

DRAFT AMENDMENT TO THE FINAL RESTORATION PLAN FOR THE ARMY CREEK SUPERFUND SITE



April 2023

**National Oceanic and Atmospheric Administration
U.S. Fish and Wildlife Service
State of Delaware – Department of Natural Resources and Environmental Control**



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1. Introduction

1.1. The Army Creek Superfund Site

The Army Creek Superfund Site is located in New Castle County, Delaware (Figure 1). The 60-acre site was a former sand and gravel pit which was operated during the 1960s by New Castle County as a landfill for municipal and industrial wastes. Contaminants leaching from the landfill were discovered in nearby private drinking water wells in 1972. In 1973 the County installed a recovery well system which effectively prevented the contaminated groundwater from migrating to nearby public water supply wells. This removed the immediate threat to human health presented by the site. However, the recovered groundwater was discharged, without treatment, directly into Army Creek which forms the lower limits of the landfill area (Figure 1).

Army Creek, a tributary of the Delaware River, is about 3.9 miles long. Its drainage is approximately 6.7 square miles. The upper 2.9 miles of the creek, including a three-acre pond, contains freshwater. The salinity of the lower one mile of the creek, including a 225-acre emergent wetland, ranges from fresh to slightly oligohaline. A tidegate at the mouth of Army Creek limits exchange of water and biota from the Delaware River. The most recent Delaware Department of Transportation (DELDOT) inspection available publicly shows the road, bridge, culvert structures in good condition and functional, with a minor buildup of sedimentation in the area, with the current tidegate functioning as designed, allowing for unrestricted downstream flow only.

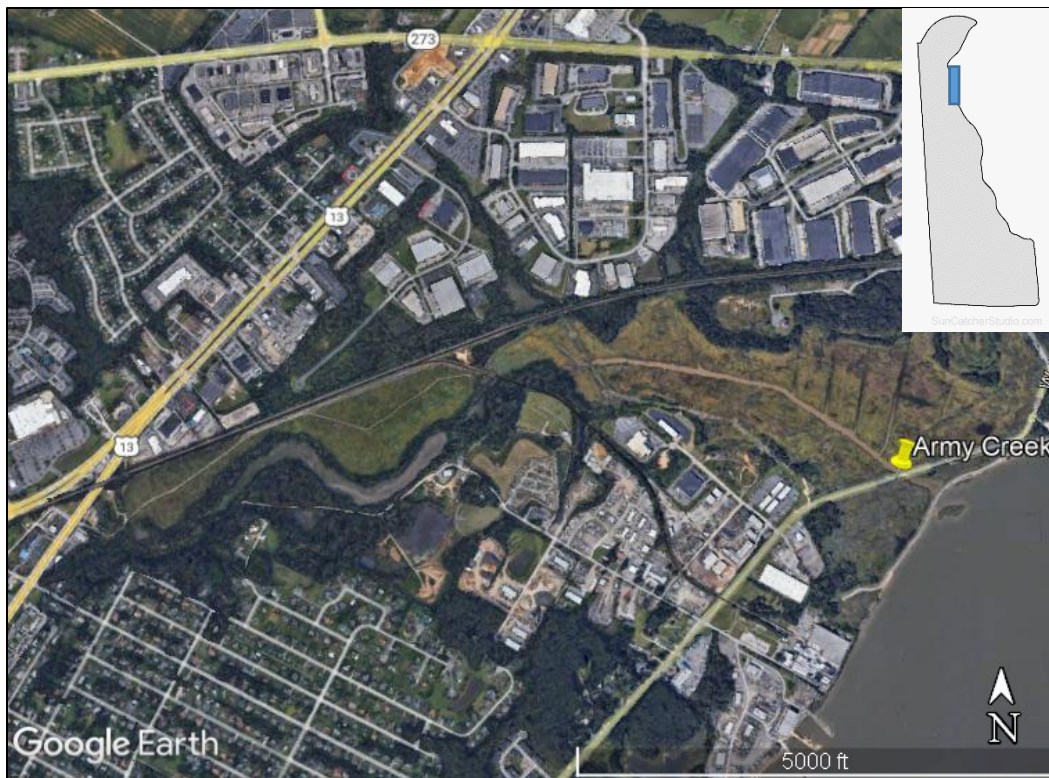


Figure 1. Army Creek watershed area, including location of originally proposed tidegate modification.

The landfill was placed on the National Priorities List in 1983. A remedial investigation/feasibility study (RI/FS) was completed in 1985, and a Record of Decision (ROD) was issued by the U.S. Environmental Protection Agency (EPA) in 1986. The remedy selected in the ROD consisted of covering the landfill with an impermeable membrane/sol cap system to prevent precipitation from leaching through the waste and into the groundwater, plus continued operation of the recovery well system. A second RI/FS and ROD in 1989 determined that treatment was required for the recovery well discharges primarily because iron concentrations were greater than the criterion for the protection of aquatic life. The landfill cap was completed in December 1993, and the water treatment facility was completed in January 1994.

In February 1990, representatives of EPA, the State of Delaware and the settling potentially responsible parties (PRPs) reached an agreement with regard to the PRPs liability for response costs at the Army Creek Superfund Site. The PRPs requested that the Trustees grant a covenant not to sue for natural resource damages associated with the Army Creek site. At that time the Trustees entered into negotiations. Based upon a review of the litigation risks associated with the Trustees' claims, EPA's proposed remedial activities at the Army Creek site, a review of the resulting past and residual injuries associated with these resources and a review of the loss of these resources, the Trustees agreed to a monetary settlement. The proposal provided for on-site restoration actions, off-site habitat development and a monetary settlement for injuries associated with groundwater as reasonable compensation for losses to public trust resources.

On September 18, 1990, 18 PRPs entered into a Consent Decree to implement clean-up actions and reimburse the EPA for past response costs. The Consent Decree also required the PRPs to deposit \$800,000 into a trust fund of which \$200,000 was to be used solely by the State of Delaware for groundwater protection and restoration and \$600,000 was to be used for habitat restoration by the Trustees. The original Restoration Plan (<https://www.gc.noaa.gov/gc-rp/rp-army1.pdf>) for the Army Creek Superfund Site (RP) was finalized in 1995 and addressed only habitat restoration; this Draft Amendment to the 1995 Final RP (Draft Amendment) also only addresses habitat restoration.

As noted above, a tidegate at the mouth of Army Creek limits exchanges of water and biota between the Delaware River and Army Creek. The tidegate was originally replaced in 1986 to prevent flooding of Route 9 and lands adjacent to the marsh. The tidegate consists of five one-way flap gates, each 48 inches in diameter, that prohibit tidal inflow and allow outflow of accumulated upland runoff when hydraulic head, in relation to the tide, is sufficient to open the flap gates. As the Trustees completed initial planning and analysis in the Final Restoration Plan to implement the selected restoration project (replacement of the non-functional 1986 tidegate) at Army Creek, it became apparent that removal of the tidegate could not be accomplished without significant risk of regular flooding to Route 9, which would leave this highly relied upon transit corridor impassable, and potentially damage and undermine it in the long term.

The Trustees chose to wait and attempt to coordinate with a potential future elevation of the Route 9 roadway, but this never occurred. In recent coordination with state

representatives, it is not in the current 20-year plan of the state to implement the Route 9 elevation in the future. Since an extended period of time has passed, and the original benefits planned for project implementation at Army Creek Marsh cannot be realized without full removal of the existing tidegate, the Trustees have elected to pursue an alternative restoration project—this alternative is described and evaluated in this Draft Amendment.

