Environmental Assessment

Blackwater National Wildlife Refuge
Backgarden Creek Wetland Restoration Plan

May 2025

Prepared by

U.S. Fish and Wildlife Service
Blackwater National Wildlife Refuge
Cambridge, Maryland

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Contents

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Date: May 27, 2025

The U.S. Fish and Wildlife Service (Service, USFWS) is a federal agency whose primary mission is conserving and enhancing the Nation's fish and wildlife populations and their habitats for the American public. Although the Service shares this responsibility with other federal, state, tribal, local, and private entities, the Service has specific legally mandated responsibilities for migratory birds, federally listed threatened and endangered species, and certain anadromous fish and marine mammals. Service efforts over the last 100 years to protect wildlife and their habitats have resulted in a network of protected units that constitute the National Wildlife Refuge System (Refuge System). This network of protected lands and waters is the largest and most diverse in the world. Refuge System lands provide essential habitat for numerous fish and wildlife species, wildlife-dependent recreational opportunities for the public, and a variety of benefits to local communities.

This Draft Environmental Assessment examines the potential environmental impacts associated with the proposed action and complies with the National Environmental Policy Act (NEPA)[1] in accordance with the Department of the Interior NEPA regulations (43 CFR 46; 516 Department Manual, or DM, 8), U.S. Fish and Wildlife Service policy (550 Service manual, or FW, 3), and other relevant regulations and requirements. NEPA requires examining the proposed action's effects on the natural and human environment.

Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to increase the resiliency of up to 100 acres of tidal marsh through sediment placement in accordance with the refuge's Comprehensive Conservation Plan (CCP, USFWS 2006). The proposed action would place material excavated from the Blackwater River on the surface of inundated and deteriorating vegetated marsh, increasing marsh elevation and resiliency to relative sea level rise. The proposed project site is located at the confluence of Backgarden Creek and the Blackwater River on Blackwater National Wildlife Refuge (NWR), Dorchester County, Maryland (Figures 1 and 2).

[1] Executive Order 14154, Unleashing American Energy (Jan. 20, 2025), and a Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (Jan. 21, 2025), require the Department to strictly adhere to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq. Further, such Order and Memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The FWS verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 C.F.R. Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum. The FWS has also voluntarily considered the Council on Environmental Quality's rescinded regulations implementing NEPA, previously found at 40 C.F.R. Parts 1500–1508, as guidance to the extent appropriate and consistent with the requirements of NEPA and Executive Order 14154.

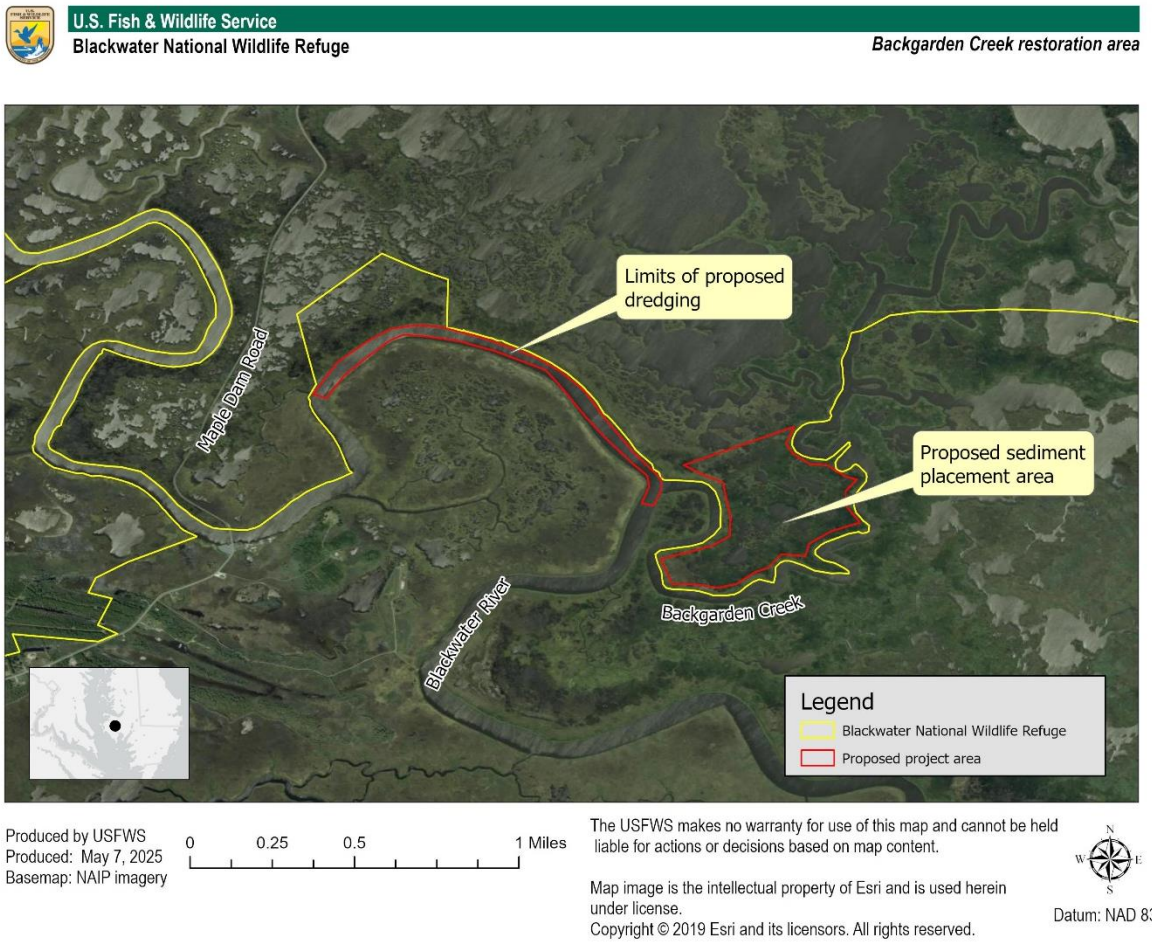

Figure 1. Proposed project area

The proposed action may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The proposed action will be finalized at the conclusion of the public comment period for the EA.

Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

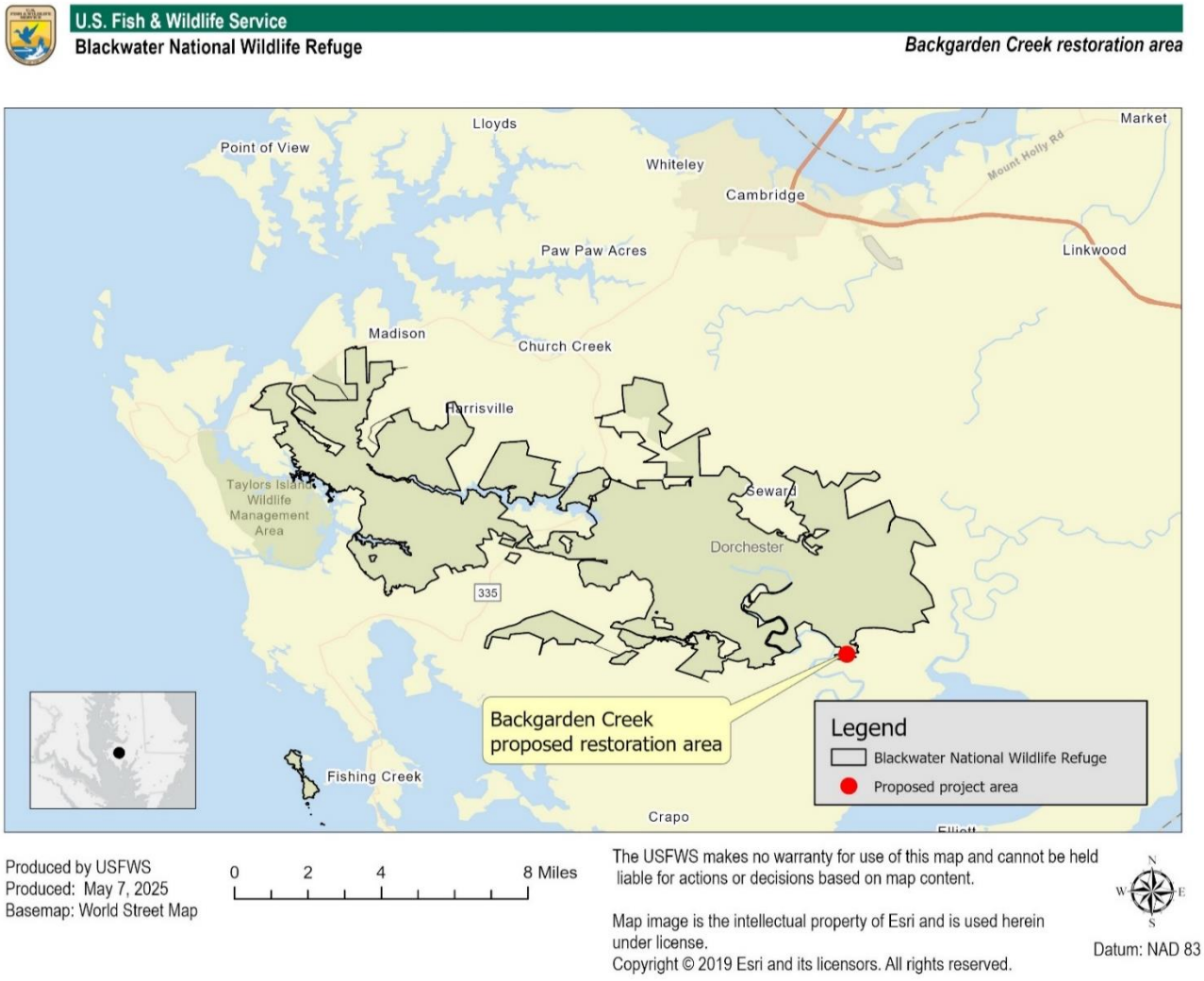

Figure 2. Blackwater NWR and location of proposed action.

Blackwater NWR was established under the authority of the Migratory Bird Conservation Act of 1929, as amended, {16 U.S.C. 715d}. Additional lands have been added to the refuge under the authorities of the Endangered Species Act of 1973 {16 U.S.C. 1534}, Refuge Recreation Act of 1966, as amended, {16 U.S.C. 460k-1}, North American Wetlands Conservation Act {16 U.S.C. 4401-413}, and the National Wildlife Refuge System Administration Act of 1966 (Refuge Administration Act) {16 U.S.C. 668dd}.

Blackwater NWR's purposes are:

- "…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. § 715d (Migratory Bird Conservation Act);
- "…to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants." 16 U.S.C. § 1534 (Endangered Species Act of 1973);
- " for...incidental fish and wildlife-oriented recreational development...the protection of natural resources...the conservation of endangered species or threatened species..." 16 U.S.C. § 460k-1 (Refuge Recreation Act);
- "…to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife" 16 U.S.C. § 4401-413 (North American Wetlands Conservation Act), and;
- "…to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife." 16 U.S.C. § 668ddb (Refuge Administration Act).

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSAA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is

"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"

Additionally, the NWRSAA mandates the Secretary of the Interior in administering the NWRS (16 U.S.C. 668dd(a)(4)) tor

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;

- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the NWRS are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and Monitor the status and trends of fish, wildlife, and plants in each refuge.

In 2006 the Chesapeake Marshlands NWR Complex completed its CCP (USFWS 2006) for the refuges it administers, including Blackwater NWR. The CCP provides long term guidance for management decisions and sets forth goals, objectives, and strategies needed to accomplish refuge purposes. The use of dredged material to restore tidal marshes is specifically discussed in the Draft CCP and EA (USFWS 2005) and became Objective 1.1.2 for the refuge in the final CCP (USFWS 2006). The Blackwater 2100 Plan (Lerner et al. 2013) was completed in 2013 in partnership with The Conservation Fund, Audubon Mid-Atlantic, and others. This plan identified a suite of sea level rise adaptation strategies for the refuge, including the use of sediment placement to increase the resiliency of tidal marshes on the refuge.

