels suitable for building adjacent to lands held as a natural resource conservation area (e.g., State Parks, Forests, and Wildlife Management Areas; National Wildlife Refuges; preserves; natural areas) are difficult to find and highly sought after for residential development. Acquiring these properties and protecting them in perpetuity can benefit resources similar to those injured at the CLTL Site by preventing further habitat fragmentation, construction of impervious cover (i.e., pavement, sidewalks, buildings, dwellings), and degradation of water quality associated with suburban and urban development.

5.3.4 Evaluation of Alternative D: No Action

This alternative would do nothing to offset injuries resulting from the contamination and results of response actions. No additional natural resource injuries would be caused by this alternative, but injuries resulting from the CLTL Site would go unaddressed. This alternative would have no effect on human health and safety. However, it is inconsistent with both Federal and state policies which promote the restoration of natural resources injured by hazardous substances. The No Action Alternative is also inconsistent with CERCLA's requirement that funds recovered by Trustees for natural resource injuries be spent on restoration, rehabilitation, replacement, or acquisition of the equivalent of those resources. Based on the aforementioned facts, the Trustees propose to reject the No Action Alternative.

5.3.5 Summary of Evaluation of Proposed Restoration Alternatives

After evaluating the potential restoration alternatives, the Trustees selected Off-Site Wetland Restoration and Acquisition of Land for Groundwater Recharge as the preferred alternatives to compensate for injuries to natural resources caused by the Chemical Leaman Tank Lines, Inc. Superfund Site.

The Off-Site Wetland Restoration Alternative will aid in buffering environmental impacts associated with the rapid suburban development (e.g., increased amounts of impervious cover, road run-off, reduced groundwater recharge, loss of wildlife habitat) that is taking place within the watershed. This action also has the potential to preserve, protect, and maintain the quality of surface waters (a service provided by the natural resources at OU3 prior to contamination) entering the Delaware River.

Restoring wetlands off-site will provide numerous benefits such as improving water quality, protecting shorelines by reducing erosion and sedimentation, increasing storm resiliency by storing excess stormwater, increasing recreational opportunities, and creating and enhancing habitat for migratory birds, fish, and other organisms that depend on wetland habitats. The Trustees recognize that while the proposed Off-Site Wetland Restoration Alternative will likely not have a direct spatial nexus to the CLTL Site, this alternative would restore the same resource types that were injured (migratory and other birds, the aquatic and wetland habitats utilized by those species, groundwater). Off-Site Wetland Restoration meets the goal of restoring the type of lost natural resources impacted by release of hazardous substances from the CLTL Site, and the Trustees propose it as one of the preferred alternatives.

The implementation of the Acquisition of Land for Groundwater Recharge Alternative is commensurate with current real estate market values, locality, availability of willing sellers and parcel size, development potential, and availability. Due to rising real estate prices and increased development, it has become increasingly difficult to acquire suitable parcels near the Lower Delaware River. Because of this, the Trustees concluded that funding allocated to this alternative may be used for the implementation of other preferred restoration alternatives.

6. Compliance with the National Environmental Policy Act

Actions undertaken by Federal trustees to restore natural resources or services under CERCLA and other Federal laws are subject to NEPA, and the regulations guiding its implementation (40 C.F.R. 1500 *et seq*.). The original OU1 and OU3 Final Restoration Plans included an integrated EA that analyzed the potential environmental impacts for the land acquisition and biological control projects. Because the Trustees are proposing a new restoration action that was not included in the Final RP, a new NEPA evaluation is needed to assess the impacts associated with off-site wetland restoration. The proposed approach to NEPA compliance for the project is discussed below.

6.1 Requirements for Analysis under NEPA

Under NEPA, Federal agencies must evaluate potential impacts to the environment from their proposed actions and reasonable alternatives. If impacts are potentially significant, an environmental impact statement (EIS) is required, but if impacts are either unclear or considered not significant, an environmental assessment (EA) may be prepared. Additionally, some types of actions may qualify for a Categorical Exclusion (CE), or otherwise not be subject to NEPA. The Service is acting as the lead Federal agency for NEPA compliance for this Draft Amendment.

NEPA allows for broad programmatic analyses that subsequently can be used to meet NEPA requirements for project-level actions through incorporation by reference and "tiering." This process is discussed further in section 6.2 below. The NEPA process ensures that public decision-makers are fully informed about the potential impacts of the proposed actions and alternatives and allows for meaningful public involvement in the decision-making process. The public will be invited to provide feedback on the Trustees' proposed action and alternatives and the analysis conducted in this Draft Amendment.

This Draft Amendment complies with NEPA by: 1) describing the purpose and need for restoration; 2) addressing public participation for this process; 3) identifying alternative actions; 4) summarizing the current environmental setting; and 5) analyzing environmental consequences.

6.2 Affected Environment

This section describes the general environmental setting that may be affected by the restoration alternatives identified in this Draft Amendment (40 C.F.R. § 1502.15). It includes information on the physical, biological, and socioeconomic environment in this portion of the Lower Delaware River Basin, including those resources that may be affected by the proposed alternatives.

The Lower Delaware River Basin includes Delaware Bay, the tidal reaches of the Delaware River (collectively known as the Delaware Estuary), and their tributaries. The affected environment where the proposed restoration alternative may occur include portions of the basin that fall within Camden, Gloucester, and Salem counties in New Jersey (Figure 3).