1.2. Natural Resource Trustees

The natural resources trustees for the Army Creek Superfund Site include the following federal and state agencies: the National Oceanic and Atmospheric Administration (NOAA) on behalf of the U. S. Department of Commerce, the United States Fish and Wildlife Service (USFWS) on behalf of the U.S. Department of the Interior (DOI), and the Delaware Department of Natural Resources and Environmental Control (DNREC) on behalf of the State of Delaware (collectively, the Trustees). The goal of the Trustees' natural resource damage assessment (NRDA or Assessment) was to determine the nature and extent of injuries to natural resources and to quantify the resulting resource and service losses. Once this Assessment was undertaken, the Trustees examined restoration options in the Restoration Plan.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (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.

The natural resources of concern associated with the Army Creek Superfund Site, which were identified by the Trustees according to their respective legal authorities, include migratory and other bird species; anadromous and other fish species; the upland, aquatic and wetland habitats utilized by those species (Army Creek, pond and marsh and the existing landfill habitat); and groundwater.

1.3. Army Creek Superfund Site Settlement and Restoration Plan

To comply with the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, the Trustees prepared an Environmental Assessment (EA) for the proposed restoration in the Final Restoration Plan (“1995 Final Restoration Plan”) (Appendix A) and that EA is incorporated herein by reference. In the EA, the Trustees identified and considered the following three alternatives: (1) taking No Action, (2) restoration of natural resources at one or more sites outside the Army Creek watershed which contain resources equivalent to those injured or destroyed at the site, and (3) rehabilitation and replacement of wetland and upland habitats in the watershed of Army Creek, including the headwaters of Army Creek, Army Creek Pond adjacent to the Army Creek Superfund Site, and Lower Army Creek and marsh. The recommended alternative was to rehabilitate Lower Army Creek and marsh by increasing the quality and quantity of wetland and upland habitat within the Army Creek watershed. Specific actions for this proposal were further identified in the Restoration Plan, which was subject to public review and

comment. NOAA signed a Finding of No Significant Impact (FONSI) for the proposed restoration on September 8, 1995.

As discussed in the 1995 Final Restoration Plan, Army Creek Marsh was to be enhanced by restoring tidal influence and migratory fish access to Army Creek habitats upstream of Route 9. The action would have restored the role of the marsh as a nursery for migratory fish, improved waterbird habitat, and improved biological control of mosquitoes in the marsh. The plan included replacement of the existing tidegate just downstream of the Route 9 bridge over Army Creek, and a vegetation management plan for elimination or control of *Phragmites* spp. in Army Creek Marsh.

2. Purpose and Need for Action

The purpose of the restoration proposed in this Draft Amendment, as in the 1995 Final Restoration Plan, is to make the environment and the public whole for injuries resulting from the release, and resulting impacts, by implementing restoration actions that restore and compensate for injured natural resources and services. The ecological restoration that the Trustees selected in the original RP (the 1995 Final RP) was not able to be implemented, as described above.

Because the Trustees for the Army Creek Superfund Site have determined that the restoration alternative selected in the 1995 Final RP is not feasible given the current infrastructure impacts that would result, the Trustees must consider other options for compensating the public for losses due to the release. The Trustees propose to amend the 1995 Final RP, replacing the proposed restoration of degraded marshes at Army Creek with a suitable and comparable tidal reconnection and wetlands restoration alternative.

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 1995 Final Restoration Plan is being released and circulated for public comment by the Trustees, electronically and through a NOAA web-based posting (<https://darrp.noaa.gov/>), for a 45-day comment period. 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 1995 Final Restoration Plan (Final Amendment).

4. Administrative Record

This document will be retained in the formal administrative record for the case, which currently resides with the NOAA Restoration Center, at National Oceanic and Atmospheric Administration – National Marine Fisheries Service, 200 Harry S. Truman Parkway, Annapolis, Maryland 21401, and can also be located within the online administrative record at (<https://darrp.noaa.gov/>).

5. Alternatives Considered

5.1. Criteria for Identifying and Evaluating Additional Potential Restoration Projects

In the 1995 Final RP, the Trustees sought to use damages recovered for injuries caused by the contamination from the site for restoration within the Army Creek watershed including: restoring tidal influence to Army Creek Marsh; managing tidal exchange to provide optimum marsh water levels that promote use of Army Creek Marsh by migratory resident species of fish and waterbirds; acquiring easements or purchasing land adjacent to the site, within or along the edge of Army Creek Marsh, or within the Army Creek watershed along Delaware Bay; and providing a more diverse marsh plant community that offers food, shelter, and resting habitats for fish and wildlife.

In seeking to identify and evaluate alternatives in this Draft Amendment, the trustees prioritized identifying similar types of projects with comparable benefits (habitat type and resource goals) to the original project not implemented, to the extent practicable.

In the EA completed for the Army Creek site, the Trustees noted at the time (in section 5.1.2 of the EA) that while on-site restoration was preferred, restoration actions outside the watershed would also provide enhancement of existing wildlife management or natural areas. The effects would be similar to those for restoration actions within the watershed (Section 5.1.3 of the EA), but would occur in a different location and therefore not directly benefit the Army Creek watershed.

5.2. Alternatives Considered but Eliminated

Army Creek Wetlands – Wetlands Restoration

The Trustees re-evaluated the original preferred alternative to remove the tidegate at the mouth of Army Creek which limits exchanges of water and biota between the Delaware River and Army Creek. The tidegate that was replaced in 1986 to prevent flooding of Route 9 is currently non-functional, but as noted earlier, removal of the tidegate cannot be accomplished without significant risk of regular flooding to Route 9, which would leave this highly relied upon transit corridor impassable, and potentially damage and undermine it in the long run. Additionally, there are no current plans to elevate the existing Route 9 roadway, so this option remains infeasible without significant unacceptable impacts.

Any additional restoration alternatives within the Army Creek site that would provide similar benefits as the 1995 proposal would require tidal flow into the system, presenting the same risk of flooding damage, and as a result were not considered by the Trustees for the RP Amendment. As a result, all of the alternatives considered by the RP Amendment were sited outside the watershed.

Fort Dupont Hybrid Living Shoreline Project

Conceptual plans exist for a proposed shoreline project along the Delaware Bay proper at Fort DuPont State Park in Delaware City just north of Reedy Point. This high energy (due to main bay exposure, long fetch, and high tide range) shoreline area of the park has undergone some restoration work in the past, with plans to build a dike and living shoreline in addition to the revetment that is already in place.

The Trustees considered restoration at this site, but determined there were significant risks to maintaining long-term habitat gains from a restoration project. Primary concerns centered on future sea-level rise impacting any nearshore constructed wetlands, in addition to the high wave energy and high erosion rates already present. The need to protect culturally important park components would likely require a significant berm landward of any shoreline project, limiting the short and long-term viability of the site to allow for migration and adaptation to sea level rise. Additionally, given the high energy and likely living shoreline costs well in excess of \$1,000 per linear foot, the Trustees were not confident that a project could be scaled to provide protection for a significant reach of the park site, given available settlement funds.

Grassdale (part of Fort DuPont State Park)

Grassdale is the wetland component that makes up the western edge of the Fort DuPont site along the Chesapeake and Delaware Canal in Delaware City. The site of a former horse track facility, the area has been proposed for comprehensive wetlands restoration over the years, including extensive channel restoration, site elevation re-contouring, and wetland habitat improvements.

The site does have vulnerable tidal wetlands subject to periodic and increasing flooding, and proposed channeling and other site restoration could provide an ecological uplift to the site. At this time, however, there exists no comprehensive plan for the site, and restoration costs are anticipated to greatly exceed available funds from the Army Creek settlement. Additionally, during the alternatives analysis, it was learned that this portion of the park also might be considered for future privatization and/or development as a campground, which could require additional future actions such as covenants and restrictions so as to protect any Trustee investment made on site. Otherwise, the restoration project and associated benefits would be at risk of being reduced or eliminated.