Purpose and Need for the Action

The purpose of this proposed action is to increase the resiliency of up to 100 acres of tidal marsh to sea level rise and subsidence through the use of sediment placement on Blackwater NWR. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSAA to "Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS" (16 U.S.C. 668dd(a)(4)). The tidal marshes along the Blackwater River are part of the largest area of brackish marsh in the Chesapeake Bay and is of regional ecological significance for its wetlands and for the wildlife populations it supports. However, over 5,000 acres of tidal marsh have converted to open water on the refuge since 1938 (Scott 2009). Normally tidal marshes are self-maintaining ecosystems that build vertically (accrete) from the accumulation of tidal mineral sediment and organic matter (plant remains), if the relative rate of sea level rise and subsidence is not too excessive. However, in marshes of the Blackwater River system the vertical development of the marsh surface, either through accretion or the development of belowground biomass (roots and rhizomes), does not appear to be keeping pace with rates of relative sea level rise (Cahoon and Guntenspergen 2010). The principal process of marsh loss in the Blackwater River system has been the interior breakup and fragmentation of formerly contiguous marsh, leading to the formation of ponds in the marsh interior, which expand via wave erosion and combine to form larger ponds. The

mechanisms contributing to the refuge's tidal marsh loss are generally attributed to a combination of sea level rise, subsidence, and former herbivory by nutria (*Myocastor coypus*).

Globally, sea levels have risen over the past century at an average rate of about 1.88 millimeters (mm) per year (Miller and Douglas 2004). Regional subsidence in the Blackwater NWR area is a consequence of the glacial isostatic adjustment (i.e. the ongoing rise or fall of land once under and around sheets of ice) that has occurred since the last ice age. Local subsidence on the refuge was found to be 6.0 mm per year (Hensel et al. 2024). Rising sea levels lead to marsh loss because tidal marsh plants, though well adapted to life in the intertidal zone, can only tolerate a certain frequency, depth, and duration of flooding before plant vigor declines and drowning occurs. Elevation capital in a marsh system refers to the elevation of the marsh surface relative to the lowest elevation the native marsh plants can survive within the local tidal range (Cahoon and Guntenspergen, 2010). The higher the marsh surface elevation relative to the growth range for these intertidal plants, the more elevation capital and longer a marsh can exist with an elevation deficit. However, much of the marsh along the Blackwater River appears to currently have a surface elevation below ideal growing conditions within this tidal range (Kirwan and Guntenspergen, 2012).

The Blackwater 2100 Plan (Lerner et al. 2013) developed a set of strategies that, despite relative sea level rise, would ensure the long-term persistence of Dorchester County's extensive tidal marsh ecosystem together with its full assemblage of associated fish, plants, and wildlife. This sea level rise adaptation plan identified three groups of strategies important to the refuge: 1) conserve priority marsh migration corridors, 2) develop strategies for managing transition of uplands to tidal marsh, and 3) slow loss of existing tidal marsh. Tidal marsh transgression will undoubtedly lead to the greatest expanses of tidal marsh in the future, but expected dominance of invasive phragmites in these developing tidal marshes will compromise their value to some wildlife. This proposed project is part of the third strategy, slowing the loss of existing marsh. Increasing the elevation of tidal marshes through the use of sediment placement would extend their longevity and help maintain habitats and ecosystem services in the near-term.

Alternatives

This EA evaluates two alternatives: the current management strategies (Alternative A), and the proposed action alternative (Alternative B, the preferred alternative).

Alternative A – Current Management Strategies

The Current Management Strategies alternative is a continuation of what is currently happening. In this case, the Current Management alternative involves not raising the elevation of the marsh to the proposed elevation. Selecting this alternative is equivalent to allowing the existing baseline environmental conditions to continue and deteriorate over time. Under this alternative, rapid loss of tidal wetlands within the project area would continue, causing the loss of important fish and wildlife habitat as well as other associated ecosystem services. The full

impact of the No Action and the Proposed Action are presented in the Summary of Analysis section.

Alternative B – Proposed Action Alternative

The proposed action would involve placing material excavated from the Blackwater River in thin layers to elevate the surface of up to 100 acres of inundated and declining vegetated marsh and thereby optimize native marsh vegetation growth. The proposed project site is located at the confluence of Backgarden Creek and the Blackwater River and is bounded to the east, south and west by Backgarden Creek and to the north by tidal marsh (Figure 1). Two placement methods would be utilized, namely aerial spraying and pipe discharge. In the initial aerial material placement phase, up to 23,150 cubic yards of dredged sediment material would be applied to create a 100-foot-wide perimeter around the project area. For the second phase, up to 126,850 cubic yards of dredge sediment material would be placed via piped discharge to fill the interior fragmenting marsh areas. The target elevation for the restored marsh platform would be 2.44 feet above mean low water (MLW). This is equivalent to 1.20 feet, or 0.37 meters, NAVD88. This target is based on a study that determined 0.30 m NAVD88 as the elevation of the marsh platform that maximized wetland plant biomass production within the Blackwater NWR tide range (Kirwan and Guntenspergen 2012). That elevation was then adjusted upward to account for recent relative sea level rise based on the closest NOAA tide gauge. The average surveyed marsh plain elevation within the proposed project location is 1.75 feet above MLW. Based on these data, we expect to increase the average elevation of the marsh surface by 0.70 feet. Material placement would be deeper in the failed marsh areas. While 2.44 feet MLW is our target elevation for most of the placement area, we expect that the primary tidal channels would persist and provide hydrological connectivity and low marsh habitat. This would create low marsh edge along the tidal channel in the interior of the project. This project would help ensure the persistence of both high and low marsh for an extended period of time.

To obtain materials for sediment placement, a hydraulic dredge outfitted with aerial spray technology would dredge the river channel. Dredging would not occur closer than 14 feet to the vegetated riverbank. The slope of the dredging would be no steeper than 1:1, helping to ensure overall bank stability. This dredging plan would maintain bank stability and avoid creating deep holes in the river bottom that could create environments that lack oxygen and negatively impact fish. We selected dredging as the source of sediment because there is no other means of obtaining needed material. The shallow and meandering Blackwater River would preclude material from being barged in from off-site. Sediment is being exported down the Blackwater River from eroding marshes upstream at a rate of 97 tons per day on average (Ganju *et al,* 2013). The material being dredged for this project is expected to be replaced by the gradual accumulation of sediment being exported from upstream marshes. Refuge staff would work with appropriate agencies to identify the time of year where restoration work would avoid and/or otherwise minimize adverse impacts to fisheries during the marsh restoration process.

After the placed sediment has stabilized, the exposed surface would be surveyed to determine where planting of vegetation would be necessary. In areas where above ground vegetation is

still evident, natural re-colonization would be allowed. In areas where existing marsh vegetation was covered or there is no underlying vegetation, different methods of native plant re-establishment would be used, including planting live plugs of species combined with seeding methods. The results would be monitored, and the more successful re-vegetation method would be used to establish full vegetated coverage of the project's elevated marsh area. All seeding and planting would occur early in the seasonal growth cycle for the region (April to June) to maximize success rates.

This alternative fulfills the Service's mandate under the NWRSAA. The Service has determined that sediment placement to restore tidal wetlands (Alternative B) is compatible with the purposes of Blackwater NWR and the mission of the NWRS.

Alternative(s) Considered, But Dismissed From Further Consideration

Additional alternatives were considered during the development of this EA but were eliminated from further discussion. These alternatives were dismissed because they do not meet the purpose and need of the project.

- One alternative to obtaining material from the Blackwater River would be the beneficial use of clean material from the maintenance dredging of navigation channels. The United States Army Corps of Engineers (USACE) has several navigation projects in the Fishing Bay area. However, dredging at these projects takes place only occasionally. Dredged material from these sources is not expected to be available in the foreseeable future. Additionally, the cost of transporting material to the project site would greatly increase the cost of the project, reducing the amount of habitat restored, and not meeting the purpose and need of the project.
- A second alternative to obtaining material from the Blackwater River would be the transportation of off-site material to the project, either via barge or truck. With this alternative, the cost of transportation would become the largest portion of the project cost, greatly reducing the amount of habitat restored and failing to meet the purpose and need of the project. Additionally, the transportation of material would create a relatively large carbon footprint, negating some of the benefits of this project which is being undertaken to counter the loss of tidal marsh due to the effects of climate-induced sea level rise.
- The addition of dredged material to an existing tidal marsh may cause temporary impacts to the wetland. An alternative to this approach would be postponing the project until the marsh has fully deteriorated through the effects of sea level rise and subsidence and has converted to open water. This alternative would require rebuilding a tidal marsh platform from a sub-tidal substrate. This would require the addition of much more material than needed in the Proposed Action. This alternative would increase project costs, greatly decreasing the amount of habitat restored and failing to meet the purpose and need of the project.

Affected Environment and Environmental Consequences

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are direct, indirect, or cumulative. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that will not be more than negligibly impacted by the action have been dismissed from further analysis.

The refuge consists of approximately 33,600 acres in Dorchester and Wicomico counties, Maryland (Figure 2). Blackwater NWR is primarily tidal wetlands, mixed hardwoods and pine forests, non-tidal wetlands, and croplands. The proposed action is located in the tidal wetlands at the confluence of Backgarden Creek and the Blackwater River (figures 1 and 2). For more information regarding and the general characteristics of the refuge's environment, please see Chapter 3 of the Refuge's Comprehensive Conservation Plan, which can be found here: https://iris.fws.gov/APPS/ServCat/Reference/Profile/1404.

The following resources either (1) do not exist within the project area or (2) would either not be affected or only negligibly affected by the proposed action:

- Wilderness and other special designations

Natural Resources

Terrestrial Wildlife and Aquatic Species

Affected Environment

Description of Affected Environment for the Affected Resource

Blackwater NWR supports abundant wildlife, especially those strongly associated with tidal marshes. Several amphibian and reptile species can be found in the brackish marshes of the refuge. Southern leopard frog (*Rana utricularia*), and northern water snake (*Nerodia sipedon sipedon*) venture into the brackish marshes, although they are more commonly associated with freshwater habitats. The diamondback terrapin (*Malaclemys terrapin*) is the turtle species most closely associated with the refuge's tidal habitats; it generally does not venture into freshwater. Snapping turtle (*Chelydra serpentina*) and eastern mud turtle (*Kinosternon subrubrum*) also frequent the brackish marshes, although these latter species are more frequently encountered in freshwater habitats.

Many bird species utilize the wetland and open water habitats of the refuge. The refuge is notable as an important resting and feeding area for migrating and wintering waterfowl along the Atlantic flyway. Wintering waterfowl species include tundra swan (*Cygnus columbianus*), Canada goose (*Branta canadensis*), snow goose (*Chen caerulscens*), and more than 20 duck species. Typical species of duck include American black duck (*Anas rubripes*), mallard (*A.*

platyrhynchos), blue-winged teal (*A. discors*), green-winged teal (*A. crecca*), northern pintail (*A. acuta*), American wigeon (*A. americana*), and gadwall (*A. strepera*). Although most waterfowl migrate north in the spring, some remain through the summer to raise their young. Wood duck (*Aix sponsa*), black duck, and mallard are the most common nesting duck species on the refuge. Canada Geese nest in the refuge, although historically they only utilized the area during migration or as a wintering ground.

Nesting species of raptors that use tidal marsh habitat at the refuge include osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), and barn owl (*Tyto alba*). In Maryland, northern harriers are largely confined to tidal marshes in the breeding season. Southern Dorchester County, including the refuge, supports a substantial portion of the State's breeding harrier population. Though none are known to nest in the project area, they are present on the refuge. Additional raptor species frequent the marshes in low numbers during winter, including short-eared owl (*Asio flammeus*) and rough-legged hawk (*Buteo lagopus*).

During spring and fall, flocks of migrant shorebirds visit the refuge to rest and forage. Pools in the tidal marsh are the principal habitat used. Flocks can number in the hundreds, and the most abundant species include dunlin (*Calidris alpina*), greater and lesser yellowlegs (*Tringa melanoleuca* and *T. flavipes*), semipalmated sandpiper (*C. pusilla*), least sandpiper (*C. minutilla*), short-billed dowitcher (*Limnodromus griseus*), Wilson's snipe (*Gallinago delicate*), semipalmated plover (*Charadrius semipalmatus*). One shorebird species, the willet (*Catoptrophorus semipalmatus*), breeds in tidal marshes at the refuge.