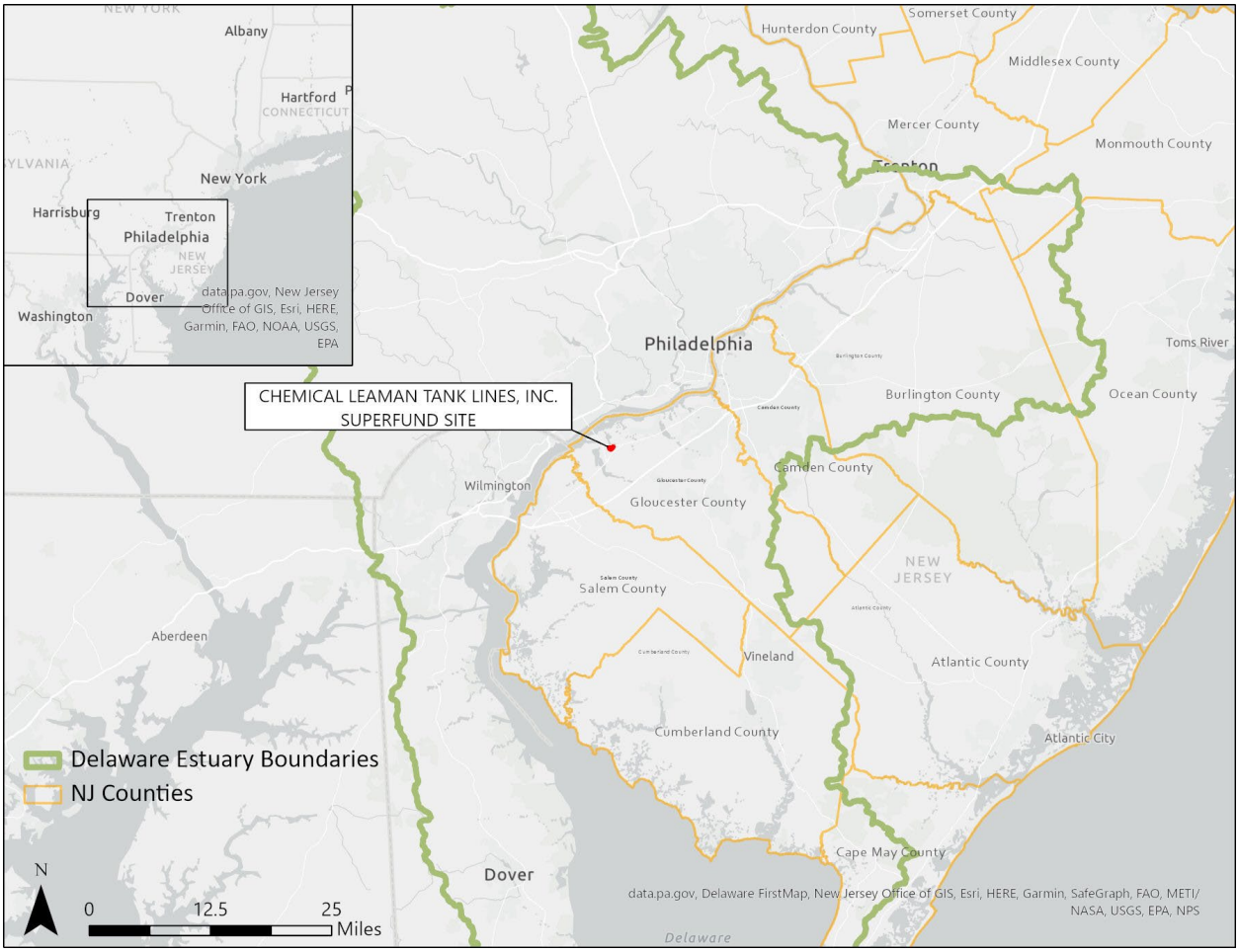

Figure 3. Map of affected area including portions of the Lower Delaware River Basin.

6.2.1 The Physical Environment

The Delaware River watershed has a drainage area of 13,539 square miles in four states: New York, Pennsylvania, New Jersey, and Delaware. It consists of the Delaware Bay, mainstem Delaware River, East and West Branches of the Delaware River, and major tributaries including the Lackawaxen River, Mongaup River, Neversink River, Flat Brook, Paulins Kill, Pequest River, Bushkill Creek, Lehigh River, Musconetcong River, Assunpink Creek, Crosswicks Creek, Rancocas Creek, Cooper River, Schuylkill River, Darby Creek, Raccoon Creek, Oldmans Creek, Christiana River, Salem River, Cohansey River, and Maurice River. The headwaters of the Delaware River form in the Catskill Mountains in New York: the East Branch at Grand Gorge and the West Branch at Mount Jefferson. The confluence of the two branches at Hancock, NY forms the mainstem of the Delaware River. Between Hancock and Trenton, NJ, the river and surrounding watershed are relatively undeveloped. South of the fall line in Trenton, the river is tidal, navigable, and industrialized, and the surrounding watershed is more developed with suburban and urban areas. As the river flows downstream past Gloucester and Salem counties in New Jersey, the land uses in the watershed become more agricultural. The river widens until it flows into Delaware Bay south of the Hope Creek Nuclear Generating Station. From the mouth of the bay between Cape May, NJ and Cape Henlopen, DE to Hancock, NY, the Delaware River is the longest undammed river in the United States east of the Mississippi River.

The affected area occurs within the Middle Atlantic Coastal Plain Level III Ecoregion, which is characterized by "low elevation flat plains, low terraces, dunes, barrier islands, and beaches underlain by unconsolidated sediments" (EPA 2010). Poorly drained soils are common, and the soils are primarily Ultisols, Entisols, and Histosols. The Delaware River Terraces and Upland subregion is characterized by tidal wetlands, saltwater marshes, numerous small, slow-moving streams, and nearly level terraces (Woods et al. 2007). With urban development around the core areas of Philadelphia, PA, Camden, NJ and Wilmington, DE, the Lower Delaware River Basin has experienced industrial pollution, excessive drainage of wetlands, and the destruction of tidal marshes.