Brandywine Dams

There are a number of dams along Brandywine Creek in Wilmington and further upstream that have been considered for removal or modification in order to attempt to restore historical runs of anadromous fish to the river. The removals or provisions of fish passage would provide access to historical riverine habitat for American shad, blueback herring, and alewives, along with white perch, American eel and resident fish. Numerous

studies have estimated the anticipated increase in fish abundance that could be expected from incremental improvements in passage and access along the creek.

Dam 1 has been recently removed, and studies and plans are underway (with a commitment in place) to facilitate passage at Dam 2. Above Dam #2, there are an additional 9 dams over the next 4.3 miles, but the next dam above (Dam #3 located about 0.5 miles upstream) is already breached. Dam #3 has unclear ownership, and is 3-feet high by 135-feet long. Dam #4, located an additional 0.25 miles above that, is 4-feet high and 150-feet long, and owned by the state. It has a fish ladder that was installed in the 1970s, but is currently non-functional and would need study and refurbishment to potentially pass fish. Dams further up the creek will have additional challenges to address since they also provide historic context to the river and local area, and some are federally listed historic properties.

Access to habitat above Dam #2 would open up 0.7 miles of river access in the Brandywine, and based on fish production estimates would have a shad production potential of about 300 fish in the reach immediately above Dam #2, and potentially up to a total of 1,000 fish with the addition of the accessible reach above the breached Dam #3.

The Trustees analysis concluded that while fish habitat gains in Brandywine Creek are an important effort, the habitat type impacted at the Army Creek site was more directly associated with tidal wetlands versus riverine habitat access.

Christina River Living Shoreline

A living shoreline demonstration project has been proposed at the site of the Kalmar Nyckel Foundation, located about 2 miles up from the mouth of the Christina River in Wilmington on the north side of the river. The state has previously obtained a proposal to do design and permitting for the site. The site is city owned, and contains about 200 feet of frontage that could be initially restored. Additional parcels or easements on adjacent parcels may be available. Fort Christina, located upriver, is a National Park Service site.

While the habitat that would be provided by a potential living shoreline project would generally be consistent with that injured at the Army Creek site, the relatively small scale of the site, the highly urbanized location, and the uncertainty of the ability to aggregate the project with adjacent sites under federal control for historical protection led the Trustees to conclude that this proposed project would not provide the desired scale of ecological gains.

5.3. Proposed Alternative

Pickering Beach Marsh Tidal Wetlands Restoration Project

The primary goal of this project is to restore hydrology to approximately 175 acres of wetlands north of Pickering Beach Road, near Dover, Delaware (see Figure 2). Currently

this area lacks daily tidal exchange. Historical inlets to the Delaware Bay no longer exist on the eastern portion of the marsh, while the remainder of the marsh is bound by existing roads and an impoundment dike at the north, west, and southern boundaries of the marsh. The proposed project involves the restoration of a previously existing north to south ditch of approximately 1.3 miles running from the Little Creek Main Impoundment at the north to the existing Lewis Ditch at the south, by excavating the channel to widen and deepen it and enhance tidal flow and volume. The crossing of Pickering Beach Road would involve replacement of existing undersized culverts with appropriately sized culverts at the correct elevation to maximize tidal flow.

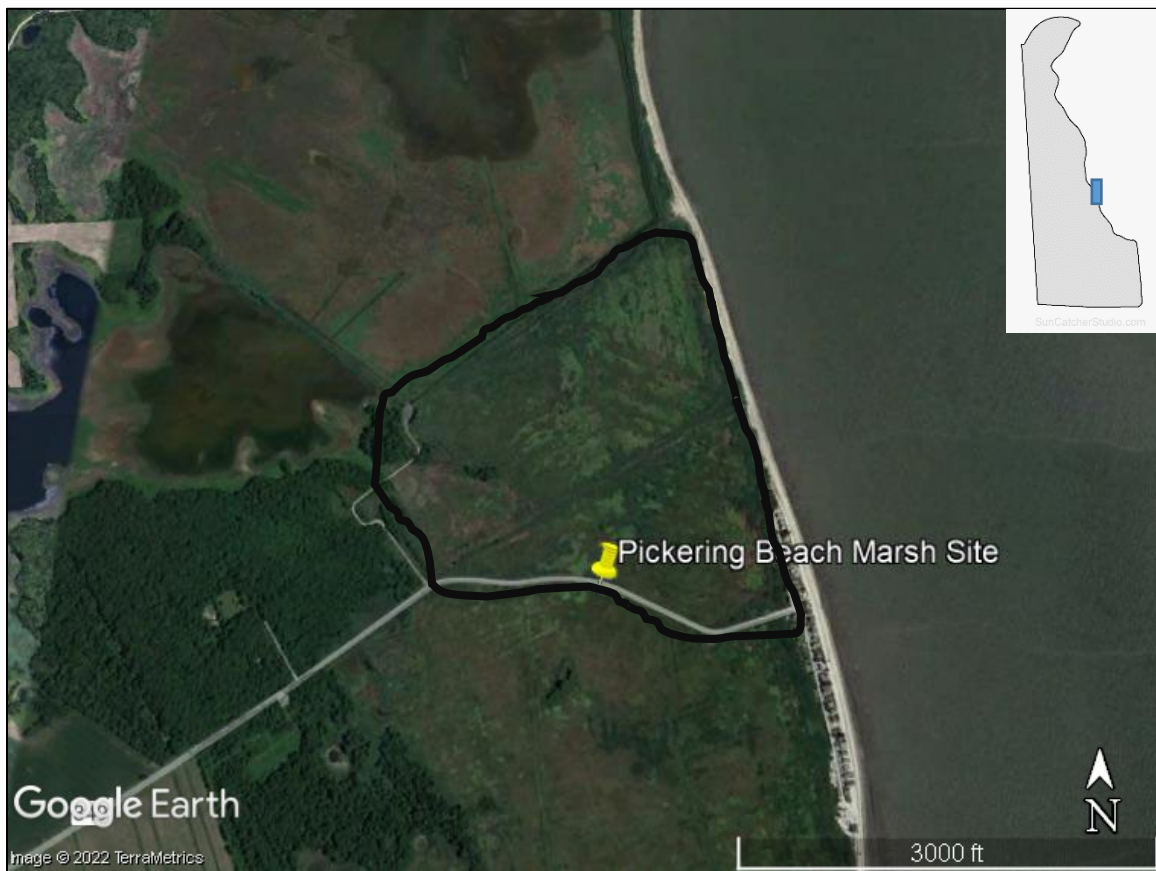


Figure 2. Pickering Beach Marsh proposed restoration site. Site pin shows the crossing at Pickering Beach Road, and the outlined area shows the general area that will have tidal hydrology restored.

A second component of this project would involve the replacement of a non-functioning water control structure located along the southern dike of the Little Creek Main Impoundment adjacent to the Pickering Marsh. Due to limited flow through the Pickering Marsh, this secondary water control structure on the impoundment has not been used and is currently in need of replacement. A functioning structure at this location would allow for tidal flow through the impoundment during portions of the year that the marsh would be used by estuarine fish, serving as a benefit to fisheries in addition to

improving the health of the impounded wetland habitat to the benefit of an abundance of wildlife utilizing the area. The impoundment would be seasonally managed for winter waterfowl use consistent with state operations and management goals.

The proposed project will provide and restore wetland habitat (tidal wetland and channel restoration) and restore tidal exchange to those wetlands, which were desired outcomes of the initial NRDA restoration and settlement for the Army Creek Superfund Site. The proposed project (175 acres) is also nearly the size of the originally envisioned scale of the Army Creek wetlands restoration (200 acres).