A variety of wading birds nesting on islands in the Chesapeake Bay visit the refuge's tidal marshes to forage, though only great blue heron (*Ardea herodias)* and green heron (*Butorides virescens*) nest along the Blackwater River. American bitterns (*Botaurus lentiginosus*) occur at Blackwater in small numbers in fall and winter, and least bittern (*Ixobrychus exilis*) nests in tidal marshes at the refuge.

The tidal marshes at Blackwater NWR support an assemblage of bird species that are specialists of salt marsh habitats and several of these are salt marsh obligates. These include American black duck, clapper rail (*Rallus longirostris*), black rail, coastal plain swamp sparrow (*Melospiza georgiana nigrescens*), saltmarsh sparrow, seaside sparrow (*Ammodramus maritimus*), and willet. Coastal plain swamp sparrow, saltmarsh sparrow and seaside sparrow are confined entirely to tidal marshes as are Atlantic coast subspecies of clapper rail and willet.

The extensive wetland habitats on the refuge support many wetland dependent mammal species such as muskrat (*Ondatra zibethicus*) and river otters (*Lutra canadensis*). Red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*) and sika (*Cervus nippon*) are also found at Blackwater. Nutria, an invasive species, was formerly present at Blackwater in very high numbers. Nutria populations were responsible for a great deal of marsh loss and habitat destruction. However, a two-decade effort by the Chesapeake Bay Nutria Eradication Project successfully eradicated nutria from the Delmarva Peninsula in 2022.

The tidal creeks and shallow ponds at Blackwater NWR provide spawning, nursery, and/or feeding habitat for a variety of finfish and shellfish. Many fish species move into shallow waters in summer and out to deeper waters in the Chesapeake Bay in the fall. The most common finfish found on the refuge include black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brown bullhead (*Ameirus nebulosus*), common carp (*Cyprinus carpio*), gizzard shad (*Dorosoma cepedianum*), pumpkinseed (*Lepomis gibbosus*), and white perch (*Morone americana*) (Love et al. 2008). Northern snakehead (*Channa argus*), an invasive species, was first recorded in the Blackwater River in March 2012 and have been recorded on the refuge every year since (USFWS, unpublished data). Most records are from upper parts of the Blackwater River, but the species has been observed on Shorter's Wharf Road during flooded conditions. Northern snakeheads have rapidly become one of the dominant fish species found on the refuge (Newhard et al. 2024).

White and yellow perch are semi-anadromous species that likely spawn in refuge waters. Semi-anadromous fish species spawn in low salinity and freshwaters, then travel to the bays to spend much of their adult life.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

The impacts of the current Proposed Action must be weighed to determine whether the additive effects of these actions would result in a significant cumulative impact on the natural and human environment of the area. Cumulative impacts analysis requires consideration both of impacts of coastal wetlands restoration, as well as impacts to the sites where coastal wetlands are restored. There are no known projects proposed in the Blackwater River area by nearby municipalities, state government, tribal government, other federal agencies, or other parties that are likely to cause cumulative impacts to terrestrial wildlife and aquatic species in the project area. While other dredging and wetland restoration projects are being implemented elsewhere in the County, they are outside the Blackwater River system and are not likely to have cumulative impacts.

Impacts on Affected Resource

Alternative A

The Current Management Alternative would allow the continued deterioration of tidal marsh habitat and subsequent conversion to open water. This loss of wetland habitat will negatively impact the wildlife that depends on it. While not implementing the Proposed Action would have no short-term impacts on wildlife, it would have negative impacts in the foreseeable future as tidal marsh habitat converts to open water.

Emergent marsh habitats would continue to degrade and convert to open water, creating additional habitat for fish and benthic organisms. However, the resulting expanse of open water would not contain the mosaic of tidal marsh and open water habitats that are favorable to many fish species, particularly as nursery habitat. Additionally, the current trend in conversion of tidal marsh to open water is creating more and more open water habitat each year elsewhere in the Blackwater River system.

Alternative B

Disturbance from noise created by the Proposed Action may cause wildlife disturbed by these activities to temporarily relocate to other areas. Habitat comparable to the areas where work is taking place is abundant in the refuge, thus avoidance of the area would cause no significant impacts to wildlife.

Construction activities would likely take place during the winter months, causing a displacement of birds that use the area in migration and over winter. There is still a vast expanse of similar habitat on the refuge to provide habitats for these species. Additionally, the Proposed Action would strengthen the resiliency of tidal marsh habitat in the project area, creating a long-term benefit to these species.

The Proposed Action may cause a short-term increase in turbidity during dredging and resulting disturbance would cause some fish and invertebrates to temporarily relocate. These impacts are expected to be minor to fish populations because only a relatively small area would be impacted, and there are substantial areas in which to relocate. Some fish may be entrained into the dredge and eliminated during dredging. Although a small number of individuals may be eliminated, no impacts to fish populations are expected. Impacts to anadromous and semi-anadromous fish species that utilize the marsh would be minimized through a time of year restriction on construction activities.

Dredging and sediment deposition activities may destroy relatively nonmotile bottom-dwelling invertebrates over the project area. Localized food web disruption would occur as invertebrates are eliminated and organisms that feed on these invertebrates are disfavored. Colonization of disturbed areas by invertebrates is expected within several months to a year following dredging, and long-term impacts are expected to be minor.

The impacts of the Proposed Action are expected to be beneficial to the Blackwater River ecosystem, providing direct and incidental benefits to tidal wetlands, and to the associated fish and wildlife that reside within these habitat areas. Potential negative impacts of the Proposed Action include localized and temporary disturbance to fish and wildlife resulting from construction activities, as well as the loss of shallow water habitat because of the footprint of the restored marsh. While these impacts need to be carefully considered, they are outweighed by the overall positive impacts to area flora, fauna, and ecosystem services. The Proposed Action would ensure the greatest potential for a diverse mosaic of habitat conditions that would be both resilient and resistant to stressful changes over time, with long-term benefits for the inhabiting flora and fauna within the ecological setting.

Threatened and Endangered Species, and Other Special Status Species

Affected Environment

Description of Affected Environment for the Affected Resource

The eastern black rail (*Laterallus jamaicensis jamaicensis*) is the only federally listed species found on the refuge that would normally occur in the project area. Black rails could potentially

occur in irregularly flooded shallow herbaceous wetlands throughout the refuge. Unfortunately, most of the wetlands in the project area are likely too low and wet for this species. The project area was surveyed for this threatened species in May and June 2022 using automated recording units, but none were detected.

Northern long-eared bat (*Myotis septentrionalis*) is federally listed endangered and tricolored bat (*Perimyotis subflavus*) is a species proposed for listing as endangered. Both species are found on the refuge and tend to be associated with forested habitats, though they could be found foraging over the open marsh habitats found in the proposed project area.

Monarchs (*Danaus Plexippus*) are proposed for listing as threatened. They use the refuge grasslands, wetlands, old fields, agricultural margins, and roadsides during spring and fall migration, as well as during the spring and summer breeding season. They seek out nectar sources including goldenrods, sunflowers, blazing stars, and ironweeds. Lowering nightly temperatures, diminishing daylight, and aging nectaries trigger monarch to depart south, with most individuals leaving Maryland by late October. The proposed project area is too low and wet to support milkweeds and many nectar sources for the species.

Atlantic sturgeon, shortnose sturgeon, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle may be located in the proposed project area according to NOAA's Section 7 Mapper (accessed May 8, 2025).

State listed species that could potentially be found in the proposed project area are rare skipper (*Problema bulenta*), American bittern (*Botaurus lentiginosus*), short-eared owl (*Asio flammeus*), sedge wren (*Cistothorus stellaris*), black rail, common tern (*Sterna hirundo*), least tern (*Sterna antillarum*), and royal tern (*Thalasseus maximus*). Rare skippers have not been found in the project area, but big cordgrass (*Spartina cynosuroides*), its favored host plant, is common along the banks of Backgarden Creek and the Blackwater River. American bittern, short-eared owl, and sedge wren are all considered non-breeding visitors to refuge's tidal marshes. The three tern species do not have suitable nesting habitat in the immediate vicinity of the proposed project area but may be found foraging in open water habitats.

The saltmarsh sparrow (*Ammospiza caudacuta*) is considered an at-risk species by the U.S. Fish and Wildlife Service. This species is declining in our area but can still sometimes be found in suitable habitat in the breeding season. Saltmarsh sparrows favor irregularly flooded tidal marsh in the breeding season. The project area was surveyed for saltmarsh sparrow in June 2024 but none were detected.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

There are no known similar projects proposed in the Blackwater River area by nearby municipalities, state government, tribal government, other federal agencies, or other parties that are likely to cause significant adverse effects to threatened and endangered species. While other dredging and wetland restoration projects are being implemented elsewhere in the County, they are outside the Blackwater River system and are not likely to have cumulative impacts.

Impacts on Affected Resource

Alternative A

The Current Management Alternative would allow the continued deterioration of tidal marsh habitat and subsequent conversion to open water. This loss of wetland habitat would negatively impact the wildlife that depends on it, including black rail. While not implementing the Proposed Action would have no short-term impacts on threatened and endangered species, it would have negative impacts in the foreseeable future as tidal marsh habitat converts to open water.

Alternative B

Northern long-eared and tricolored bats use mines and caves in the winter to hibernate and use forests to forage and roost throughout the rest of the year. The species are most sensitive to disturbance during hibernation and when raising young. There are no caves or mines suitable for hibernacula anywhere on the eastern shore of Maryland. There are no trees within or around the project area so there is a very low chance of impacting either of the species of listed bat.

Placement of dredged material should restore some irregularly flooded high marsh habitat, potentially benefitting black rails. Dredging and material placement would not take place during the breeding season, minimizing the chances of impacting breeding black rails. Non-breeding rails may be displaced by construction activities.

Monarchs are expected to depart the area before construction activities start in the late fall, therefore, direct impacts to this species would not be expected. While it may take several growing seasons for the plant community in the project area to recover from the placement of material, there are thousands of acres of similar marsh in the vicinity for migrating monarchs to use. Additionally, the restored marsh is expected to be higher in elevation and may support nectar species like seaside goldenrod (*Solidago sempervirens*), potentially improving the site for monarchs.

An Endangered Species Act (ESA) Intra-service Section 7 determination found that the proposed action may affect but would not likely adversely affect eastern black rail, monarch, or either of the two species of bats discussed.

Although four species of sea turtle, shortnose sturgeon, and Atlantic sturgeon are known to occur in the Chesapeake Bay and its rivers and tributaries, due to the location and timing of the proposed project, will not be exposed to any direct or indirect effects of the action. Following discussion with NOAA staff, a consultation in accordance with Section 7 of the ESA is not necessary.

Construction activities would likely take place during the winter months, causing a displacement of birds that use the area in migration and over wintering. There is still vast expanse of similar habitat on the refuge to provide nesting areas for these species. Additionally, the Proposed Action would strengthen the resiliency of tidal marsh habitat in the project area, creating a long-term benefit to these species.

Habitat and Vegetation (including vegetation of special management concern)

Affected Environment

Description of Affected Environment for the Affected Resource

The proposed project area is part of one of the largest expanses of tidal marsh in the Chesapeake Bay. These vast marshes are influenced by tide and salinity, producing a variety of habitats that are valuable for fish, wildlife, and important ecosystem services. The tidal marshes on the refuge are considered brackish, a mix of fresh and salt water, and tend to be dominated by meadow cordgrass (*Spartina patens*), saltgrass *(Distichlis spicata)*, black needlerush *(Juncus roemerianus*), cattail *(Typha* spp.), and three-square (*Schoenoplectus americanus*). Big cordgrass *(Spartina cynosuroides)* can form dense stands on creek and riverbanks. Smooth cordgrass (*Spartina alterniflora*) occurs along the marsh edge and lower more frequently flooded marsh. Common reed (*Phragmites australis*) is common invasive plant on the refuge and is dominant in many areas.