6.2.2 Biological Resources

The Lower Delaware River Basin includes a variety of habitats that support fish, birds, and other wildlife. High levels of development have historically resulted in extensive loss and fragmentation of habitats including grassland, wetland, and forest habitats (NJDEP 2008). However, despite these losses, the region contains patches of grassland and agricultural areas, mixed deciduous forests, hardwood swamps, tidal freshwater and brackish marshes, and swaths of natural riparian areas.

Common mammals that occur within the affected area include: white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), eastern gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), groundhog (*Marmota monax*), red fox (*Vulpes vulpes*), eastern coyote (*Canis latrans*), raccoon (*Procyon lotor*), North American beaver (*Castor canadensis*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), northern short-tail shrew (*Blarina brevicauda*), eastern mole (*Scalopus aquaticus*), American mink (*Neovision vison*), and North American river otter (*Lontra canadensis*).

The Lower Delaware River Basin is located within the Atlantic flyway and provides habitat for both migrating and resident birds, including raptors such as red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), broad-winged hawk (*Buteo platypterus*), sharp-shinned hawk (*Accipiter striatus*), osprey (*Pandion haliaetus*), and bald eagle (*Haliaeetus leucocephalus*). Songbirds such as warblers, orioles, and blackbirds, as well as waterfowl and shorebirds, also utilize the Delaware River corridor. Habitats provide nesting habitat for a variety of species, including flycatchers, swallows, thrushes, woodpeckers, and warblers. Shallow water wetlands, shoals, and flats provide foraging habitat for wading birds such as great egret (*Ardea alba*), snowy egret (*Egretta thula*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), yellow-crowned night heron (*Nyctanassa violacea*), and glossy ibis (*Plegadis falcinellus*).

Common reptiles and amphibians in the Lower Delaware River Basin include: northern watersnake (*Nerodia sipedon*), eastern rat snake (*Pantherophis alleghaniensis*), eastern box turtle (*Terrapene carolina carolina*), common snapping turtle (*Chelydra serpentina*), eastern painted turtle (*Chrysemys picta picta*), spotted turtle (*Clemmys guttata*), eastern mud turtle (*Kinosternon subrubrum subrubrum*), eastern musk turtle (*Sternotherus odoratus*), northern diamondback terrapin (*Malaclemys terrapin terrapin*), marbled salamander (*Ambystoma opacum*), spotted salamander (*Ambystoma maculatum*), four-toed salamander (*Hemidactylium scutatum*), redback salamander (*Plethodon cinereus*), northern spring peeper (*Pseudacris crucifer crucifer*), northern gray tree frog (*Hyla versicolor*), northern cricket frog (*Acris crepitans crepitans*), New Jersey chorus frog (*Pseudacris kalmi*), wood frog (*Lithobates sylvaticus*), pickerel frog (*Lithobates palustris*), southern leopard frog (*Lithobates sphenocephalus*), northern green frog (*Lithobates clamitans melanota*), American bullfrog (*Lithobates catesbeianus*), American toad (*Anaxyrus americanus*), and Fowler's toad (*Anaxyrus fowleri*).

Common freshwater fish species include: bluegill (*Lepomis macrochirus*), redbreast sunfish (*Lepomis auritus*), pumpkinseed (*Lepomis gibbosus*), largemouth bass (*Micropterus salmoides*), rock bass (*Ambloplites rupestris*), channel catfish (*Ictalurus punctatus*), brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox niger*), redfin pickerel (*Esox americanus americanus*), yellow perch (*Perca flavescens*), tessellated darter (*Etheostoma olmstedi*), golden shiner (*Notemigonus crysoleucas*), spottail shiner (*Notropis hudsonius*), eastern silvery minnow (*Hybognathus regius*), eastern mudminnow (*Umbra pygmaea*), and gizzard shad (*Dorosoma cepedianum*).

Common marine and estuarine fish species include: white perch (*Morone americana*), black drum (*Pogonias cromis*), summer flounder (*Paralichthys dentatus*), bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*), Atlantic croaker (*Micropogonias undulatus*), spot (*Leiostomus xanthurus*), silver perch (*Bairdiella chrysoura*), bay anchovy (*Anchoa mitchilli*), Atlantic silverside (*Menidia menidia*), rough silverside (*Membras martinica*), inland silverside (*Menidia beryllina*), fourspine stickleback (*Apeltes quadracus*), banded killifish (*Fundulus diaphanous*), and mummichog (*Fundulus heteroclitus*).

Common diadromous fish species include: American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), sea lamprey (*Petromyzon marinus*), and striped bass (*Morone saxatilis*).

Occurrence of federally listed species in the affected area may include: Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*); as well as one species proposed for listing, the tricolored bat (*Perimyotis subflavus*); and one candidate species, monarch butterfly (*Danaus plexippus*).

Birds of conservation concern are protected under the Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712) and the Bald and Golden Eagle Protection Act (16 U.S.C. § 668). In the affected area, these species may include bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), barn swallow (*Hirundo rustica*), black-billed cuckoo (*Coccyzus erythropthalmus*), cerulean warbler (*Setophaga cerulea*), prairie warbler (*Setophaga discolor*), prothonotary warbler (*Protonotaria citrea*), Kentucky warbler (*Geothlypis formosa*), chimney swift (*Chaetura pelagica*), eastern whip-poor-will (*Antrostomus vociferus*), ruby-throated hummingbird (*Archilochus colubris*), rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*).