The Trustees estimate that the project will cost approximately \$900,000. The funds received for Army Creek habitat restoration (originally \$600,000, but with interest now total \$930,000) are sufficient to cover the cost of the proposed project, including survey, design, permitting, construction, and monitoring. A detailed cost estimate has not yet been developed, but excess funds are not anticipated after the proposed project has been implemented.

5.4. No Action/Natural Recovery Alternative

NEPA requires the Trustees to consider a “no action” alternative (40 C.F.R. §1502.14(d)), and the CERCLA regulations require consideration of the natural recovery option (43 C.F.R. §11.82(c)(2)). These alternative options are equivalent. Under this alternative, the Trustees would take no direct action to restore injured natural resources or compensate for lost services pending environmental recovery. Instead, the Trustees would rely on natural processes for recovery of the injured natural resources. While natural recovery would occur over varying time scales for the injured resources, the interim losses suffered would not be compensated under the no action alternative.

The principal advantages of this approach are the ease of implementation and low cost. This approach relies on the capacity of ecosystems to “self-heal”. CERCLA, however, clearly establishes Trustee responsibility to seek compensation for interim losses pending recovery of the natural resources. This responsibility cannot be addressed through a no action alternative. While the Trustees have determined that natural recovery is appropriate as primary restoration for injuries resulting from this incident, the no action alternative is rejected for compensatory restoration. Technically feasible and cost-effective alternatives exist to compensate for these losses.

The no action/natural recovery alternative would not result in impacts to the physical, biological, and cultural/human use environment since no restoration actions would be undertaken. However, the benefits from hydrologic and wetland restoration would not be fully achieved and the public would not be fully compensated for these losses resulting from the release of contaminants.

5.5. Preferred Alternative

After considering multiple alternatives, the Trustees propose to select the Pickering

Beach Marsh Tidal Wetland Restoration project as the preferred alternative to restore for natural resource injury of the type associated with the Army Creek Superfund Site. The Pickering project would provide comparable benefits to the unimplemented original restoration project proposed for the Army Creek site in the 1995 Final Restoration Plan. The trustees recognize that while the proposed Pickering Beach Marsh Tidal Wetland Restoration project does not have a direct spatial nexus to the Army Creek Superfund Site, the proposed action will provide the same types of habitat restoration that were envisioned for the Army Creek Marsh restoration project (e.g., tidal wetland and channel restoration; and restoring tidal influence and managing tidal exchange) and will restore the same resource types that were injured at the site (migratory birds, anadromous and other fish, and the aquatic and wetland habitat utilized by those species). For these reasons, the Pickering project is also generally consistent with the alternatives identification and evaluation criteria described in section 5 above and in the Final RP.

The proposed habitat restoration at the Pickering Beach Marsh Tidal Wetlands Restoration project meets the restoration goal of restoring the type of lost natural resources impacted by contaminant releases from the Army Creek Superfund Site and the Trustees propose it as the preferred restoration alternative.

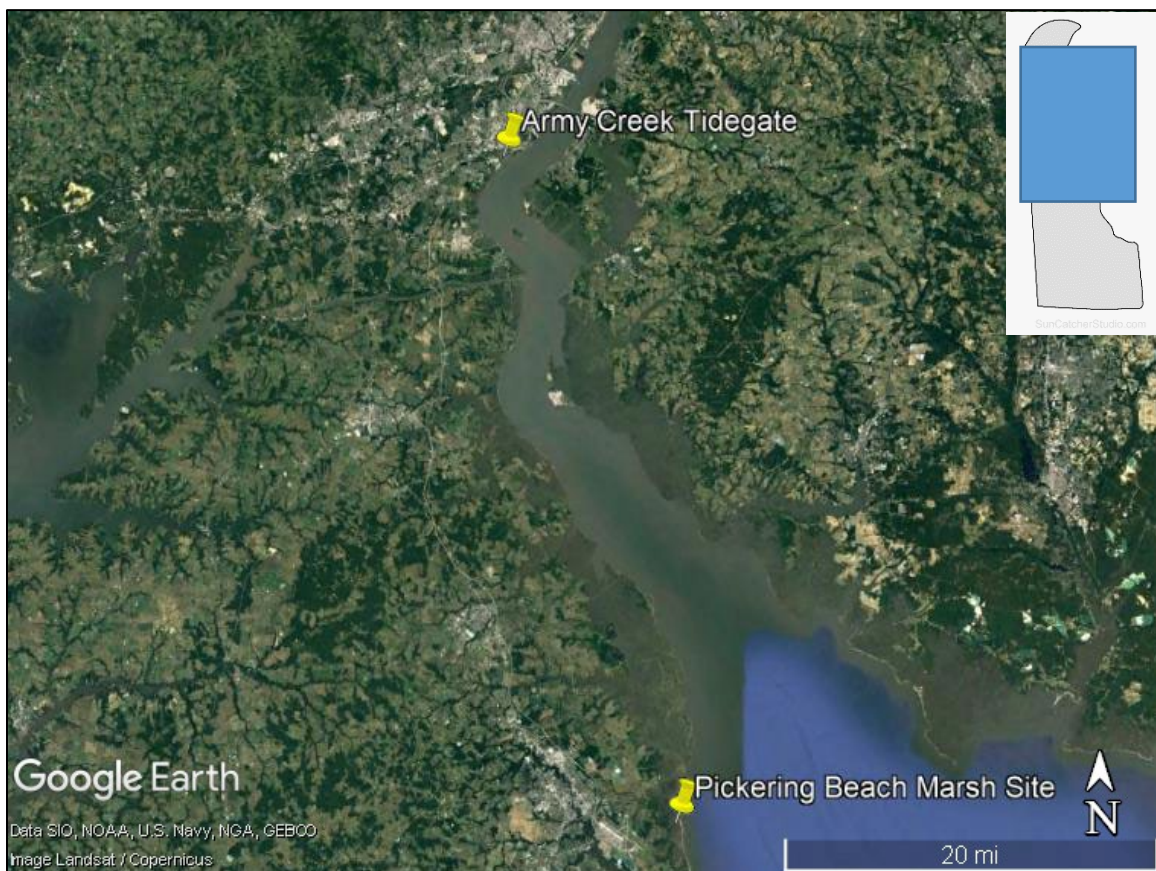


Figure 3. Location of originally proposed Army Creek tidegate site for restoration and now proposed Pickering Beach Marsh restoration site. Distance between two sites is approximately 36 miles.

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 the National Environmental Policy Act, (NEPA), 42 U.S.C. § 4321 *et seq.*, and the regulations guiding its implementation (40 C.F.R. 1500 *et seq.*). The original Army Creek Superfund Site Final RP included an integrated EA that analyzed the potential environmental impacts of the Army Creek Marsh project. 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 the Pickering Beach Marsh Tidal Wetland Restoration project. 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. NOAA 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. For this Draft Amendment, the federal trustees propose to satisfy their NEPA obligations by applying the impacts analysis and conclusions drawn in another, previously published programmatic NEPA document—NOAA’s Restoration Center Programmatic EIS (RC PEIS). 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 NOAA Restoration Center Programmatic EIS

After decades of experience evaluating and implementing environmental restoration projects, NOAA’s Restoration Center (RC) has determined that many of its efforts involve similar types of activities with similar environmental impacts. To increase efficiency in conducting future NEPA analyses for a large suite of habitat restoration actions, the RC developed the “Programmatic Environmental Impact Statement for

habitat restoration activities implemented throughout the coastal United States” (RC PEIS) in 2015. After a public comment period, NOAA’s Record of Decision was signed on July 20, 2015. USFWS documented their adoption of the RC PEIS with a Record of Decision, dated August 20, 2019 (84 Federal Register 45515). The RC PEIS is available at the following link: <https://www.fisheries.noaa.gov/resource/document/restoration-center-programmatic-environmental-impact-statement>