At the proposed project site, most of the area is relatively low lying and is dominated by three-square. There are patches of meadow cordgrass where the marsh surface is slightly higher. Big cordgrass forms a fringe along portions of the bank of the Blackwater River and Backgarden Creek. Common reed has not been detected in the proposed project area.

Only small amounts of submerged aquatic vegetation (SAV) can be found in the Blackwater system. Widgeongrass (*Ruppia maritima*) will occasionally be found on sunken mats of marsh peat. These mats are frequently exposed during low water events and rarely produce viable stands of SAV. There are no records of SAV within the project area.

Upland vegetation at Blackwater NWR includes pine and hardwood forests, and small amounts of cropland that are managed for wildlife use. The proposed project site does not contain any upland habitats.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

There are no known projects proposed in the Blackwater River area by nearby municipalities, state government, tribal government, other federal agencies, or other parties that are likely to cause significant adverse effects to habitat and vegetation. While other dredging and wetland restoration projects are being implemented elsewhere in the County, they are outside the Blackwater River system and are not likely to have any cumulative impacts.

Impacts on Affected Resource

Alternative A

If the Proposed Action is not implemented the current deterioration of tidal high marsh habitat and subsequent conversion to open water can be expected.

Alternative B

Under the Proposed Action Alternative, up to 100 acres of deteriorating brackish marsh would be restored to its historic condition. After the placed sediment has stabilized, the exposed

surface would be surveyed to determine where planting of vegetation would be necessary. In areas where above ground vegetation is still evident, natural re-colonization would be allowed. In areas where existing marsh vegetation was covered or there is no underlying vegetation, different methods of native plant re-establishment would be used, including planting live plugs of species combined with seeding methods. The results would be monitored, and the more successful re-vegetation method would be used to establish full vegetated coverage of the project's elevated marsh area. All seeding and planting would occur early in the seasonal growth cycle for the region (April to June) to maximize success rates.

Plant growth within the treated marsh is expected to increase following sediment enhancement. Increased elevation should promote increased root growth and overall plant health.

Under this alternative, no impacts to SAV are expected since SAV is absent from the waters of the project area.

Geology and Soils

Affected Environment

Description of Affected Environment for the Affected Resource

Blackwater NWR is underlain by thick interbedded layers of ancient ocean, bay, and river sediments. Sea level has risen and fallen multiple times over geologic history. There were repeated cycles of incision and deposition during the Pleistocene Epoch (2.6 million to 11,700 years ago) as sea levels fluctuated. The marshes of the Blackwater River appear to have established approximately 910 to 690 years ago (DeJong et al, 2015) and have been building elevation in response to subsequent increases in sea level. Peats, accumulations of partially decayed vegetation, formed as the marshes accreted vertically while also expanding landward over uplands and non-tidal wetlands as sea level has risen. Peat deposits range from millimeters in thickness on the landward edge of marshes now forming on the drowning uplands, to about four meters thick on long established marshes, such as in the vicinity of Backgarden Creek. Mineral sediments (such as clays and silts) that occur in the peats are deposited on the marsh surface primarily by tidal waters. The marsh deposits contain a high proportion of organic matter (plant remains).

The flow of tidal waters maintains a relatively deep channel within the Blackwater River in the proposed project area. Water depths within the river channel are typically 10 to 15 feet deep. Isolated holes of over 30 feet deep have been found in certain areas of the river (Sustainable Sciences, LLC, unpublished data). The proposed material to be excavated is made up of silt and clay with pockets of sand.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known planned actions by nearby municipalities, state governments, tribal government, other federal agencies, or other parties are likely to cause significant adverse effects to geologic or soil physical characteristics relevant to the Backgarden Creek tidal marsh restoration project.

Other current and planned dredging projects in the county are outside the Blackwater River watershed and are unlikely to have cumulative impacts to geologic resources.

Impacts on Affected Resource

Alternative A

If the Proposed Action is not implemented, there would likely be no change to the bathymetry of the Blackwater River channel. Without the Proposed Action, the tidal marsh in the project area can be expected to convert to shallow open water, following the pattern seen on over 5000 acres of tidal marsh on the refuge since 1938 (Scott, et al. 2009).

Alternative B

Dredging activities associated with the Proposed Action should not cause any long-term changes to the bathymetry of the Blackwater River. To obtain materials for sediment placement, a hydraulic dredge outfitted with aerial spray technology would dredge the river channel no more than 2.5 feet below existing channel base. Dredging would not occur closer than 14 feet to the vegetated riverbank. The slope of the dredging would be no steeper than 1:1, helping to ensure overall bank stability. This dredging plan would maintain bank stability and avoid creating deep holes in the river bottom that could create environments that lack oxygen and negatively impact fish. We selected dredging as the source of sediment because there is no other means of obtaining needed material. The shallow and meandering Blackwater River would preclude material from being barged in from off-site. The material being dredged for this project is expected to be replaced by the gradual accumulation of sediment being exported from upstream marshes.

There will be some loss of shallow open water and tidal flats within the deposition area. While the Proposed Action is focused on increasing the elevation of the existing marsh, small areas where the marsh has previously broken up and converted to open water or intertidal mud will be restored to marsh.

Air Quality

Affected Environment

Description of Affected Environment for the Affected Resource

Dorchester County is not currently designated by the EPA as a non-attainment area for air quality, meaning that it meets or exceeds the national air quality standards for the five major criteria pollutants (https://www3.epa.gov/airquality/greenbook/ancl.html).

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known planned actions by nearby municipalities, state governments, tribal government, other federal agencies, or other parties are likely to cause significant adverse effects to air quality relevant to the Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

Air quality would likely remain unchanged if the Proposed Action is not implemented.

Alternative B

Alternative B would cause direct, short-term, negligible to minor impacts to air quality during construction and other on-the-ground activities. These impacts include exhaust emissions from heavy equipment associated with dredging and material placement, as well as workers and employees commuting vehicles. Most of these impacts would end once construction is complete, impacts associated with monitoring work would continue. These impacts should be minor and the proposed project is not likely to adversely impact air quality.

Water Quality

Affected Environment

Description of Affected Environment for the Affected Resource

The Blackwater River serves as the principal route for salt water from the bay to enter the refuge. To a lesser extent, saltwater also penetrates the refuge through Parson's Creek and other smaller sources of saltwater intrusion into the upper reaches of the Blackwater River. Salinity within the refuge varies as a function of proximity to these sources. Tidal waters of the refuge are brackish for much of the year, but salinity in the refuge fluctuates seasonally. During the winter with high rates of runoff, the entire river system within the refuge is nearly fresh. Following major precipitation events, freshwater runoff can also greatly lower marsh salinity. In contrast, storm tides associated with hurricanes or Nor'easters can inundate large areas with salt water, causing major tree mortality in swamps and low-lying upland areas. Drought conditions also promote greater salinities in the tidal wetlands. From 2021 to 2023, salinities at the Shorter's Wharf Bridge typically reached a high of 13-15 ppt in the late summer or fall. Lowest salinities are found during the winter months, reaching as low as 2-3 ppt most winters (USFWS, unpublished data).

Dissolved oxygen levels of refuge waters are generally at healthy levels during the cool weather months but can drop to low levels in warm weather months. Low oxygen conditions less than 5 mg/l are stressful to many forms of aquatic life. Discrete samples taken monthly at Shorters Wharf 2021-2023 indicate dissolved oxygen levels are typically 10-12 mg/L in the winter and reach as low as 4.3 late summer (USFWS, unpublished data).

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known environmental trends or planned actions by nearby municipalities, state government, tribal government, other federal agencies, or other parties are likely to contribute to compounding impacts on water quality relevant to the proposed Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

Water quality would likely remain unchanged if the Proposed Action is not implemented.

Alternative B

Minor, local, and temporary detrimental impacts to water quality during dredging and sediment placement would occur as a result of increased turbidity and possible reduced dissolved oxygen from resuspension of bottom materials and runoff of turbid materials from marsh areas during spraying. However, refuge waters are naturally turbid due to sediment export from deteriorating marshes upstream, and the increase in turbidity is generally expected to be minor.

Following completion of spraying, minimal runoff of material from the restored marsh surface is expected. Some areas will be planted to help stabilize the marsh surface. The effects of planting will be closely monitored. During precipitation events prior to marsh vegetation establishment, impacts from rain are expected and may lead to some erosion of the restored marsh surfaces and cause minor increases in turbidity.

Floodplains

Affected Environment

Description of Affected Environment for the Affected Resource

The tidal marshes along the Blackwater River are regularly flooded and are considered part of the floodplain. According to the Federal Emergency Management Agency area flood maps (24019C0345E, updated 3/16/2015), the proposed project area is entirely within the 100-year flood plain. Tidal marshes effectively attenuate flood waters by absorbing runoff, slowing flow, and improving water quality. They act as natural barriers against coastal flooding and mitigate storm surge levels.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known environmental trends or planned actions by nearby municipalities, state government, tribal government, other federal agencies, or other parties are likely to contribute to compounding impacts on water quality relevant to the proposed Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

The floodplain would likely remain unchanged if the Proposed Action is not implemented.

Alternative B

The proposed project would restore approximately 100 acres of tidal marsh within the floodplain, possibly increasing flood water attenuation and other ecosystem services to a minor degree.

Visitor Use and Experience

Affected Environment

Description of Affected Environment for the Affected Resource

Blackwater NWR is open to all six priority public uses: wildlife observation, photography, environmental education, interpretation, hunting, and fishing. Each year, over 185,000 visitors come to the refuge. Most visitation occurs at Wildlife Drive, the visitor center, and nearby hiking trails. The refuge is open for hunting of turkey, deer (both sika and white-tailed), and waterfowl, as well as fishing. The sediment placement area is not open to the public, but adjacent waterways are open to boating.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known environmental trends or planned actions by nearby municipalities, state government, tribal governments, other federal agencies, or other parties are likely to contribute to impacts to visitor use or experiences relevant to the proposed Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

There would be negligible impacts to visitor use and experience under Alternative A, as the project area is closed to public use.

Alternative B

The proposed project will not significantly impact visitor use or experience, though there will be temporary inconvenience to boaters during construction. Construction activities will likely take place during part of waterfowl season. Hunters traveling to and from hunting areas may experience minor inconvenience while navigating around dredging operations. Dredging operations are required to be clearly marked and not impede navigation. Therefore, the proposed action is anticipated to have little to no effect on visitor use and experience.

Cultural Resources and Subsistence

Affected Environment

Description of Affected Environment for the Affected Resource

Although Dorchester County is known to have significant cultural resources, these sites are not located within or near the project area. Most existing sites are located in the areas of historic upland surrounding the marsh. The Blackwater River marshes were used seasonally by Native Americans as hunting areas. Historically, early settlement in Dorchester County was centered on upland areas, particularly upland areas with easy access to navigable waterways.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known environmental trends or planned actions by nearby municipalities, state government, tribal governments, other federal agencies, or other parties are likely to contribute to impacts to cultural resources relevant to the proposed Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

Disturbance to archeological sites or adverse effects to know cultural resources would not change.

Alternative B

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the Service to evaluate the effects of any of its actions on historic properties (historic, architectural, and archeological properties). The proposed activity has been reviewed and concurred upon by the Service's Regional Historical Preservation Officer and Cultural Resource Staff. On April 29, 2025 The Maryland Historical Trust (MHT) concurred with the determination that no historic properties will be affected by the proposed undertaking (MHT Log # 202502378).

Refuge Management and Operations

Affected Environment

Description of Affected Environment for the Affected Resource

Blackwater NWR is part of Chesapeake Marshlands NWR Complex, which also includes Susquehanna, Eastern Neck, and Martin NWRs. There are 11 permanent staff stationed at Blackwater NWR that oversee operations on all four refuges. Permanent staff currently include a Refuge Manager, Deputy Refuge Manager, two administrative staff, three visitor services staff, two maintenance staff, and two biological staff. The budget for the proposed project is funded through cooperative agreements with partner organizations.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known planned actions by nearby municipalities, state government, tribal government, other federal agencies, or other parties are likely to have compounding effects on refuge management or operations relevant to the proposed project area.