State-listed species that have the potential to be found in the affected area include but are not limited to: bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), pied-billed grebe (*Podilymbus podiceps*), American bittern (*Botaurus lentiginosus*), black-crowned night heron (*Nycticorax nycticorax*), osprey (*Pandion haliaetus*), red-headed woodpecker (*Melanerpes erythrocephalus*), American kestrel (*Falco sparverius*), bobolink (*Dolichonyx oryzivorus*), great blue heron (*Ardea herodias*), and eastern box turtle (*Terrapene carolina carolina*).

6.2.2 Historic and Cultural Resources

The affected area is located on the ancestral lands of the Lenape called Lenapehoking. The Lenape people are believed to have settled in the Lower Delaware River Basin between 1000 A.D. and the 1200s. Several bands of Lenape lived in what is now southwestern New Jersey, including the Armewarmex, Mantaes, Naraticonck, Little Siconese, and Sewapois.

During the early 1600s, European settlers from Sweden and Finland established settlements and farms along the lower reaches of the Delaware River. The colony was known as New Sweden until they were conquered by the Dutch in 1655 and incorporated into New Netherland. After the Conquest of New Netherland in 1664, the colony was ruled by the English.

Coastal shipping and commerce became prevalent along the Delaware River throughout the 1700s, and the river played an important role in the American Revolution. During the 1700s and 1800s, mills and factories were constructed throughout the Delaware Valley. Anthracite coal from the mountains of Pennsylvania was shipped by canal and train to markets in Philadelphia, and commercial fishing was prominent in the river and bay for species such as American shad (*Alosa sapidissima*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), and eastern oysters

(*Crassostrea virginica*). As the industrial revolution began, facilities for heavy industries such as shipyards, tanneries, oil refineries, and chemical manufacturing plants were constructed along the riverfront. New Jersey's population doubled between 1900 and 1930, and manufacturing became a four-billion-dollar industry. Though the public was becoming increasingly aware of the pollution, industry only expanded throughout the watershed during World War II, as corporations established large-scale electronics and chemical industrial operations.

The Climate and Economic Justice Screening Tool (CEJST) was produced by the White House Council on Environmental Quality to determine disadvantaged communities based on thresholds for categories of burden including climate change, energy, heath, housing, legacy pollution, transportation, water and wastewater, and workforce development. There are numerous disadvantaged communities as defined by this tool in the Lower Delaware watershed, specifically concentrated around the urban sprawl of Philadelphia in Camden County, as well as some in in Salem and Gloucester counties. This is likely due to the historical riverfront industry and associated legacy pollution.

There are numerous historic districts and properties under the New Jersey and National Registers of Historic Places as determined and managed by the NJ State Historic Preservation Office (SHPO). These properties and historic districts all meet the New Jersey and National Register criteria for significance in American history, archaeology, architecture, engineering, or culture, and possess integrity of location, design, setting, materials, workmanship, feeling and association. Some that exist in the affected area include but are not limited to Fort Mott State Park, Finns Point National Cemetery, Mullica Hill Historic District, Red Bank Battlefield, *Hadrosaurus foulkii* Leidy Site, and Blackwood Historic District.

6.2.3 Recreational Services

The Delaware River and surrounding areas, despite having high levels of urbanization, offer many nature-based recreational opportunities to the public including hiking, biking, horseback riding, hunting, fishing, camping, wildlife viewing, and boating. Multiple public and private nature preserves as well as County and State Parks exist along the waterways, providing public access to the rivers and surrounding natural areas.

6.2.4 Socioeconomic Resources

The population densities of Camden, Gloucester, and Salem counties are approximately 2,365, 939, and 195 persons per square mile, respectively. Camden County has an estimated population of 524,907 individuals, Gloucester County has an estimated population of 306,601 individuals, and Salem County has an estimated population of 65,117 individuals as of July 1, 2022. The median household income of Camden County is $75,485 in 2021 dollars, the median household income of Gloucester County is $93,201 in 2021 dollars, and the median household income of Salem County is $67,898 in 2021 dollars (U.S. Census Bureau 2022).

6.3 Scope of NEPA and Trustee Approach

Council on Environmental Quality (CEQ) Regulations (40 C.F.R. 1502.4) encourage agencies to prepare broad EISs that encompass program areas. These evaluations are referred to as Programmatic EISs. CEQ also encourages agencies to incorporate the information and analyses included in programmatic documents into project specific analysis by reference. This is referred to as "tiering off" of the programmatic document (40 C.F.R. 1501.11).

In 2015, the NOAA Restoration Center developed a *Programmatic Environmental Impact Statement for Habitat Restoration Activities Implemented throughout the Coastal United States* (PEIS; NOAA 2015). NOAA developed the PEIS to evaluate coastal and riverine habitat restoration activities routinely funded or implemented through its existing programs. The Service documented their adoption of the PEIS with a Record of Decision, dated August 20, 2019 (84 Federal Register 45515). The PEIS is available on NOAA's website at: https://www.fisheries.noaa.gov/resource/document/restoration-center-programmatic-environmental-impact-statement. The PEIS includes a description of, and an evaluation of typical impacts for, a suite of restoration activities that are inclusive of the proposed restoration alternatives identified in this Draft Amendment, including:

- Planning, Feasibility Studies, Design Engineering, and Permitting
- Invasive Species Control
- Wetland Planting
- Bank Restoration and Erosion Reduction
- Wetland Restoration and Shoreline Stabilization Techniques
- Implementation and Effectiveness Monitoring
- Fish and Wildlife Monitoring
- Conservation Transactions