The RC PEIS provides a program-level environmental analysis of NOAA’s habitat restoration activities throughout the coastal and marine environment of the United States. Specifically, it evaluates typical impacts related to a large suite of projects undertaken frequently by the RC, including, but not limited to: Coral Reef Restoration; Debris Removal; Beach and Dune Restoration; Signage and Access Management; Fish Passage; Fish, Wildlife, and Vegetation Management; Levee and Culvert Removal, Modification, and Set-Back; Shellfish Reef Restoration; Subtidal Planting; Wetland Restoration; Freshwater Stream Restoration; and Conservation Transactions. These analyses may be incorporated by reference in subsequent NEPA documents, where applicable. For example, a site-specific NEPA document may evaluate a restoration project where all potential impacts were addressed in the RC PEIS. In that instance, the site-specific NEPA document would, in effect, incorporate by reference the full impacts analysis from the RC PEIS. In those cases where the RC PEIS determined none of the potential impacts would be significant, the site-specific NEPA document could incorporate that conclusion by reference as well. In short, no further NEPA analysis may be necessary so long as the proposed activity is within the range of alternatives and scope of potential environmental consequences analyzed in the RC PEIS and would not cause significant adverse impacts. Conversely, if the site-specific restoration activity is not within the scope of alternatives or environmental consequences considered in the RC PEIS, it will require additional analysis through preparation of a new NEPA document.

For this Draft Amendment, the Trustees have made the preliminary determination that the RC PEIS fully covers the scope of the proposed action and all environmental impacts, and a separate NEPA analysis and decision document is not needed. This determination has been documented in sections 6.4 - 6.8 below, and in a draft NEPA “Inclusion Analysis” (Appendix).

The environmental impacts from the types of restoration actions proposed in this Draft Amendment have been analyzed in the RC PEIS, specifically in section 4.5.2 (Riverine and Coastal Habitat Restoration). Those general analyses are incorporated here by reference and are summarized in the draft NEPA Inclusion Analysis (Appendix), as discussed in section 6.5 below.

6.3 Affected Environment

This section provides a general description of the affected environment, and related resources, as they relate to the geographic area that may be affected by the restoration alternatives considered in this Draft Amendment. A detailed description of the natural

resources and socioeconomics of New Castle County is provided in the EA (section 4.0 Affected Environment), and that information is incorporated here by reference.

While coastal habitats are dynamic and highly variable environments, they do share certain qualities that are somewhat universal. This Draft Amendment incorporates by reference and briefly summarizes the affected environment description of tidal wetlands and river channels in the RC PEIS (section 3.1.1 “Wetlands”; section 3.1.1.1 “Tidal Wetlands”; section 3.1.3 “Stream and River Channels”).

The Trustees have made the determination that the RC PEIS contains an applicable description of the affected environment generally associated with the restoration project types described in this Draft Amendment.

Wetlands

Wetlands provide numerous beneficial ecological functions, including protection of shorelines from waves and storm surges, erosion control and buffering, carbon sequestration and storage, water storage, maintenance of water quality, removal of sediments, groundwater recharge, nutrient and pollution filtering, spawning and nursing areas for many fish species, and food and habitat for numerous species of aquatic and terrestrial plants and animals. Wetlands are among the most productive ecosystems in the world, supporting thousands of species of plants, animals, shellfish, finfish, birds, invertebrates, and microbes (NMFS 2004). Wetlands also provide important recreational and economic benefits for humans, such as opportunities for boating, fishing, hiking, waterfowl hunting, nature observation, and photography, among many others.

Wetland resources are found throughout the area potentially affected by NOAA-supported projects, including all regions and many areas along coastlines, rivers, streams, estuaries, and other water bodies or receiving areas. A wide variety of wetlands occur in the potentially affected area covered by the RC PEIS, including tidal and nontidal wetlands.

Tidal Wetlands

Tidal wetlands include salt, brackish, and fresh tidal marshes that are transitional habitats between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water tidally or seasonally (Thayer et al. 2003). Marshes occur on all coasts of the United States, in every region under NOAA jurisdiction. Most marine fish depend on the resources of tidal wetlands during some part of the life cycle. Marsh ecosystems, like all wetlands, are a function of hydrology, soil, and biota. Salt marshes exist on the transition zone between the land and the sea in protected low-energy areas such as estuaries, lagoons, bays, and river mouths (Copeland 1998). Tidal cycles allow salty and brackish water to inundate and drain the salt marsh, circulating organic and inorganic nutrients throughout the marsh. The marshes are strongly influenced by tidal flushing and stream flow, which affect the inundation and salinity regimes of salt marsh soils. In areas with enough freshwater

input, salt marshes transition into brackish and freshwater marshes (Copeland 1998). Sand and mudflats occur throughout the tidal spectrum, whereas salt marsh vegetation develops where the soils are more exposed to the air than inundated by tides, usually above mean sea level.

Salt marshes are of paramount ecological importance because they 1) export vital nutrients to adjacent waters, 2) improve water quality through the removal and recycling of inorganic nutrients, 3) absorb wave energy from storms and act as a water reservoir to reduce damage further inland, and 4) serve an important role in nitrogen and sulfur cycling (Mitsch and Gosselink 1993) and in carbon sequestration and storage (McLeod et al. 2011).

Sand and mudflats occur throughout the tidal spectrum, whereas salt marsh vegetation develops where the soils are more exposed to the air than inundated by tides, usually above mean sea level. Salt marshes provide important habitat for invertebrates (such as crabs and bivalves) and fishes. Vital nutrient exchange takes place in salt marshes, as the detritus and algae in the marshes are consumed and nutrients excreted by birds, fish, and shellfish are recycled by the flora (Zedler 1992). Salt marshes, along with mangroves and seagrasses, are very productive ecosystems that also store and sequester substantial amounts of carbon belowground in soils at very high rates.

Brackish marshes are found in embayments and tidally influenced rivers where marine water is diluted with freshwater. Brackish water typically has a salinity of 0.5 to 35 parts per thousand; the salt content of soil in brackish marshes ranges from 0.5 to 18 parts per thousand. Species composition changes with salinity and water content. Fresh tidal marshes are found in areas where the tide rises and falls but the waters have no detectable salt content. Fresh tidal marshes feature the greatest diversity of tidal wetlands and support a larger number of plants than salt and brackish marshes.

Stream and River Channels

Tidal and nontidal stream and river systems are located in every region of the U.S. where NOAA and its co-trustees implement restoration. Many rivers and streams along the coast are tidal, with the effects of ocean tides extending upstream. The channel of a stream or river is the portion of the cross section that is usually submerged and totally aquatic. Channel substrates may be composed of various materials, including cobbles, boulders, sand, clay, and silt. Portions of a river channel often contain biological elements such as oyster reefs or submerged aquatic vegetation beds that help shape or define the channel.

Stream and river channels are critical to the viability of living coastal and marine resources. In addition to providing freshwater, rivers and streams transport nutrients and provide habitat for thousands of aquatic and terrestrial species, including birds, shellfish, finfish, amphibians, reptiles, mammals, plants, and invertebrates. Vegetation that grows along the banks of rivers and streams stabilizes the banks, shades the water, and provides cover and food for animals and nutrients for the ecosystem (e.g., from fallen leaves).

The integrity of stream and river channels is important to the viability of not only the streams and rivers themselves, but also to the estuaries, oceans, marshes, and wetlands connected to them. Processes such as accelerated channel erosion, pollution, diking, damming, channel alteration, scouring, and dumping can drastically affect the rivers and streams and their receiving waters by causing accelerated sedimentation, and alteration of temperature and water quality, among other factors.