Impacts on Affected Resource

Alternative A

The Current Management Alternative would allow the continued deterioration of tidal marsh habitat and subsequent conversion to open water. While not implementing the Proposed Action would have no short-term impacts to refuge administration, it would have negative impacts in the foreseeable future as tidal marsh habitat converts to open water.

Alternative B

Implementing the proposed action would require a moderate commitment of time from refuge staff. Refuge biologists and managers would be involved in designing and implementing the project, as well as overseeing and in some cases implementing monitoring. Refuge administrative staff would be involved with administering agreements. Additional commitments of boat support and other logistical assistance may be necessary. Most of the time commitment would be during the six-month construction period. Overall, the burden on refuge staff is expected to be moderate and short-term.

Socioeconomics

Local and Regional Economies

Affected Environment

Description of Affected Environment for the Affected Resource

Dorchester County is located approximately 100 miles southeast of Washington, DC, and is bordered by the Chesapeake Bay to its west, Talbot County to the north, Wicomico County to the east, and Somerset County to the south. Population data since 2010 indicate no significant increases or decreases in recent years. The population of Dorchester County was estimated to be 31,853 in 2020, little changed from the 2010 estimate of 32,618 (Maryland Department of Commerce 2024). Dorchester County, containing 350,300 acres of land, is Maryland's largest county. Median household income in the county is estimated to be $60,495 in the county, lower than the state-wide median of $101,652. Median age is 43.9 years old, 86.8% graduated high school, and 18.8% have a bachelor's degree or higher. Agriculture is a key industry for Dorchester County.

Given the counties' composition of agriculture, forests, wetlands and waters, there is a long history of fishing, trapping, and hunting as the principal forms of recreation and income. Fishing and hunting continue to be major recreational activities on and around the refuge. Those who are engaged in wildlife observation and photography are a rapidly growing segment of the population whose contribution to the economy is also substantial. Refuge visitors make a major economic contribution to the economy of Dorchester County. According to USFWS's Banking on Nature report, Blackwater NWR had an economic impact of $7.8 million to the local economy in 2017 (USFWS 2019). Visitor expenditures were $5.8 million, with non-residents accounting for 95% of the total.

Description of Cumulative Impacts, Environmental Trends, and Planned Actions

No known environmental trends or planned actions by nearby municipalities, state government, tribal governments, other federal agencies, or other parties are likely to contribute to impacts to socioeconomics relevant to the proposed Backgarden Creek tidal marsh restoration project.

Impacts on Affected Resource

Alternative A

There would be no changes to the local and regional economies with the Current Management alternative.

Alternative B

By maintaining emergent wetlands, and subsequently fish and wildlife resources, the Preferred Alternative would help to maintain that portion of the local economy dependent on the recreational and commercial fish and wildlife resources found within the project area.

Monitoring

A monitoring and management plan for the proposed project has been developed (Appendix C). This plan identifies project objectives, monitoring metrics, and potential adaptive management responses. We would work with USGS and other partners on monitoring tasks associated with the project. Additional monitoring requirements may be identified in the Marsh Maintenance Plan by regulatory agencies during permitting for the project.

Summary of Analysis

Alternative A – Current Management Strategies

As described above, the Current Management Alternative would allow the continued deterioration of tidal marsh habitat and subsequent conversion to open water. This loss of wetland habitat will negatively impact the wildlife that depends on it. While not implementing the Proposed Action would have no short-term impacts on wildlife, it would have negative impacts in the foreseeable future as tidal marsh habitat converts to open water. This alternative does not meet the purpose and need of the Service as described above because it would not increase the resiliency of the project area to sea level rise and subsidence.

Alternative B – Proposed Action Alternative

As described above, the Proposed Action is expected to be beneficial to the Blackwater River ecosystem, providing direct and incidental benefits to tidal wetlands, and to the associated fish and wildlife that reside within these habitats. Potential negative impacts of the Proposed Action include localized and temporary disturbance to fish and wildlife resulting from construction activities, as well as the loss of shallow water habitat because of the footprint of the restored marsh and impact of dredging to benthic organisms. While these impacts need to be carefully considered, they are outweighed by the overall positive impacts to area flora, fauna, and ecosystem services. The Proposed Action would ensure the greatest potential for a diverse mosaic of habitat conditions that will be both resilient and resistant to stressful changes over time, with long-term benefits for the inhabiting flora and fauna within the ecological setting. This alternative helps meet the purpose and need of the Service as described above because it would enhance the resiliency of up to 100 acres of tidal marsh in the proposed project area.

List of Sources, Agencies and Persons Consulted

Conference calls, video calls, emails, and personal interactions with the following persons from February 2023 to May 2025:

- Albert McCullough, Sustainable Sciences, LLC
- Erik Meyers, The Conservation Fund
- Bart Wilson, USFWS
- Glenn Guntenspergen, USGS
- David Walters, USGS
- Joel Carr, USGS
- Karen Gedan, George Washington University
- Matthew Kirwan, Virginia Institue of Marine Science, William and Mary
- Mary Phipps-Dickerson, Maryland Department of the Environment
- Jonathan Watson, NOAA
- Megan Spindler, USACE

List of Preparers

- Matt Whitbeck, Supervisory Wildlife Biologist, Blackwater NWR
- Kathryn Minczuk, Conservation Planner, USFWS Northeast Region

State Coordination

The draft EA was made available to state agencies for a 30-day comment period. No comments were received during the comment period. This project was initially proposed to the Maryland Department of the Environment (MDE) and others at a wetland permit pre-application meeting in March 2024. The proposed project at Backgarden Creek is very similar to a restoration project completed on the refuge in 2016 at Shorters Wharf. Maryland Department of Natural Resources, MDE, and other state agencies have visited the Shorters Wharf site and are familiar with using sediment placement as a management tool on the refuge.

Tribal Consultation

The draft assessment was made available to the Delaware Nation and Delaware Tribe for a 30-day comment period. No comments were received during the comment period.

Public Outreach

The draft environmental assessment will be available for public review and comment for 30 days from July 11 to August 9, 2025. The public will be made aware of this comment opportunity through posting at refuge headquarters, posting on the refuge website, and social media. A hard copy of this document will be posted at the Refuge Headquarters or Visitor Center located at 2145 Key Wallace Drive, Cambridge, Maryland 21613. It will be made available electronically on the website *https://www.fws.gov/refuge/Blackwater/*. Information or concerns received during the comment period will be addressed in the final document.

This restoration project is nearly identical to a restoration project completed on the refuge in 2016 at Shorters Wharf. That project received broad public support and recognition. Articles referencing the assessment and strategies for tidal marsh resiliency, including the use of dredged material to increase tidal marsh resiliency, appeared in a special issue of *Chesapeake Quarterly* and in the *Bay Journal* during 2014 and 2015. (Chesapeake Quarterly, Vol 13, Nos. 203, The Future of Blackwater (October 2104); and Bay Journal (April 13, 2015)). Presentations on the project were given at the 7th National Summit on Coastal and Estuarine Restoration (November 2014) in Washington DC as well as to a number of USFWS-led workshops, reaching a broad audience of government and non-government representatives. The restoration strategy we are proposing at Backgarden Creek is well known and generally well received by the public.

Determination

This section will be filled out upon completion of the public comment period and at the time of finalization of the Environmental Assessment.

- ☐ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact".**
- ☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Signatures

Submitted By:

Project Leader Signature:

Date:

Concurrence:

Refuge Supervisor Signature:

Date:

Approved:

Regional Chief, National Wildlife Refuge System Signature:

Date:

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Appendix A – Other Applicable Statues, Executive Orders and Regulations

Cultural Resources

American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 - 1996a; 43 CFR Part 7

Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa-470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810

Paleontological Resources Protection Act, 16 U.S.C. 470aaa-470aaa-11

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10

Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)

Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)

Fish and Wildlife

Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, 450

Fish and Wildlife Act of 1956, 16 U.S.C. 742a-m

Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904

Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21

Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)

Natural Resources

Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23

Wilderness Act, 16 U.S.C. 1131 et seq.

Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.

Alaska Native Interests Lands Conservation Act 94 Stat. 2371

Appendix B – Section 7 Not Likely to Adversely affect

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Matt Whitbeck, Wildlife Biologist, Chesapeake Marshlands NWR Complex

Telephone Number: 443-737-7699

Date: May 8, 2025

I. Region: Region 5

II. Service Activity (Program) tidal marsh restoration

Blackwater NWR is proposing a thin layer placement project to restore approximately 100 acres of tidal marsh at the confluence of Backgarden Creek and the Blackwater River.

III. Pertinent Species and Habitat within Action Area: (Listed species/critical habitat, proposed species/proposed critical habitat, and candidate species). Include species/habitat occurrence on a map.

Northern long-eared bat (*Myotis septentrionalis*) – Endangered

Tricolored bat (*Perimyotis subflavus*) – Proposed species

Eastern black rail (*Laterallus jamaicensis jamaicensis*) – Threatened

Monarch (*Danaus Plexippus*) – Proposed species

Northern long-eared bats have been found in Moneystump Swamp and, possibly, Coles Creek on Blackwater NWR. A northern long-eared bat was captured in a mist net in Moneystump Swamp in 2016. A mist netting effort in 2019 also captured a single individual in the same area. Both captures were of an adult male. Several recently volant northern long-eared bats were captured in Moneystump Swamp in 2024, indicating breeding in the vicinity. Several roost trees were also identified in 2024 in Moneystump Swamp. There are no known hibernacula on the refuge.

Tricolored bats have been detected with acoustic recorders at three locations on Blackwater NWR in 2015 and 2016. Survey work conducted by Maryland DNR also found tricolored bat in Kentuck Swamp on Blackwater in 2017. Tricolored bats have not been detected on refuge properties on the Nanticoke River or Marshyhope Creek, but Maryland DNR has recorded them on nearby state property. There are no known maternity roost trees on the refuge. This species was detected in 2020 on a winter acoustic survey and may be using a dwelling on the refuge as hibernacula.

Black rails could potentially occur in irregularly flooded shallow tidal marsh or shallow freshwater herbaceous wetlands on Blackwater NWR. Automated recording units (ARUs) were used to survey for black rail in the project area the nights of May 15, 19, 31, and June 10, 2022, but none were detected.

Monarchs use the refuge grasslands, wetlands, old fields, agricultural margins, and roadsides during spring and fall migration, as well as during the spring and summer breeding season. They seek out nectar sources including goldenrods, sunflowers, blazing stars, and ironweeds. Lowering nightly temperatures, diminishing daylight, and aging nectaries trigger monarch to depart south, with most individuals leaving Maryland by late October. The proposed project area is too low, wet, and brackish to support milkweeds and many nectar sources for the species.

IV. Geographic area or station name and action:

Blackwater NWR, Dorchester County, MD. Thin layer placement of dredged material for wetland restoration.

V. Location (attach map) - County and State; section, township, and range (or latitude and longitude); distance (miles) and direction to nearest town:

The restoration area is at the confluence of Backgarden Creek and the Blackwater River. Approximately 12.3 miles south of Cambridge, MD.

VI. Description of proposed action (attach additional pages as needed):

The Service is proposing to treat up to 100 acres of a deteriorating tidal marsh on the refuge with thin-layer sediment applications using material dredged from the adjacent Blackwater River (See attached maps). We anticipate this project will raise the marsh surface approximately 10 to 15 centimeters. The sediment enhancement will offer a twofold ecological benefit to marsh resilience. The longevity of the marsh receiving thin layer sediment application will be extended by virtue of the raised surface elevation in relation to the local tidal regime. Additionally, root zone production is the main driver of vertical accretion rates in the Blackwater River system. Building the marsh platform to an elevation that maximizes plant productivity will take full advantage of the capacity of the marsh to further build elevation. The goal of this project is to not only build marsh elevation capital, but to raise the elevation of the plant community to a level where there is a positive feedback between rising sea levels and increased below ground biomass production and subsequent elevation gain.