6.4 Impacts Analyzed for Preferred Alternatives

6.4.1 Planning, Feasibility Studies, Design Engineering, and Permitting

The PEIS Section 4.5.1.1 states the following regarding the potential impacts of Planning, Feasibility Studies, Design Engineering, and Permitting:

"*The completion of project planning, feasibility studies, design engineering studies, and permitting activities would cause indirect, long-term, beneficial impacts to the affected environment. These activities would support the continued implementation of the most successful projects and therefore result in effective and efficient habitat restoration. Some feasibility studies would cause direct, short-term, minor impacts through associated fieldwork, including drilling into soil or sediment with an augur, drill rig, or other tools to remove surface, subsurface, or core samples. These impacts would be very minor and localized to the project site given how small such areas are in relation to an overall project area. Similar short-term impacts to living coastal resources…essential fish habitat…and threatened and endangered species may include effects from handling, noise, and displacement (see PEIS Section 4.7).*"

The Trustees have determined that the impacts from the proposed action (i.e., preferred alternatives) fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.2 Invasive Species Control

The PEIS Section 2.2.2.4.1 states the following regarding the potential impacts of Invasive Species Control:

"The impacts of invasive species removal ultimately benefit the immediate ecosystem by allowing native species the chance to re-establish. Generally, invasive species removal activities may cause direct, short-term, localized, minor adverse impacts to the affected area from mechanical or human activities. For terrestrial and aquatic invasive plant removal, direct adverse impacts to geology and soils may include compaction, whereas impacts to in-water substrate and water resources may include ephemeral sedimentation, turbidity, or other water quality impacts. However, long-term moderate to major beneficial impacts to geology and soils, water resources, coastal resources, and essential fish habitat, and threatened and endangered species would result as non-native species are replaced by diverse native plant and animal communities."

"Herbicide use for removal of invasive plant species could cause direct, short-term, moderate, adverse impacts to geology and soils, water, air, living coastal resources and essential fish habitat, threatened and endangered species, and land use and recreation. These impacts would result from the potential for lethal effects on soil biota and the short-term loss of shading and habitat for prey species provided by the invasive plant. The potential impacts to birds, aquatic organisms, and terrestrial organisms will be mitigated by the use of the least toxic herbicides, surfactants, and spray pattern indicators available, but sub-lethal impacts are possible. These include impacts to reproduction, survival to adulthood, and disrupted food webs (NMFS 2005). Potential impacts to non-target plant species are reduced when proper application methods are prescribed, but rainfall and wind may cause herbicides to leach into the surrounding soil or be transported to non-invasive plants, causing unintentional damage. Appropriate herbicide application methods should reduce the risk of such herbicide drift. Suggested methods include backpack spraying, cut stump, and hack-and-squirt; however, other methods may be used as the site or target species dictates. These methods also greatly reduce the chance of exposing surface waters and their ecological communities to these chemicals due to the high level of applicator control. Methods that do not require surfactants would be used when possible. If necessary, surfactants would be limited to products determined to be the least toxic to the terrestrial, aquatic, and marine/estuarine organisms found in the immediate area. Herbicide tracers (i.e., spray pattern indicators) should be used whenever possible to track herbicide application progress. Where feasible, the area will be regularly monitored for regrowth of the target or new invasive species. Generally, use of herbicides in project areas would be conducted according to established protocols for the locality, as determined by a licensed herbicide applicator. Such protocols would include information and guidelines for appropriate chemical to be used, timing, amounts, application methods, and safety procedures relevant to the herbicide application."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.3 Wetland Planting

The PEIS Section 4.5.2.11.3 states the following regarding the potential impacts of Wetland Planting:

"*Planting may cause short-term, direct adverse impacts to living coastal and marine resources when existing vegetation is trampled during the donor harvest or planting process. Planting is generally short-term in duration, lasting days to weeks, but the length of time between the restoration efforts that prepare a site for planting and when planting has begun may be several months, as planting cannot be completed outside the local growing season. For this reason, active wetland restoration activities may last over a year, even at smaller sites. Short-term damage to stands of healthy wetland vegetation may occur where native species are harvested from donor sites using species-appropriate techniques. The growth habit and length of the growing season determines how rapidly a donor site would recover. Generally, the benefits of using a local, native plant source outweigh the damage to the donor site, which is temporary."*

"For restoration activities that involve building native plant nurseries, although the nursery use may be long-term, the impacts are low because the sites are generally constructed in areas that do not have existing habitat value (e.g., a school playground, a disturbed upland area, or former sewage treatment plant or aquaculture pond). Minor adverse impacts to cultural and historic resources may occur during wetland restoration, when historic structures are present within a project site."

"Long-term, moderate beneficial impacts to water resources, living coastal resources and threatened and endangered species would occur due to the erosion reduction and increased shelter provided by wetland plants. Wetland planting activities would result in beneficial impacts by restoring or creating wetland and/or shallow-water habitats that provide areas for feeding and shelter for fish, as well as nutrient cycling and carbon sequestration and storage capacity."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.4 Bank Restoration and Erosion Reduction

The PEIS Section 4.5.2.5.2 states the following regarding the potential impacts of Bank Restoration and Erosion Reduction:

"Bank restoration and erosion reduction activities would cause direct and indirect, short-term, minor adverse impacts on geology and soils, water, air quality, living coastal and marine resources and EFH, and threatened and endangered species during the on-the-ground

implementation phase. Impacts to threatened and endangered species may include effects from handling, noise, turbidity, contaminant exposure, altered hydrology, additional habitat quality/quantity, displacement, and mortality (see Section 4.7 for more details). These impacts would result from installation of natural features or geotextile materials, stabilization of slopes, removal of bulkheads or other artificial shoreline armoring, or introduction of new vegetation (planting). Depending on the nature of each project, the installation of materials and stabilization of slopes could require small or large earth-moving machines, which would cause minor amounts of localized soil compaction, may introduce non-native species if not properly decontaminated, and other impacts as described above. The duration of impacts typically range from weeks to months, depending on the length of the shoreline or stream bank. Wildlife would also potentially be displaced temporarily during construction activities. By protecting erodible or unstable soils, bank restoration and erosion reduction would result in indirect, long-term, minor and moderate beneficial impacts to water quality and benthic habitat in wetlands, water bodies, and other sensitive riparian or coastal habitats where erosion is a problem beyond the project site. Natural processes (beginning after planting) would help stabilize banks and shorelines. Installation of biologs or geotextile materials also would stabilize areas of high erosion."

"Bank restoration and erosion reduction activities could cause indirect, long-term, minor impacts on cultural and historic resources and land use either localized to or beyond the project site. The land use would change from its presently managed or otherwise cultural/ historic condition to a vegetated, more natural condition at each proposed project site. Any cultural and historic resources nearby could be impacted by ground disturbance during construction or from the change in land use. These impacts would be mitigated through the consultation process described in Section 3.6. However, many projects of this type are in areas that historically functioned as wetlands but were altered or eroded away to their present condition, thereby previously eroding any historic or cultural resources that might exist at the site."

"Habitat restoration practices that are most likely to take place on stream banks, riparian habitat, and coastal or intertidal areas usually involve revegetation, placement of woody debris, stabilization of banks, removal of bulkheads or other artificial shoreline armor, and stormwater management practices. Revegetation usually results in minor disturbance of the surrounding habitat, which is quickly remedied by the revegetation of the area itself. However, the placement of woody debris and other wildlife habitat features, stabilization of banks, removal of bulkheads or other artificial shoreline armor, and stormwater management practices may require the use of heavy machinery. The use of heavy machinery can often cause damage to the surrounding riparian area such as clearing of existing vegetation, compaction, and disruption of the soil. This, in turn, may cause sedimentation in the adjacent stream, with turbidity plumes typically being short-term and quickly dispersed by the river current."

"In instances where native vegetation remains on the site, restoration activities may cause some incidental damage to the vegetation by trampling it. Recovery times of such incidental damage depend on the growth habit of native vegetation; a long growing season would therefore cause minimal impact. In the case of projects using heavy machinery to conduct the restoration work, potential impacts are related to compaction of the soils, leaking of petroleum products, and increased turbidity at the restoration site. All of these impacts would be ameliorated through the

use of BMPs. Although soil compaction has the potential for long-term impacts, BMPs would reduce the compaction so that plant roots and benthic infauna can inhabit the soil and create further improvements."

"This restoration activity will also have direct, short- and long-term, minor and moderate, adverse and beneficial impacts to land use and recreation because increases in recreational opportunity will likely occur in the project area and beyond in the larger river system in the long term; however, short-term use may be curtailed during construction activities. Increased fishing pressure may occur in the short and long term. Channel restoration activities are widely implemented through the use of volunteers and conservation corps groups and are a source of local employment and job training in many rural areas. As such, in-stream restoration activities can result in indirect short- and long-term, minor and moderate beneficial impacts to socioeconomics."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.5 Wetland Restoration and Shoreline Stabilization Techniques

The PEIS Section 4.5.2.11.2 states the following regarding the potential impacts of Wetland Restoration and Shoreline Stabilization Techniques:

"Potential impacts from wetland restoration activities described in Section 2.2.2.11—fringing marsh and shoreline restoration, sediment removal, and sediment/materials placement—generally consist of the more acute impacts caused by the use of heavy equipment on site followed by lasting benefits. Consequently, these techniques are grouped together in the analysis of impacts."

"Construction impacts from sediment removal, materials placement, and shoreline stabilization activities are similar, and would cause direct and indirect, short-term, localized, minor adverse impacts on geology and soils, water, living coastal and marine resources and EFH, and threatened and endangered species during the implementation phase of the projects."

"Potential impacts to air quality could include direct, short-term, minor adverse impacts to air quality during construction or other on-the-ground activities. These impacts include exhaust emissions from off-road construction equipment, on-road hauling, construction worker employee commuting vehicles, and fugitive dust emissions from paved roads and earthmoving activities. These impacts may extend beyond the project site."

"Impacts to living coastal and marine resources, EFH, and threatened and endangered species may include effects from handling, noise, turbidity, contaminants, changes to hydrology, and displacement (see Section 4.7 for more details). In the case of any activities using heavy machinery to conduct restoration work for marsh restoration activities, potential impacts are related to compaction of the soils, leaking petroleum products, and increased turbidity at the restoration site. Techniques such as the thin-layer deployment of dredged materials will have

fewer impacts than traditional deployment, as there is less material to cause soil compaction or vegetation smothering. Many of these impacts would be ameliorated through the use of BMPs. Although soil compaction has the potential for long-term impacts, BMPs would reduce the compaction so that plant roots and infauna can inhabit the soil and create further improvements. Several shoreline stabilization techniques have potential impacts related to placing plastic or metal into the environment. In the case of bagged shell, the plastic mesh bags remain immobile in the environment until oysters grow over and encapsulate the plastic. All rock or shell breakwaters would be designed with appropriate ingress and egress for fish, in consultation with regulatory agencies."