6.4. Evaluation of Preferred Alternative Relative to the RC PEIS

As discussed above in section 5.5, the preferred alternative is comprised of tidal wetland habitat restoration within the larger Pickering Beach Marsh site, located in Little Creek, Delaware and draining into the Delaware Bay (Figure 2). Section 2.2.2 of the RC PEIS addresses “Riverine and Coastal Habitat Restoration” alternatives, including the types of restoration activities proposed in this Draft Amendment. Specifically, the RC PEIS describes the actions associated with tidal channel restoration in section 2.2.2.5.1 (“Channel Restoration”) of that document. The RC PEIS also describes tidal wetland restoration actions associated with replacement of culverts and water control structures for the purposes of enhancing or restoring hydrologic connections in tidal or riverine systems (section 2.2.2.11.1 “Levee and Culvert Repair, Modification, and Set-Back”).

The Trustees have determined that the project activities that comprise the preferred alternative described in this Draft Amendment fall within the scope of the “Riverine and Coastal Habitat” alternatives considered in the RC PEIS. Further, the restoration activities associated with the preferred alternative described in this Draft Amendment are fully described in the appended draft NEPA Inclusion Analysis under “Project Description/Scope of Activities.”

6.5. Impacts Analyzed for Preferred Alternative

The RC PEIS impacts analysis includes a description of the impacts associated with the types of restoration activities proposed in this Draft Amendment. That information can be found in section 4.0 of the RC PEIS (“Environmental Consequences”; also see Table 11 of the RC PEIS). The environmental consequences from activities related to tidal wetland and channel restoration are described in sections 4.5.2 (“Riverine and Coastal Habitat Restoration”) of the RC PEIS, and more specifically, in sections 4.5.2.5.1 (“Channel Restoration”) and 4.5.2.11.1 (“Levee and Culvert Removal, Modification, and Set-Back”). Also, see Tables 23 and 33 of the RC PEIS for a summary of these impacts. Direct, indirect, and cumulative impacts to relevant resources (e.g., geology and soils, water resources, living coastal and marine resources and EFH, threatened and endangered species, cultural and historic resources, land use and recreation, and socioeconomics) with the preferred alternative are also fully summarized in the draft NEPA Inclusion Analysis (“Project Impact Analysis – IV.4 and IV.5,” core questions 4 and 5) (Appendix).

The Trustees have also determined that the preferred alternative would not have adverse impacts beyond the scope of those analyzed in the RC PEIS, or meet any other criteria for exclusion from analysis under the RC PEIS (refer to Table 10 of the RC PEIS).

Ultimately, the RC PEIS concludes that the anticipated impacts would not be significant, and the Trustees propose to adopt that conclusion and the analysis in this Draft Amendment. A more detailed description of the Trustees' justification for doing so can be found in the draft NEPA Inclusion Analysis (Appendix).

6.6. 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 Army Creek Superfund 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 Army Creek Superfund Site. The no action alternative would have either no effect or minor to moderate indirect adverse effects on the environment.

6.7. Cumulative Effects

Under NEPA, federal agencies are required to consider the cumulative effects of their proposed actions within the affected environment, taking into consideration other activities that have occurred, are occurring and are likely to occur in the future.

Because the proposed restoration is restoring natural habitat structure and function, the Trustees expect that there will be long-term, minor to moderate positive cumulative effects on the biological and physical health of the project area under the preferred alternative. Cumulative impacts will not occur at a regional scale, and are consistent with those described in the RC PEIS (section 4.9, "Cumulative Impacts"). Relative to the magnitude of ecological impacts that currently exist in the area, the positive cumulative benefits of these proposed restoration actions are not expected to be significant as defined under NEPA. Cumulative impacts to relevant resources with the proposed action are also summarized in the draft NEPA Inclusion Analysis under "Project Impact Analysis – IV.5" (Appendix).

Cumulatively, it is anticipated that there may be a long-term adverse effect to the physical and biological resources of the project area were the no action alternative selected because the restoration would not occur. However, relative to the magnitude of adverse ecological impacts that currently exist in the affected area, the adverse cumulative effect of the no action alternative is not expected to be significant as defined under NEPA.

6.8. NEPA Conclusion

Through the analysis in this Draft Amendment, the Trustees have made a preliminary determination that the corresponding project type descriptions and impacts fall entirely within the scope of the project descriptions and impacts analysis contained in the RC PEIS sections referenced herein. Moreover, there are no site-specific considerations, sensitivities, unique habitat, or resources that warrant additional NEPA analyses beyond what is provided in the RC PEIS. The public will be invited to provide feedback on the Trustees' proposed action and alternatives and the analysis conducted in the Draft Amendment, which includes the draft NEPA Inclusion Analysis (Appendix). If, after the public comment period and review of any additional information it is determined that no substantive changes are needed to the Draft Amendment, the Trustees will not be preparing any further NEPA analysis or seeking a new FONSI determination or ROD for the proposed restoration, and the Final Amendment will be prepared. Alternatively, if after the public review it is determined that the proposed activities do not fall within the scope of alternatives or environmental consequences considered in the RC PEIS, they will require additional analysis under NEPA through the preparation of a subsequent NEPA document.

7. Conclusions

In conclusion, the Trustees are confident that the proposed restoration in this Draft Amendment, the tidal wetland habitat restoration project at Pickering Beach Marsh, provides similar benefits as the original planned restoration selected in the Final RP that could not be implemented.

The proposed action 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 will 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 Trustee agencies will ensure consistency with the Coastal Zone Management Act, the Endangered Species Act, the Fish and Wildlife Coordination Act,

the Magnuson-Stevens Act for Essential Fish Habitat, the Marine Mammal Protection Act, and the National Historic Preservation Act.

9. Request for Information

Requests for further information about the proposed amendment to the Final RP may be directed to Rich Takacs, National Oceanic and Atmospheric Administration – National Marine Fisheries Service, 200 Harry S. Truman Parkway, Room 460, Annapolis, Maryland 21401 or rich.takacs@noaa.gov.

10. References

Copeland, B.J. 1998. Salt marsh restoration: coastal habitat enhancement. UNC-SG-98-08. North Carolina Sea Grant College Program, Raleigh, North Carolina.

McLeod, E., G. L. Chmura, S. Bouillon, R. Salm, M. Bjork, C. M. Duarte, C. E. Lovelock, W. H. Schlesinger, and B. R. Silliman. 2011. A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO₂. *Frontiers in Ecology and the Environment*. 9:552-560.

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APPENDIX: NOAA Restoration Center NEPA Inclusion Analysis

NOAA Restoration Center NEPA Inclusion Analysis

Award Number

I. IDENTIFYING PROJECT INFORMATION

Project Name Pickering Beach Marsh Tidal Wetland Restoration - Draft Amendment to the Army Creek RP		Project State DE
Project Proponent / Applicant NOAA, USFWS, Delaware NREC - "Trustees"		Project Contact Rich takacs

II. OTHER FEDERAL PARTNERS AND LEVEL OF NEPA ANALYSIS

Has another Federal agency completed NEPA?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is NOAA the lead federal agency for this NEPA analysis?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

III. PROJECT DESCRIPTION / SCOPE OF ACTIVITIES FOR ANALYSIS

Please check one of the following conditions:

I am analyzing impacts of project planning and design activities, in order to gather all required project information

I have all information needed to complete the final analysis of impacts for the entire project

Has a NEPA review been conducted for prior project activities?	<input type="checkbox"/> Yes	Date of NEPA completion for prior phase
	<input checked="" type="checkbox"/> No	N/A

Describe the full scope of the project, including historic/ geographic/ ecological context, the type of restoration, and how it will be conducted.