The proposed action would use a floating hydraulic dredge to obtain sedimentary materials from the channel of the Blackwater River. The inner meander bends of the river would be dredged by cutting a series of one foot benches down and channelward on each dredge pass. This stair-stepped dredging pattern will avoid the creation of a vertical downcut from the river edge and help maintain bank stability. The inner meander bends would not be dredged below the current maximum river depths. Dredging would not occur closer than 14 feet to the vegetated riverbank. The dredged materials will be applied to the restoration area using a combination of aerial spray technology and slurry. After the applied material stabilizes, the area will be vegetated using a combination of planting, seeding, and natural re-colonization. Dredging and material placement will not take place May 1 – August 31.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in item III. (attach additional pages as needed):

Northern long-eared and tricolored bats use mines and caves in the winter to hibernate and use forests to forage and roost throughout the rest of the year. The species are most sensitive to disturbance during hibernation and when raising young. There are no caves or mines suitable for hibernacula anywhere on the eastern shore of Maryland. There are no trees within or around the project area so there is a very low chance of impacting either of the species of bat.

Placement of dredged material should restore some irregularly flooded high marsh habitat, potentially benefitting black rails. Dredging and material placement will not take place May 1 – August 31, minimizing the chances of impacting breeding black rails. Non-breeding rails may be displaced by construction activities.

Monarchs are expected to depart the area before construction activities start in November, therefore, direct impacts to this species would not be expected. While it may take several growing seasons for the plant community in the project area to recover from the placement of material, there are thousands of acres of similar marsh in the vicinity for migrating monarchs to use. Additionally, the restored marsh is expected to be higher in elevation and may support nectar species like seaside goldenrod (*Solidago sempervirens*), potentially improving the site for migrating monarchs.

B. Explanation of actions to be implemented to reduce adverse effects:

No additional actions are necessary as the existing program is not likely to affect either species.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination	**Response requested**
no effect/no adverse modification (species:_____)	**____*Concurrence**
may affect, but is not likely to adversely affect species/adversely modify critical habitat (species: eastern black rail and northern long eared bat)	**-X– Concurrence**
may affect, and is likely to adversely affect species/adversely modify critical habitat (species: _____)	**____Formal Consultation**

B. Proposed species/proposed critical habitat:

Determination	**Response requested**
no effect on proposed species/no adverse modification of proposed critical habitat (species: _____)	**____*Concurrence**
may affect, but is not likely to adversely affect species/adversely modify critical habitat (species: _tricolored bat and monarch__)	**-X– Concurrence**
is likely to jeopardize proposed species/adversely modify proposed critical habitat (species: _____)	**____Conference**

C. Candidate species:

Determination	**Response requested**
no effect (species: _____)	**____*Concurrence**
is likely to jeopardize candidate species (species: _____)	**____Conference**

MARCIA PRADINES

Digitally signed by MARCIA PRADINES
Date: 2025.05.12 13:14:16 -04'00'

signature **date**

Marcia Pradines Long
Project Leader
Chesapeake Marshlands NWR Complex

IX. Reviewing ESO Evaluation:

A. Concurrence ____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

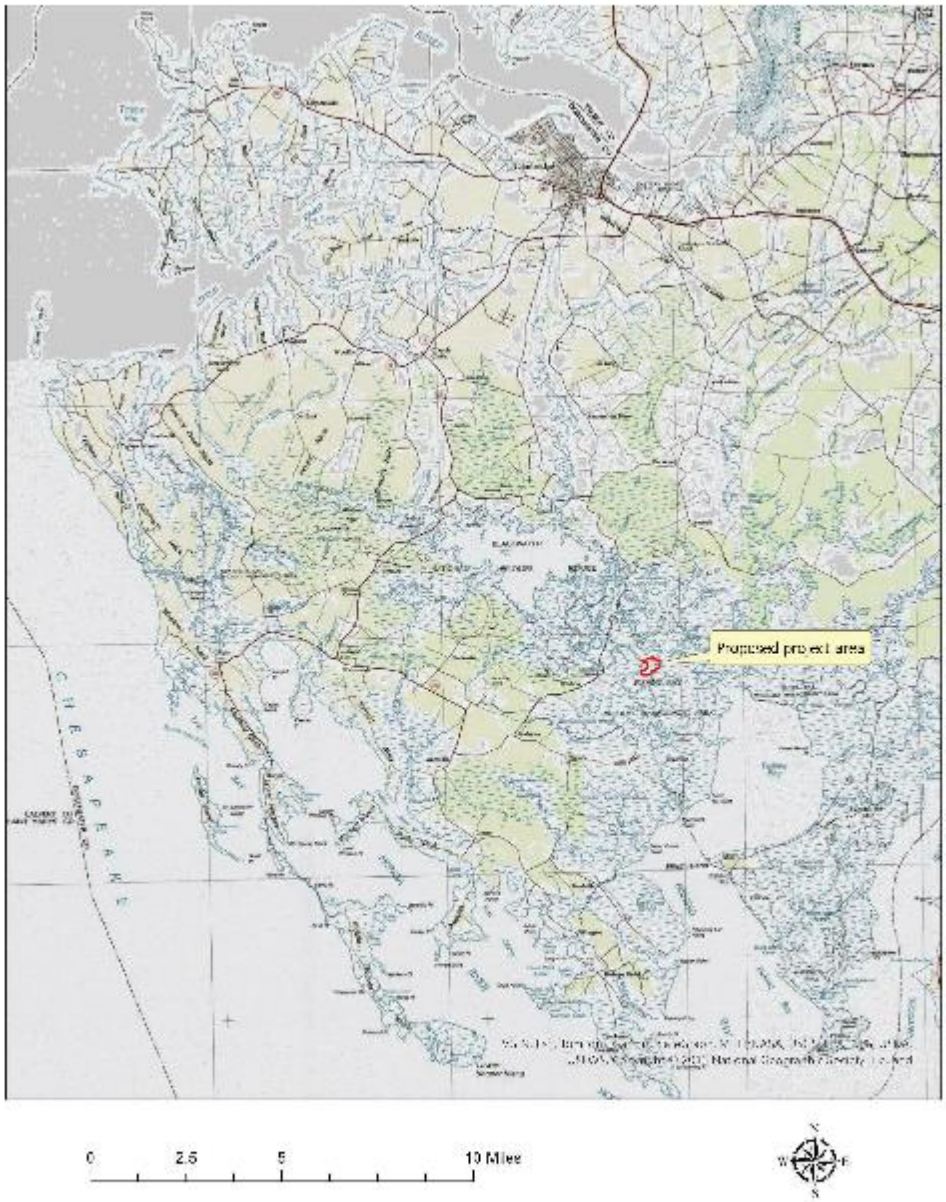
E. Remarks (attach additional pages as needed):

JULIE SLACUM Digitally signed by JULIE SLACUM Date: 2025.05.12 14:01:36 -04'00'

_____ _____

signature **date**

Genevieve Pullis LaRouche
Field Office Supervisor
Chesapeake Bay Field Office


Proposed project area
CHESAPEAKE
0
2.5
5
10 Miles
N
W
E
S


Proposed dredge area
Proposed restoration area
Rubbins
0
0.25
0.5
1 Miles
N
W
E
S

Appendix C - Marsh Restoration Monitoring and Management Plan

The goal of this project is to increase the resiliency of approximately 100 acres of tidal marsh within Blackwater NWR to relative sea level rise and storm impacts, while maintaining or increasing the ecological integrity of the system. The project is needed to restore tidal marsh elevation and thereby increase plant productivity. Increased plant productivity is expected to enhance the ability of the marsh to build elevation through belowground biomass accumulation. Without this action, the marsh at the project site will convert to open water in the near future. USGS's Chesapeake Bay Coastal Wetlands Synthesis Web App predicts approximately half the tidal marsh in the project area converting to open water in 26-50 years, with the remainder lasting 50-100 years.

The project builds marsh elevation through thin-layer sediment applications using material dredged from the adjacent Blackwater River. The sediment enhancement will offer a twofold ecological benefit to marsh resilience: 1) The longevity of the marsh receiving thin layer sediment application will be extended by virtue of the raised surface elevation in relation to the tidal regime (i.e. increased elevation capital); and 2) Root zone production, and consequently rates of vertical accretion, should increase. Root zone production is the main driver of vertical accretion rates in the Blackwater River system (Cahoon and Guntnerspergen 2010). Building the marsh platform to an elevation that maximizes plant productivity will take full advantage of the capacity of the marsh to continue to build future elevation (Kirwan and Guntenspergen 2012). This project is expected to not only build near-term tidal marsh elevation capital but also to raise the elevation of the plant community to the level at which there is positive feedback between rising sea levels and increased below ground biomass production.

Blackwater NWR has benefited from a long and productive partnership with USGS. We understand that they will likely be able to conduct research that will help us understand the outcomes of this project. While their work will be research-driven, it will serve to inform managers and help guide future decision making.

Adaptive management plan objectives, design, and framework

This plan is comprised of monitoring objectives measured by performance metrics, monitoring methods, and trigger point criteria. Possible management actions (potential responses) are listed at the end of the document and may occur based on results of monitoring and if trigger points are reached.

Objective 1. Area receiving sediment enhancement will have significantly greater marsh elevation trajectory, relative to comparable untreated marshes, over a ten-year period post-treatment.

Monitoring Metrics

- Marsh surface elevation change

Monitoring Methods

- Through a combination of SET, RTK, Lidar, or other methods monitor elevation change for up to 10 years post-construction.

Expected Results

- Marsh elevation increases from pre- to post-construction, to the extent specified by engineering plans.
- Marsh elevation trajectory increases post-construction, relative to comparable untreated marshes.

Objective 2: The area of emergent marsh habitat within the treated area returns to 1938 extent within three-years post-treatment. We expect 10-15% of the restored marsh to consist of regularly flooded low marsh and the remainder to be irregularly flooded.

Monitoring Metrics

- Percent cover of *Spartina alterniflora*, *S. patens*, *S. cynosuroides*, *Schoenoplectus americanus*, and other desirable macrophytes, as well as invasive species (e.g., *Phragmites australis*) for one growing season before construction and for three growing season post-construction.

Monitoring Methods

- Aerial photography, vegetation surveys, and/or photopoints will be used to estimate marsh habitat composition pre-construction and for three-years post-construction.

Expected Results

- Percent cover of marsh vegetation should increase to 1938 extent within three-years post construction.
- Cover of non-native invasive plants, primarily *Phragmites*, will not exceed 5% of the project area.

Trigger Levels

- Native plant cover in the project area has decreased, remained unchanged following construction, or falls below permitting requirements.
- Invasive plant cover exceeds 5% of the project area.

Objective 3: Banks of the Blackwater River adjacent to dredging areas do not erode or change position more than untreated reference areas for three years post-construction.

Monitoring Metrics

- Position of the riverbank adjacent to dredging areas and nearby untreated reference areas.

Monitoring Methods

- Changes in the position of the bank of the Blackwater River will be measured using remote sensing and/or physical markers over a three-year period.

Expected Results

- The position of the riverbank will not change more than untreated reference sites.

Trigger Levels

- The banks of the Blackwater River adjacent to dredge removal areas become destabilized and erode faster than untreated reference areas.

Potential responses

Once construction is completed, a post-construction assessment will occur to ensure design standards are met, followed by monthly visits the first year and annual visits in year 2 and 3. Concerns include sediment loss, no changes in inundation, no changes in ecological life, or exacerbations of any of these preexisting challenges. If such failures occur, staff will evaluate the potential harm to the environment and project success, and act to reverse such harm within the means, methods, and resources available.

The first round of data collected pre-construction will be the baseline to which metrics will be compared to determine if expected results are met (in addition to the baseline collected immediately post-construction). During the first few years, material will settle and vegetation will vary depending on soil conditions. Therefore, we expect the 3-year timeframe to be considered the early stages of this long-term project. As we collect data to understand and analyze the objectives addressed in this document, we will regularly re-evaluate success of the project. If expected results are not met or outcomes appear to be detrimental, staff will determine responses.

Below, we list potential responses that would be considered. It should be noted that not all triggers will require immediate action and may just require further analysis and study over time to understand the level of detriment occurring.

Types of Potential Responses:

• If restored marsh is too flooded, construct runnels or clean tidal guts to allow greater tidal exchange

• If invasive or unwanted plants occur at unacceptable levels, apply herbicide.

• If native vegetation does not recolonize the sites naturally or at an acceptable rate, add more plant plugs of native target species.