"These restoration activities may impact vegetation on the project site or nearby. Impacts to vegetation should be minimal, as the most frequently removed mature plants would not be native to the site or would be invasive species. For instance, shrub and tree species would be removed if the end goal is a habitat dominated by wetland obligate species. The removed plant species may not provide the same quality of habitat for fish as the goal habitat and consequently the overall impact of this removal is low. In instances where sediment and vegetation are not removed from the site, those working on the site may potentially trample existing vegetation or unintentionally introduce non-native species, but this would be kept to a minimum through the use of BMPs."

"Increased water turbidity and temporary decreases in water quality may result from sediment removal, materials placement, and shoreline stabilization activities, which may in turn impact living resources in the area. Behavior of species that use wetlands impacted by this restoration activity may be temporarily modified. Mitigation for potential impacts would focus on implementation of BMPs. All restoration actions occurring within or near shallow or intertidal habitat may displace managed or protected species through the increased activity and noise associated with restoration. These impacts are expected to be temporary and may have the side effect of removing fish from harm's way during construction. In most cases, fish return to restoration sites almost immediately or within a short time after construction (Bilkovik and Mitchell 2013). Direct, short-term, localized moderate impacts would be expected on benthic fauna and infauna smothered by sediment placement. Materials with contaminant concentrations consistent with published sediment quality guidelines and background levels rarely impact biota and will be considered non-significant."

"After construction, these projects would result in direct and indirect long-term or permanent, moderate to major beneficial impacts to geology and soils, water, living coastal and marine resources and EFH, and threatened and endangered species, and minor beneficial impacts related to socioeconomic resources as a result of increased tourism opportunities that could result from an improved resource."

"Sediment removal, materials placement, and shoreline stabilization activities would result in beneficial impacts by restoring or creating wetland and/or shallow-water habitats that provide areas for feeding and shelter for fish, as well as nutrient cycling and carbon sequestration and storage capacity. Changes in land use would be permanent if uplands were converted to wetlands. In general, increases in wetlands are beneficial impacts, due to the historic loss of wetland habitat."

"Minor adverse impacts to cultural and historic resources may occur during wetland restoration, when historic structures are present within a project site (e.g., staddles)."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.6 Implementation and Effectiveness Monitoring

The PEIS Section 4.5.1.2 states the following regarding the potential impacts of Implementation and Effectiveness Monitoring:

"*The environmental consequences of the initial implementation of restoration monitoring could cause direct and indirect, short-term, minor, localized, adverse impacts. Impacts to threatened and endangered species may include effects from handling, noise, turbidity, displacement, and mortality (see PEIS Section 4.7). These impacts would result from activities associated with in-water or on-site observation or experimentation, such as the use of equipment for sampling or monitoring of organisms. Although these adverse impacts may occur, the monitoring products would result in indirect, long-term, minor to major beneficial impacts that extend beyond the project site. The benefits would allow future restoration proposals to be planned with better information and implemented more effectively by using the most successful methods, materials, or equipment for achieving the goal of restoration*."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.7 Fish and Wildlife Monitoring

The PEIS Section 4.5.1.3 states the following regarding the potential impacts of Fish and Wildlife Monitoring:

"Fish and wildlife monitoring activities are related to monitoring the performance and progress of restoration projects relative to their established project goals. Because monitoring can allow for smarter decision-making, projects using this technique could cause indirect, long-term, minor to major beneficial impacts to geology and soils, water resources, living coastal and marine resources, and threatened and endangered species that may be localized or extend beyond the project site. The data gathered by trained individuals would be used to establish baseline information on species abundance and diversity and then to evaluate changes in these metrics through time…These data would then be used as a basis for future habitat management decisions and restoration actions to substantially benefit various wildlife species…In addition, indirect and direct, short-term, localized, minor to moderate adverse impacts to living coastal and marine resources and EFH, and threatened and endangered species may include effects from handling, noise, turbidity, displacement, and mortality (see Section 4.7 for more details).

Cultural and historic resources may be impacted if disturbed during monitoring activities. Projects with successful monitoring programs would likely be more successful than those without such programs because monitoring would allow problems and flaws to be identified early in the process and corrected. Newly established invasive species also would be identified quickly, contained, and eradicated before they become widely established. Monitoring programs would have direct and indirect, long-term, minor beneficial impacts on land use and socioeconomics that extend beyond any project site, because the information gathered and any involvement of local citizens in environmental projects would promote environmental stewardship, an understanding of living coastal and marine resources and environmental issues, and a sense of community pride."

"Despite the beneficial impacts expected from this activity, monitoring could cause adverse impacts. Direct, short-term, localized, minor adverse impacts are expected to geology and soils from the human presence and movement around the project site (i.e., from soil compaction). Direct, short-term, localized, minor adverse impacts are also expected to air quality and noise at the project site due to the presence of crew members (and in the case of electrofishing, the operation of gas- or battery-powered electrofishing equipment). Direct, short-term, localized, minor adverse impacts may occur to water quality because, depending on the water body's substrate, turbidity may increase from the movement of crew members throughout the project site. Potential impacts to air quality could include direct, short-term, minor adverse impacts to air quality during construction or other on-the-ground activities. These impacts include exhaust emissions from off-road construction equipment, boats, and employee commuting vehicles. These impacts may extend beyond the project site. Direct, short-term, localized, minor, adverse impacts would occur to land use and recreation because anglers or other individuals recreating at the project site may need to vacate or avoid the site in order to avoid interacting with monitoring activities. Adverse population level effects are not expected from monitoring activities (e.g., electrofishing) because the activity typically takes place over a relatively small area compared with the overall distribution of the population being monitored. Regardless of the level of mortality observed from a monitoring event, it is reasonable to expect that areas that may observe mortality would be rapidly recolonized by individuals from surrounding, connected waters (e.g., Berra and Gunning 1970; Smock 2006)."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.4.8 Conservation Transactions [Land Acquisitions]