Pickering Beach Marsh Tidal Wetlands Restoration Project:

The primary goal of this project is to restore hydrology to approximately 175 acres of wetlands north of Pickering Beach Road, DE. Currently this area is void of daily tidal exchange. Historical inlets to Delaware Bay no longer exist on the eastern portion of the marsh, while the remainder of the marsh is bound by existing roads and impoundment dike at the north, west, and southern boundaries of the marsh. This project involves the restoration of a previously existing north to south ditch of approximately 1.3 miles running from the Little Creek Main Impoundment at the north to the existing Lewis Ditch at the south. The crossing of Pickering Beach road would involve replacement of existing culverts with appropriated sized culverts to allow tidal flow. A second component of this project would involve the replacement of a non-functioning water control structure located along the southern dike of the Little Creek Main Impoundment adjacent to the Pickering Marsh. Due to limited flow through the Pickering Marsh, this secondary water control structure on the impoundment has not been placed in used and is currently in need of replacement. A functioning structure at this location would allow for tidal flow through the impoundment during portions of the year serving as a benefit to fisheries in addition to improving the health of the impounded wetland habitat to the benefit of an abundance of wildlife utilizing the area.

Describe the proposed action (i.e. the portion of the project that NOAA is funding/approving).

The Trustees are funding the proposed project in its entirety, using remaining NRDA settlement funds for the Army Creek Superfund Site, New Castle County, Delaware. These restoration activities will replace comparable tidal wetland restoration activities originally selected in the Final Restoration Plan (RP) for the Army Creek Superfund Site that were not able to be implemented, as discussed in the Draft Amendment to the Final RP. The proposed project will provide and restore wetland habitat (tidal wetland and channel restoration) by improving and managing tidal exchange, which was a desired outcome for the initial natural resources damages assessment and settlement for the Army Creek Superfund site. The project will restore the same resource types that were injured at the site--e.g., migratory birds, anadromous and other fish, and the aquatic and wetland habitat utilized by those and other wildlife species.

The non-preferred alternative to the proposed action described above includes the no action alternative, which is premised on natural recovery and is further described and evaluated in the Draft Amendment to the RP.

Check the types of activities being conducted in this project:

Technical Assistance

<input type="checkbox"/> Implementation and Effectiveness Monitoring	<input type="checkbox"/> Environmental Education Classes, Programs, Centers, Partnerships and Materials; Training Programs	<input type="checkbox"/> Fish and Wildlife Monitoring
<input type="checkbox"/> Planning, Feasibility Studies, Design Engineering, and Permitting		

Riverine and Coastal Habitat Restoration

Beach and Dune Restoration

<input type="checkbox"/> Debris Removal	<input type="checkbox"/> Bank Restoration and Erosion Reduction	<input type="checkbox"/> Water Conservation and Stream Diversion
<input type="checkbox"/> Dam and Culvert Removal & Replacement	<input type="checkbox"/> Coral Reef Restoration	<input checked="" type="checkbox"/> Levee & Culvert Removal, Modification, Set-back
<input type="checkbox"/> Technical and Nature-like Fishways	<input type="checkbox"/> Shellfish Reef Restoration	<input type="checkbox"/> Fringing Marsh and Shoreline Stabilization
<input type="checkbox"/> Invasive Species Control	<input type="checkbox"/> Artificial Reef Restoration	<input type="checkbox"/> Sediment Removal
<input type="checkbox"/> Prescribed Burns/Forest Management	<input type="checkbox"/> Road Upgrading/Decommissioning; Trail Restoration	<input type="checkbox"/> Sediment/Materials Placement
<input type="checkbox"/> Species Enhancement	<input type="checkbox"/> Signage and Access Management	<input type="checkbox"/> Wetland Planting
<input checked="" type="checkbox"/> Channel Restoration	<input type="checkbox"/> SAV Restoration	
	<input type="checkbox"/> Marine Algae Restoration	

Conservation Transactions

<input type="checkbox"/> Land Acquisition	<input type="checkbox"/> Water Transactions	<input type="checkbox"/> Restoration/Conservation Banking
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IV. PROJECT IMPACT ANALYSIS

Core Questions

1. Are the activities to be carried out under this project fully described in Section 2.2 of the NOAA RC PEIS?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
2. Are the specific impacts that are likely to result from this project fully described in Section 4.5.2 of the NOAA RC PEIS?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
3. Does the level of adverse impact for the project exceed that described in Table 11 of the NOAA RC PEIS for any resource, including significant adverse impact?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

4. Describe the project impacts to resources (including beneficial impacts) and any mitigating measures being implemented.

Pickering Beach Marsh Tidal Wetland Restoration--Proposed tidal wetland and channel restoration activities are similar to those described in section 2.2.2 ("Riverine and Coastal Habitat Restoration") of the RC PEIS--specifically section 2.2.2.5.1 ("Channel Restoration") and 2.2.2.11.1 ("Wetland Restoration - Levee and Culvert Repair, Modification, and Set-Back"). Impacts from the proposed habitat restoration activities are consistent with (or less than) those described in sections 4.5.2.5.1 ("Channel Restoration") and 2.2.2.11.1 ("Wetland Restoration - Levee and Culvert Repair, Modification, and Set-Back") and Tables 23 and 33 of the RC PEIS, and the relevant impacts are summarized below. The proposed activities do not have impacts beyond those analyzed in the RC PEIS, including adverse effects that are significant, or meet any other criteria for exclusion from analysis (Table 10 of the RC PEIS).

1. Channel Restoration:
Construction activities related to restoration of in-stream channel and off-channel habitat can cause direct and indirect, short- and long-term, minor and moderate, localized, beneficial and adverse impacts.

Geology and soils and water resources would receive direct, short-term, minor adverse impacts due to a temporary increase in turbidity and exposure of bare stream banks as a result of the restoration activity. Channel and in-stream restoration can involve the use of heavy equipment, which could disturb soil and the channel beds. Exposure of bare soil can cause erosion, and channel bed disturbances can cause stream turbidity.

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.

In-stream and off-channel restoration would cause direct and indirect, short- and long-term, minor and moderate, beneficial and adverse impacts to living coastal and marine resources and EFH and threatened and endangered species. More in-stream complexity promotes higher benthic organism productivity throughout the system, increased feeding opportunities, lowered predation rates on juvenile fish, more suitable spawning substrate, and deeper rearing habitat—conditions that are beneficial to living coastal and marine resources and EFH, and threatened and endangered species. In-stream restoration construction activities could cause temporary alteration of EFH and disruption or mortality of living coastal marine resources. In-stream and channel restoration projects would only occur in work windows when low flow conditions are present at the project site, and when the least number of ESA species are present in the project area.

In-stream channel restoration could have direct, minor, short- and long-term adverse impacts on cultural and historic resources if unknown sites are disturbed during construction.

Core Questions (continued)

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.

In-stream restoration activities can result in indirect short and long-term, minor and moderate beneficial impacts to socioeconomics.

2. Wetland Restoration - Levee and Culvert Repair, Modification, and Set-Back:

The removal and/or modification of culverts and similar infrastructure would cause direct and indirect, short-term, localized, minor adverse impacts on geology and soils, water, air, living coastal and marine resources and EFH, and threatened and endangered species during the construction phase of the project. The use of heavy machinery and construction equipment is the primary cause of the direct, adverse impacts associated with this activity, which may include soil compaction, emissions from heavy equipment, removal or crushing of understory vegetation, increased soil erosion in the immediate area of construction operations, and unintentional introduction of non-native, potentially invasive, species. Impacts to threatened and endangered species may include effects from handling, noise, turbidity, contaminants, hydrology, additional habitat quality/quantity, and displacement. Removal of barriers may also open pathways for invasive species. Cultural and historic resources and land use could experience indirect, long-term, minor adverse impacts. The land use in the floodplain, including any potential culturally sensitive areas, could change as the water resources in the floodplain changed. Because land use would stabilize in the floodplain over time, the impact would be minor.