• If areas within the project area subside unacceptably over time, consider applying additional sediment on the sites (this may require a permit modification).

• If vegetation is not responding positively, conduct a stressor analysis to determine if underlying soil health is declining

Sampling protocols

The project will utilize a variety of monitoring protocols, developed either by the USFWS or by partners. An internal more extensive outline of protocols will be used. We recognize that technology is ever-changing regarding data collection and analysis. We may alter these protocols as affordable, state-of-the-art tools become available.

Appendix D – Section 106 State Historic Preservation Office Consultation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Marshlands National Wildlife Refuge Complex
Blackwater National Wildlife Refuge
2145 Key Wallace Drive
Cambridge, MD 21613

23 April 2025

Ms. Dixie Henry
Administrator, Project Review and Compliance
Maryland Historical Trust
100 Community Place, 3rd Floor
Crownsville, Maryland 21032

Dear Ms. Henry:

The U.S. Fish & Wildlife Service (Service) is planning a 100-acre marsh restoration project at the Blackwater National Wildlife Refuge (Refuge) in Dorchester County (Enclosure 1). The Service seeks to initiate coordination under Section 106 of the National Historic Preservation Act for the project. The Service is the lead agency for the undertaking. Coordination on this project will take place with the Maryland Department of the Environment and the U.S. Army Corps of Engineers, as well as other state and federal agencies, during the tidal wetland permitting process. A Joint Application for this project was sent to Maryland Department of the Environment on 08/05/2024.

The Service is proposing to treat up to 100 acres of a deteriorating tidal marsh on the refuge with thin-layer sediment applications using material dredged from the adjacent Blackwater River (Enclosure 2 and 3). We anticipate this project will raise the marsh surface approximately 15 to 20 centimeters. The sediment enhancement will offer a twofold ecological benefit to marsh resilience. The longevity of the marsh receiving thin layer sediment application will be extended by virtue of the raised surface elevation in relation to the local tidal regime. Additionally, root zone production is the main driver of vertical accretion rates in the Blackwater River system. Building the marsh platform to an elevation that maximizes plant productivity will take full advantage of the capacity of the marsh to further build elevation. The goal of this project is to not only build marsh elevation capital, but to raise the elevation of the plant community to a level where there is a positive feedback between rising sea levels and increased below ground biomass production and subsequent elevation gain.

The proposed action would use a floating hydraulic dredge to obtain sedimentary materials from the channel of the Blackwater River. The inner meander bends of the river would be dredged by cutting a series of one-foot benches down and channelward on each dredge pass. This stair-stepped dredging pattern will avoid the creation of a vertical downcut from the river edge and help maintain bank stability. The dredged materials will be applied to the restoration area using a combination of aerial spray technology and slurry. The proposed project will build the marsh elevation to approximately 37 cm NAVD88. After the applied material stabilizes, the area will be vegetated using a combination of planting, seeding, and natural re-colonization.

The Area of Potential Effects (APE) for the project consists of up to 30 acres of river channel, as well as a 100 acre section of tidal marsh (Enclosures 2 and 3). Maryland Historical Trust files were searched on 23 October 2014 for a similar project in the area. No records of inventoried sites were found within the APE. A note was found in the Quad File for the project area stating "1. Approximate location of Shorters Wharf; as per information gathered during phase I underwater archeological project (0)." The note indicated the historic Shorters Wharf may have been located on the southern shore of the Blackwater River, immediately east of the existing bridge. The dredging activity for the proposed project would take place over 2000 feet from this location, minimizing the likelihood of any negative impacts to the site if significant cultural resources were present. The tidal marshes

within the APE have no upland inclusions or indications of recent transition from upland to marsh, indicating low archeological sensitivity. The project will not have any effects on historic structures or viewsheds. Consequently, we believe that the project will have no effect on historic properties that are eligible for listing in the National Register of Historic Places. We request your concurrence with this determination.

We would appreciate receiving your comments on this finding within 30 days, as prescribed in the Regulations of the Advisory Council on Historic Preservation [36 CFR 800.4 (c)]. If you have any questions or need further information, please contact Matt Whitbeck, Supervisory Wildlife Biologist, Chesapeake Marshlands National Wildlife Refuge Complex, 443-737-7699 or matt_whitbeck@fws.gov.

Sincerely Yours,

BRIAN BOUTIN Digitally signed by BRIAN BOUTIN Date: 2025.04.23 07:31:08 -04'00'

Brian Boutin
Deputy Refuge Manager

Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD

Enclosure 2. Area of Potential Effects of the proposed undertaking, shown on aerial imagery.

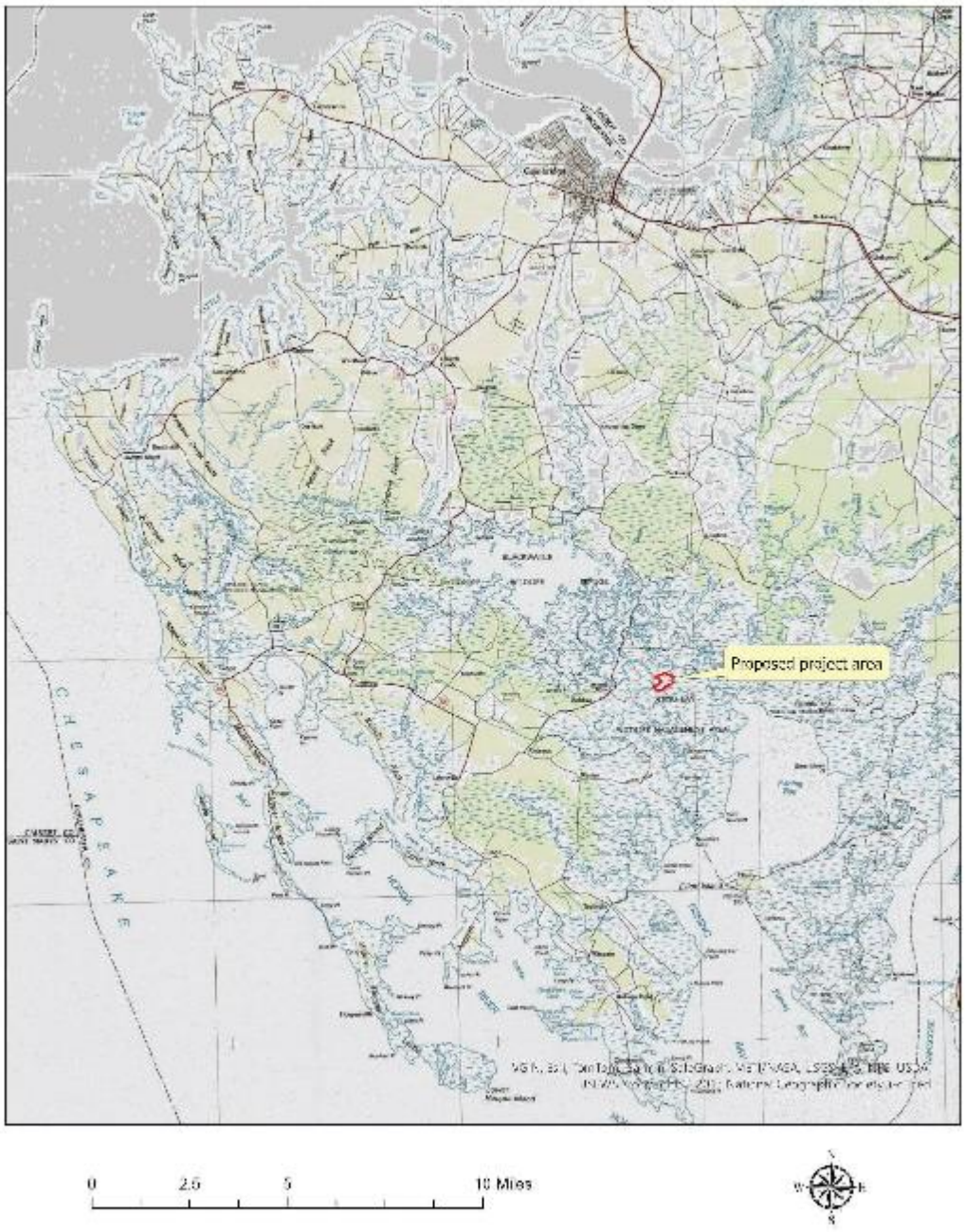
Enclosure 3. Area of Potential Effects of the proposed undertaking, shown on the Blackwater River, MD U.S.G.S. quadrangle.

Cc: Amy Wood, NWRS
Esther Westfall, NWRS

The **Maryland Historical Trust** concurs with the U.S. Fish and Wildlife Service that the undertaking described above will have no effect on National Register-eligible historic resources in the project area.

_____ _____
Signature Date

Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD



Enclosure 2. Area of Potential Effects of the proposed undertaking, shown on aerial imagery.

Enclosure 3. Area of Potential Effects of the proposed undertaking, shown on the Blackwater River, MD U.S.G.S. quadrangle.

Date: April 29, 2025

To: matt whitbeck
U.S. Fish and Wildlife Service

Project Name: Backgarden Creek tidal marsh restoration
County: Dorchester County
Agency: U.S. Fish and Wildlife Service
Second Agency: -- Not noted --
MHT Log #: 202502378

MHT Response: Thank you for providing the Maryland Historical Trust the opportunity to comment on the above-referenced undertaking using the MHT e106 system. The Maryland Historical Trust has reviewed the submitted project for its effects on historic and archeological resources, pursuant to Section 106 of the National Historic Preservation Act of 1966 and/or the Maryland Historical Trust Act of 1985. We offer the following comments and/or concurrence with the agency's findings:

No historic properties will be affected by the proposed undertaking. Additional consultation with our office may be required if there are any significant changes in project scope or location.

Thank you for your cooperation in this review process. Since the MHT response is now complete, this response will appear in the Completed section of your project dashboard. No hard copy of this response or attachments will be sent. If you have questions, please contact the following MHT project reviewers:

Troy Nowak troy.nowak@maryland.gov

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032
mht.section106@maryland.gov

MHT.Maryland.gov
Planning.Maryland.gov

Appendix E – Tribal Nation Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Marshlands National Wildlife Refuge Complex
Blackwater National Wildlife Refuge
2145 Key Wallace Drive
Cambridge, MD 21613

25 April 2025

Ms. Charissa Speck
Historic Preservation Director
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Dear Ms. Speck:

The U.S. Fish & Wildlife Service (Service) invites the Delaware Nation to be a consulting party under Section 106 of the National Historic Preservation Act for the proposed 100-acre marsh restoration project at the Blackwater National Wildlife Refuge (Refuge) in Dorchester County, Maryland (Enclosure 1).

The Service is proposing to treat up to 100 acres of a deteriorating tidal marsh on the refuge with thin-layer sediment applications using material dredged from the adjacent Blackwater River (Enclosure 2 and 3). We anticipate this project will raise the marsh surface approximately 15 to 20 centimeters. The sediment enhancement will offer a twofold ecological benefit to marsh resilience. The longevity of the marsh receiving thin layer sediment application will be extended by virtue of the raised surface elevation in relation to the local tidal regime. Additionally, root zone production is the main driver of vertical accretion rates in the Blackwater River system. Building the marsh platform to an elevation that maximizes plant productivity will take full advantage of the capacity of the marsh to further build elevation. The goal of this project is to not only build marsh elevation capital, but to raise the elevation of the plant community to a level where there is a positive feedback between rising sea levels and increased below ground biomass production and subsequent elevation gain.

The proposed action would use a floating hydraulic dredge to obtain sedimentary materials from the channel of the Blackwater River. The inner meander bends of the river would be dredged by cutting a series of one-foot benches down and channelward on each dredge pass. This stair-stepped dredging pattern will avoid the creation of a vertical downcut from the river edge and help maintain bank stability. The dredged materials will be applied to the restoration area using a combination of aerial spray technology and slurry. The proposed project will build the marsh elevation to approximately 37 cm NAVD88. After the applied material stabilizes, the area will be vegetated using a combination of planting, seeding, and natural re-colonization.