The PEIS Section 4.5.3 states the following regarding the potential impacts of Conservation Transactions:

"Conservation transactions would cause indirect, long-term, moderate to major beneficial impacts to geology and soils, water, living coastal and marine resources and EFH, threatened and endangered species, cultural and historic resources, and socioeconomics. These impacts would result from new management of land and water resources and would prevent development or other degrading activities from taking place on the project site; acquisition and water rights

projects would be limited to those that would improve the environment and/or enhance human use values (e.g., recreation) following completion. In the case of transfer or purchase of credits developed through a conservation or restoration bank, typically by a nonfederal entity, the effects on the environment are independent of the Federal action, and no further environmental impacts would be expected."

"Beneficial impacts to geology and soils, water resources, living coastal and marine resources and EFH and threatened and endangered species may occur from such restoration activities due to improved access to coastal areas and habitats, the creation of buffer zones between sensitive resources, altered or managed timing of water withdrawals, and other factors that could impact such resources. Depending on the nature of the land acquisition or water transaction, land use overall could be directly and moderately benefitted over the long term, as fewer adverse environmental impacts occur at the project site. Recreational opportunities and land use practices would largely be improved as natural areas and ecosystems are preserved (e.g., through fee simple purchase of tracts of land or of water flows in rivers). Cultural and historic resources, if located on a protected parcel, would benefit from not being disturbed by development or other degrading activities that might otherwise occur."

The Trustees have determined that the restoration activities and impacts associated with the proposed action fall within the range of alternatives and scope of potential environmental impacts analyzed in the PEIS and do not have significant adverse impacts.

6.5 Evaluation of the No Action Alternative

The Trustees evaluated the impacts of the No Action Alternative on relevant resources (e.g., geology and soils, water, air, living coastal and marine resources and Essential Fish Habitat, threatened and endangered species, cultural and historic resources, land use and recreation, and socioeconomics*)*. As noted above, the No Action Alternative was a non-preferred alternative because it fails to compensate the public for losses associated with the CLTL Site. However, NEPA mandates that Federal agencies evaluate the environmental impacts of no action.

By definition, the No Action Alternative lacks physical interaction with the environment. Accordingly, the No Action Alternative would cause no direct impacts to any of the elements of the environment listed above. However, if the Trustees undertook no action, the environment would not benefit from the ecological uplift created by active restoration. Conversely, the type of active restoration with the proposed action would restore the resources and services that were injured by the CLTL Site. The No Action Alternative would have either no effect or minor to moderate indirect adverse effects on the environment.

6.6 Impacts Not Addressed in the PEIS - Environmental Justice

Riverine and coastal habitat restoration projects that include environmental justice are not directly addressed in the PEIS impacts analysis; therefore, the Trustees have provided additional NEPA analysis for potential impacts to Environmental Justice communities. The Trustees have determined that all proposed restoration activities would provide long-term or permanent

beneficial impacts to the overburdened communities described in Sections 6.2.3. The ecological uplift facilitated by the proposed restorations would assist in addressing the historic burdens placed upon these communities by proximity to Superfund Sites, effects from air and water pollutants, all in combination with socioeconomic burdens. The associated improvements in ecosystem services, including improved air quality, water quality, and flood resilience, along with and enhanced recreational and educational opportunities will serve these local communities. None of the alternatives are expected to adversely impact minority or low-income populations.

6.7 Cumulative Effects

The Restoration Alternatives would have no major adverse impacts on habitats, lands, or waterways in the watershed. The preferred alternatives could result in minor, short-term adverse impacts and both short- and long-term beneficial impacts to habitats and the natural resources they support. When considered in tandem with other past, present, and reasonably foreseeable future actions within the affected area, the preferred alternative is not anticipated to have adverse cumulative impacts. Direct and indirect adverse impacts are likely to be short-term and will occur primarily during and immediately after periods of active construction. The preferred alternatives are expected to result in long-term, beneficial cumulative impacts on the human environment since they may positively impact the areas land use, recreational use, and economic activity through habitat restoration, and improved public access, and recreational activities.

7. Conclusions

In conclusion, the Trustees are confident that the proposed restorations in this Draft Amendment will expand the restoration opportunities available to compensate the public for injuries and loss of natural resources due to the release of hazardous substances into areas at or near the Site.

The proposed actions can be implemented in compliance with all applicable Federal, State, and local permits and approvals, and associated state water quality certification. All permits and environmental compliance would be obtained and satisfied prior to project implementation, as discussed in section 8 below.

8. Compliance with Other Laws and Regulations

Individual permits may need to be issued for the proposed project under Section 404 of the Clean Water Act and in accordance with Section 10 of the Rivers and Harbors Act. With the consultation and coordination for that review once the proposed project is designed, the Trustees will ensure consistency with the Coastal Zone Management Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act, the Magnuson-Stevens Act for Essential Fish Habitat, the Marine Mammal Protection Act, and the National Historic Preservation Act.

The Trustees will ensure compliance with all applicable state and local laws and other applicable Federal laws and regulations relevant to the State of New Jersey. All projects that receive funding will be responsible for obtaining necessary permits and complying with relevant statutes, regulations, and policies.

9. Request for Information

Requests for further information about this proposed Amendment to the OU1 and OU3 Final Restoration Plans may be directed to:

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