These restoration activities would provide direct and indirect benefits to geology and soils, water, living coastal and marine resources and EFH, and threatened and endangered species. These activities result in benefits to riparian, stream and river channel habitats, and shoreline habitats such as wetlands, beaches, and mudflat areas. Restoration of natural hydrology would aid in the development of vegetated communities that provide vital rearing, feeding, and refuge habitat for fish and benthic communities and wildlife species. This technique is beneficial for anadromous fish that need connected coastal waterways and rivers with unaltered hydrology for passage during migration events, as well as for estuarine fish species that benefit from increased habitat area. Long-term major beneficial effects to the quality of surface water resources at the project site and beyond are expected due to restoration of tidal flow and water movement. Restoration of these areas to natural states would enhance water quality and salinity, reduce turbidity and soil erosion, increase carbon sequestration and storage capacity (providing climate change mitigation), and enhance habitat quality, although some increases in turbidity in the water column could result due to increased water movement. Indirect, long-term minor beneficial effects would be expected by uptake and transformation of nutrients resulting from enhanced vegetative growth in the restoration area.

3. No Action - The no action alternative, which is premised on natural recovery, is the non-preferred alternative to the proposed activities described above and is further described and analyzed in sections 5.4 and 6.6 of the Draft Amendment.

5. Describe any potential cumulative impacts that may result from past, present or reasonably foreseeable future actions (beneficial or adverse).

Cumulative project impacts would not be significant or occur at a regional scale, and are consistent with those described in the RC PEIS (section 4.9, "Cumulative Impacts"). Because the proposed restoration is restoring natural habitat structure and function, the Trustees expect that there will be long-term, minor to moderate positive cumulative effects on the biological and physical health of the project area under the preferred alternative (including living Coastal and Marine Resources and EFH).

There may be a long-term adverse effect to the physical and biological resources of the project area were the no action alternative selected because the restoration would not occur. However, relative to the magnitude of adverse ecological impacts that currently exist in the affected area, the adverse cumulative effect of the no action alternative is also not expected to be significant.

6. Describe the public outreach and/or opportunities for public comment that have taken place to this point. Are any future opportunities for public input anticipated?

The Draft Amendment to the RP, including this draft Inclusion Analysis, will be made available to the public for review and comment. All comments on the Draft Amendment and Inclusion Analysis will be addressed prior to finalization and approval of the Final Amendment. If, after the public comment period, and review of any additional information, it is determined that no substantive changes are needed to the Draft Amendment, the Trustees will not be preparing any further NEPA analysis or seeking a FONSI or ROD for the proposed restoration projects, and the Final Amendment to the RP will be prepared.

7. Have any public comments raised issues of scientific/environmental controversy? Please describe.

All comments on the Draft Amendment and Inclusion Analysis will be addressed prior to finalization and approval of the Final Amendment to the Restoration Plan.

8. Describe the most common positive and negative public comments on issues other than scientific controversy described above in Question 7.

The proposed restoration activities are similar to those that have been occurring throughout the northeast for many years, and the public has generally been supportive of spending restoration funding (including CERCLA case settlement funds) on on-the-ground restoration projects, especially those associated with restoring natural resources and providing public access to those resources. Any common positive and negative public comments received on the Draft Amendment and this draft Inclusion Analysis will be addressed and summarized in the Final Amendment to the RP.

Levee and Culvert Removal, Modification and Set-back

Describe the extent and the height of the levee/culvert targeted in the restoration project. How is it consistent with the types and impacts of species enhancement presented in the NOAA RC PEIS in Sections 2.2 and 4.5.2?

The proposed culvert replacement at Pickering Beach Road and the water control structure replacement at the Little Creek Main Impoundment near Pickering Marsh will restore tidal influence and manage tidal exchange, and are consistent with the types of actions described in section 2.2.2.11.1 of the RC PEIS. Specific dimensions and specifications for the culverts and control structure and are not yet determined, but will be appropriately sized to restore hydrologic connection to the adjacent wetlands. Anticipated environmental impacts are consistent with those described in section 4.5.2.11.1 of the RC PEIS.

In general these types of culvert/water control structure replacement projects produce short-term adverse ecological impacts and considerations, but longterm ecological benefits—e.g. improved water quality, sediment transport, development of vegetated communities, and improved habitat and passage for migratory and estuarine fish species and other wildlife.

V. NEPA DETERMINATION

The action is completely covered by the impact analysis within the NOAA RC Programmatic EIS (PEIS). The project and its potential impacts may be limited through terms or conditions placed on the recipient of NOAA funds. It requires no further environmental review. An EIS Inclusion Document will be prepared.

The action analyzed here has unknown impacts. At this time, funding will be limited to those portions of the action and impacts analyzed in the PEIS. These limitations will be described in terms or conditions placed on the recipient of NOAA funds. If all remaining activities and impacts are later determined to be described in the PEIS, this analysis will be documented in the program record and the applicant may then proceed with the project. If all remaining activities and impacts are later determined to not be described in the PEIS, further NEPA review will be required; see below.

The action or its impacts are not covered by the analysis within the PEIS. It will require preparation of an individual EA, a supplemental EIS, adoption of another agency's EA or EIS, or will be covered by a Categorical Exclusion.

Signature

Date Signed

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION APPROVAL OF
THE 2022 DRAFT AMENDMENT TO THE ARMY CREEK 1996 RESTORATION
PLAN AND ENVIRONMENTAL ASSESSMENT**

In accordance with the Memorandum of Agreement, as amended, among the United States Fish and Wildlife Service (DOI), the National Oceanic and Atmospheric Administration, and the State of Delaware, NOAA indicates by signature below their agreement to concur, in its entirety, with this 2022 Draft Amendment to the Army Creek 1996 Restoration Plan and Environmental Assessment on behalf of their agency.

Approved:

Christopher Doley

Digitally signed by
DOLEY.CHRISTOPHER.DAVID.1365844042
Date: 2022.12.19 17:04:22 -05'00'

Christopher Doley
Division Chief
NOAA Restoration Center
U.S. Department of Commerce

Date

U.S. DEPARTMENT OF THE INTERIOR APPROVAL OF THE 2022 AMENDMENT TO THE ARMY CREEK 1996 RESTORATION PLAN AND ENVIRONMENTAL ASSESSMENT

In accordance with the U.S. Department of Interior policy regarding documentation for natural resource damage assessment and restoration projects (521 DM 3), the Authorized Official for the Department must demonstrate approval of draft and final Restoration Plans with their associated National Environmental Policy Act documentation, with concurrence from the Department's Office of the Solicitor.

The Authorized Official for the Army Creek Superfund Site is the Regional Director for the U.S. Fish and Wildlife Service's Northeast Region.

By the signature below, the 2022 Amendment to the Army Creek 1996 Restoration Plan and Environmental Assessment is hereby approved.

Approved:

KYLA HASTIE Digitally signed by KYLA HASTIE
Date: 2023.03.24 17:12:11 -04'00'

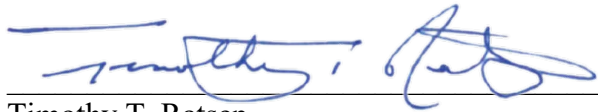
Kyla Hastie
Acting Regional Director
Northeast Region
U.S. Fish and Wildlife Service

Date

STATE OF DELAWARE APPROVAL OF THE 2022 AMENDMENT TO THE ARMY CREEK 1996 RESTORATION PLAN AND ENVIRONMENTAL ASSESSMENT

In accordance with the Memorandum of Agreement, as amended, among the United States Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, and the State of Delaware, Delaware indicates by signature below their agreement to concur, in its entirety, with this 2022 Amendment to the Army Creek 1996 Restoration Plan and Environmental Assessment.

Approved:



Timothy T. Ratsep
Director, Division of Waste and Hazardous Substances
Department of Natural Resources and Environmental Control
State of Delaware

1/5/2023

Date