The Area of Potential Effects (APE) for the project consists of up to 30 acres of river channel, as well as a 100 acre section of tidal marsh (Enclosures 2 and 3). Maryland Historical Trust files were searched on 23 October 2014 for a similar project in the area. No records of inventoried sites were found within the APE. A note was found in the Quad File for the project area stating "1. Approximate location of Shorters Wharf; as per information gathered during phase I underwater archeological project (0)." The note indicated the historic Shorters Wharf may have been located on the southern shore of the Blackwater River, immediately east of the existing bridge. The dredging activity for the proposed project would take place over 2000 feet from this location, minimizing the likelihood of any negative impacts to the site if significant cultural resources were present. The tidal marshes within the APE have no upland inclusions or indications of recent transition from upland to marsh, indicating low archeological sensitivity. The project will not have any effects on historic structures or viewsheds. Consequently, we believe that the project will have no effect on historic properties that are eligible for listing in the National

Register of Historic Places. If there are areas of religious and cultural significance to your Tribe that we are unaware of, we would like to discuss ways to avoid adverse effects.

If the Delaware Nation wishes to be a consulting party for the proposed Backgarden Creek tidal marsh restoration project, the Service respectfully requests a response within 30 days of receipt of this letter. Maryland's SHPO will also be reviewing this project. If you have any questions or need further information at this time, please contact Matt Whitbeck, Supervisory Wildlife Biologist, Chesapeake Marshlands National Wildlife Refuge Complex, 443-737-7699 or matt_whitbeck@fws.gov.

Sincerely Yours,
MARCIA PRADINES
Digitally signed by MARCIA PRADINES
Date: 2025.04.29 08:13:19 -04'00'
Marcia Pradines Long
Refuge Manager

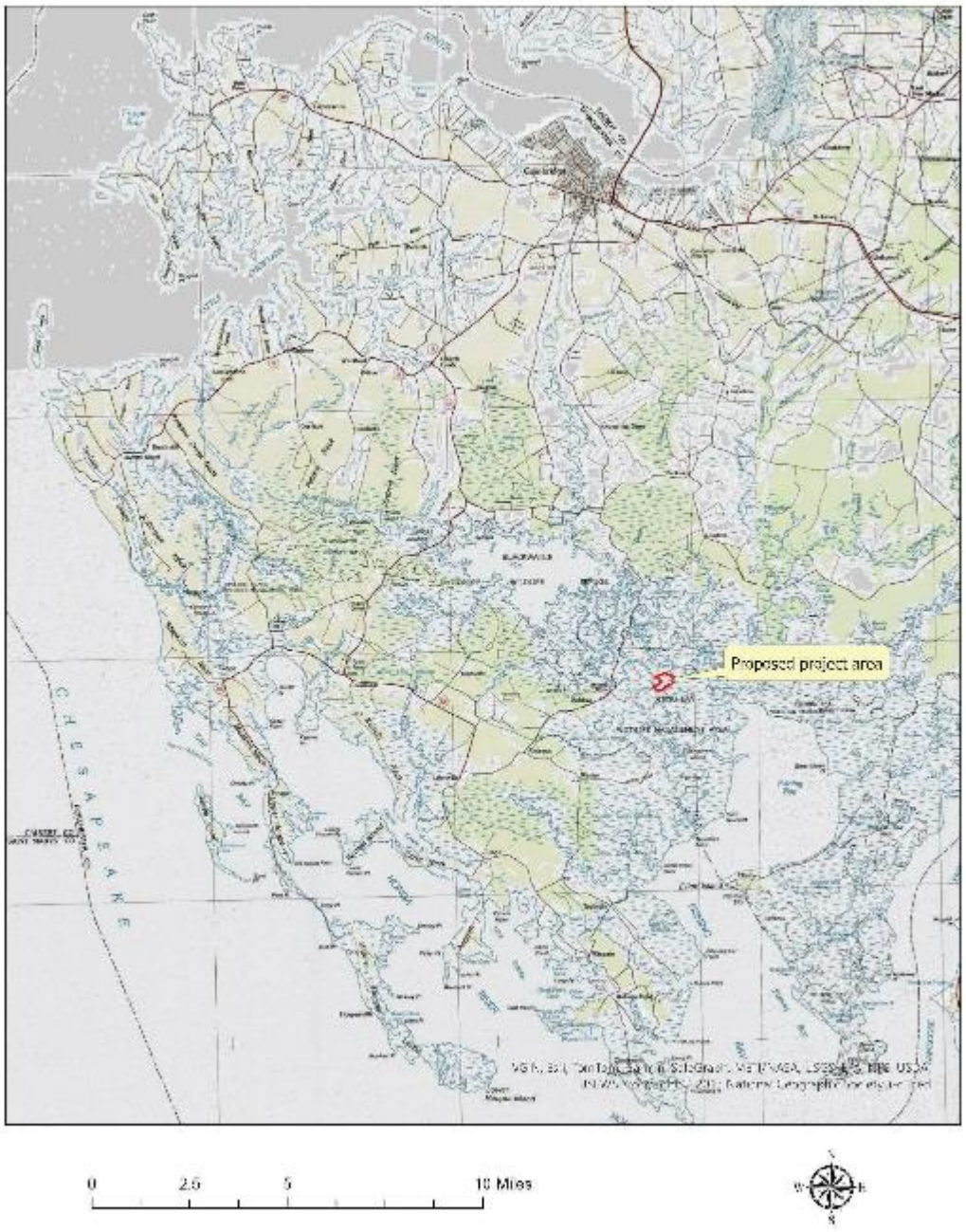
Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD

Enclosure 2. Area of Potential Effects of the proposed undertaking, shown on aerial imagery.

Enclosure 3. Area of Potential Effects of the proposed undertaking, shown on the Blackwater River, MD U.S.G.S. quadrangle.

Cc: Katelyn Lucas, THPO, Delaware Nation
Timothy Binzin, NWRS
Amy Wood, NWRS
Esther Westfall, NWRS

Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD



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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Marshlands National Wildlife Refuge Complex
Blackwater National Wildlife Refuge
2145 Key Wallace Drive
Cambridge, MD 21613

25 April 2025

Ms. Martina Thomas
Historic Preservation Officer
Delaware Tribe of Indians
5100 Tuxedo Blvd.
Bartlesville, OK 74006

Dear Ms. Thomas:

The U.S. Fish & Wildlife Service (Service) invites the Delaware Tribe of Indians to be a consulting party under Section 106 of the National Historic Preservation Act for the proposed 100-acre marsh restoration project at the Blackwater National Wildlife Refuge (Refuge) in Dorchester County, Maryland (Enclosure 1).

The Service is proposing to treat up to 100 acres of a deteriorating tidal marsh on the refuge with thin-layer sediment applications using material dredged from the adjacent Blackwater River (Enclosure 2 and 3). We anticipate this project will raise the marsh surface approximately 15 to 20 centimeters. The sediment enhancement will offer a twofold ecological benefit to marsh resilience. The longevity of the marsh receiving thin layer sediment application will be extended by virtue of the raised surface elevation in relation to the local tidal regime. Additionally, root zone production is the main driver of vertical accretion rates in the Blackwater River system. Building the marsh platform to an elevation that maximizes plant productivity will take full advantage of the capacity of the marsh to further build elevation. The goal of this project is to not only build marsh elevation capital, but to raise the elevation of the plant community to a level where there is a positive feedback between rising sea levels and increased below ground biomass production and subsequent elevation gain.

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Register of Historic Places. If there are areas of religious and cultural significance to your Tribe that we are unaware of, we would like to discuss ways to avoid adverse effects.

If the Delaware Tribe of Indians wishes to be a consulting party for the proposed Backgarden Creek tidal marsh restoration project, the Service respectfully requests a response within 30 days of receipt of this letter. Maryland's SHPO will also be reviewing this project. If you have any questions or need further information at this time, please contact Matt Whitbeck, Supervisory Wildlife Biologist, Chesapeake Marshlands National Wildlife Refuge Complex, 443-737-7699 or matt_whitbeck@fws.gov.

Sincerely Yours,
MARCIA PRADINES
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Date: 2025.04.29 08:07:56 -04'00'
Marcia Pradines Long
Refuge Manager

Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD

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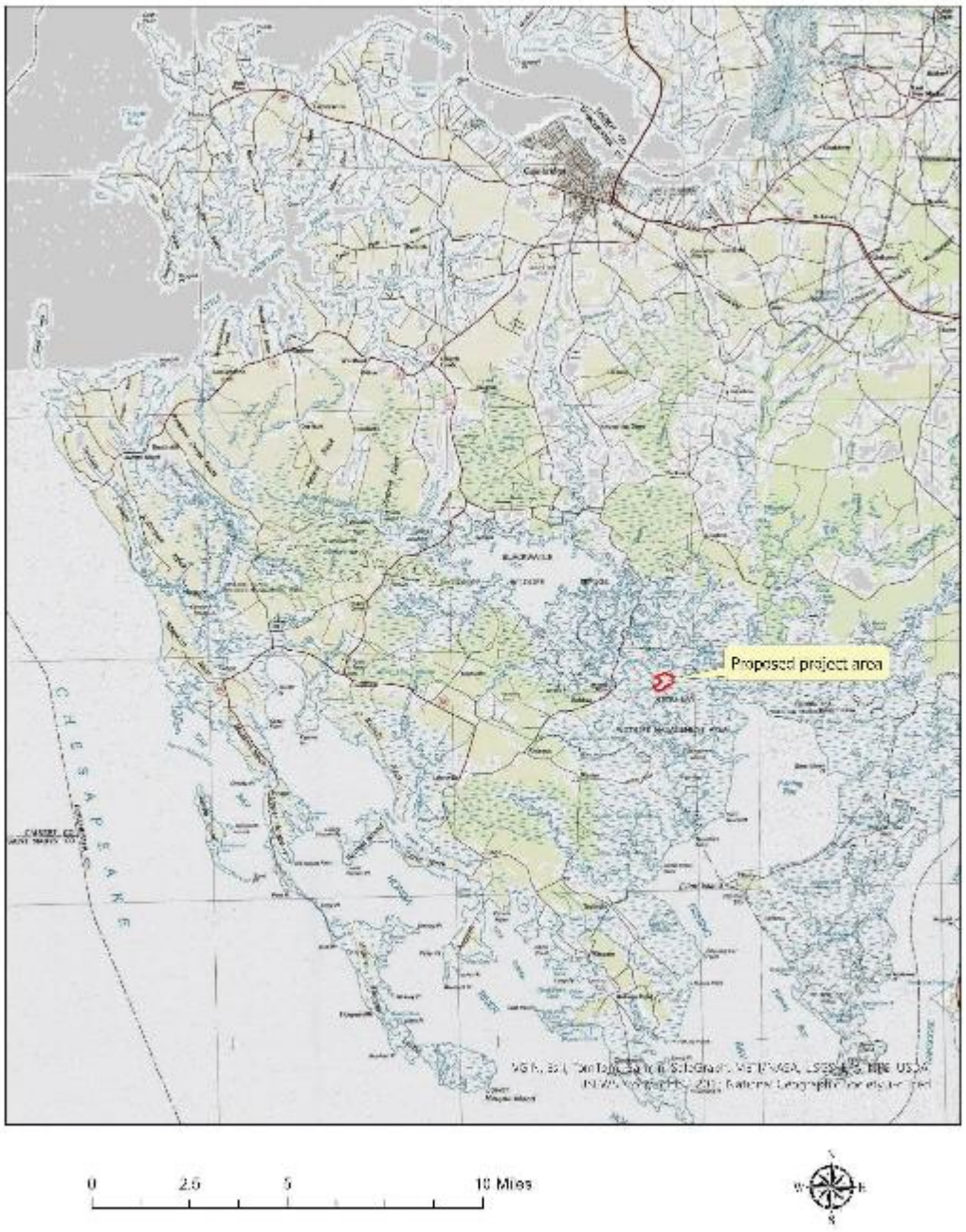
Enclosure 3. Area of Potential Effects of the proposed undertaking, shown on the Blackwater River, MD U.S.G.S. quadrangle.

Cc: Timothy Binzin, NWRS
Amy Wood, NWRS
Esther Westfall, NWRS

Enclosure 1. Vicinity map and proposed project area, Blackwater NWR, Dorchester County, MD



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