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APPENDICES

1. INTRODUCTION

1.1 PROJECT BACKGROUND AND AUTHORITY

The U.S. Army Corps of Engineers, Baltimore District (USACE), has prepared an Environmental Assessment (EA) to ensure compliance with the National Environmental Policy Act (NEPA) for proposed maintenance dredging of the Wicomico River Federal Navigation Channel located in Wicomico and Somerset Counties, Maryland. The authorized project provides for a channel up to 14 feet deep (plus two feet of allowable overdepth) and up to 150 feet wide from the Chesapeake Bay to Salisbury, Maryland. The project includes 14-foot deep, 100-foot wide channels with turning basins on the north and south prongs, and a 6-foot deep, 60-foot wide channel from deep water in the main river channel to Webster Cove. In the cove there is a T-shaped basin that is 100 feet wide and 400 feet long with extensions 200 feet long and 100 feet wide on each side (Appendix A, Map 1). The Federal navigation project is 37 miles long and was completed in 1956. USACE dredges the existing channel periodically to maintain the authorized project depths. Wicomico County is the non-Federal sponsor and is responsible for locating dredged material placement sites. The navigation channel is divided into upper and lower halves for maintenance dredging. The lower half of the navigation channel extends from Chesapeake Bay upstream to White Haven Ferry. The upper half of the navigation channel starts just north of the White Haven Ferry and ends at Salisbury. Maintenance dredging is completed in cycles in which one half is dredged approximately every two years, with dredging of the entire navigation channel length thus taking approximately four years to complete.

USACE conducts periodic condition surveys of Federal navigation channels to determine whether the channels have shoaled and require maintenance dredging. The dimensions of federally authorized channels are maintained for navigation when feasible and justified. When the need for maintenance dredging is established, the non-Federal sponsor is contacted by USACE to identify a suitable dredged material placement area. This process usually involves review of existing placement sites to determine if there is adequate capacity for their continued use, or identification of new sites when existing sites are deemed unsuitable. Section 3 (Alternatives Considered) describes the process undertaken to select the proposed placement site at Deal Island Wildlife Management Area (WMA) in Somerset County. Multiple agencies and organizations and Somerset County served as partners with USACE and Wicomico County to identify the proposed placement site.

1.2 PURPOSE AND NEED

The Wicomico River Federal Navigation Channel connects the port of Salisbury to Chesapeake Bay. The purpose of the Proposed Action is to maintain the authorized channel dimensions to allow unencumbered use by watercraft. The Proposed Action is needed because the existing channel has shoaled and is unsuitable for the range of vessels that require access through the channels. Economic interests would benefit because maintenance of the channel would provide unimpeded navigation to commercial vessels to sustain commerce, and to other general boating interests. The port of Salisbury has the second highest commercial port traffic in Maryland,

principally consisting of petroleum products and grain. Barge traffic is crucial to maintaining adequate fuel supplies for the Delmarva Peninsula.

Although this is a navigation project, the proposed action in this case would also serve the purpose of restoring and maintaining valued salt marsh habitat for vegetation, fish, and wildlife. The proposed action is designed to provide nesting habitat for saltmarsh sparrow, a rapidly declining species. Salt marsh in the lower Eastern Shore, as well as in multiple other areas along the US Atlantic and Gulf Coasts, is undergoing landscape-scale loss from the impacts of accelerating sea-level rise. Making use of dredged material from routine maintenance dredging is a nationally recognized opportunity to maintain and restore salt marsh. The opportunity to use Wicomico River navigation channel material for this purpose was identified by multiple agencies and organizations who recognized that the proposed action would generate material of value for salt marsh restoration and maintenance.

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The Proposed Action and No-Action alternative are evaluated in this EA. The EA was prepared in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969, as amended, and the regulations for implementing NEPA promulgated by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508) and USACE (33 CFR 230). A 404(b)(1) analysis has been prepared due to the placement of dredged material into waters of the United States (Appendix B). Because this EA is being prepared for operation and maintenance activities involving the discharge of dredged or fill material requiring a public notice, the notice indicated the availability of the EA/FONSI (33 CFR Ch. II, § 230.10) for review.

If it had become evident during preparation of the draft EA or public review that significant adverse impacts that could not be mitigated would have occurred as a result of the Proposed Action, a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) would have been prepared and published.

USACE has prepared previous NEPA documents for O&M of the lower half of the Wicomico River Federal Navigation Channel. A Record of Environmental Consideration (REC) for maintenance dredging of the lower reach of the Federal channel was prepared in 2012, and the channel was dredged in early 2013 with the material placed at an existing upland site at New Road Landing on Clara Road. An EA was prepared in 2017 for dredging the lower reach of the Wicomico River, and dredging was completed that year (2017). The 2017 NEPA document was an EA rather than a REC because the dredged material was placed beneficially at Ellis Bay WMA with the intent to restore tidal wetlands, rather than at the previously used upland site. A REC was prepared for dredging the upper channel in 2019, with dredging conducted in 2020 and the material placed at Sharp's Point upland containment site.

1.4 PUBLIC / AGENCY INVOLVEMENT

USACE coordinated with multiple agencies and organizations to consider alternative placement sites and develop details of this proposed action. The US Fish and Wildlife Service, Maryland Department of Natural Resources (MDNR), and Audubon Society proposed to USACE in 2019

use of the Deal Island WMA as a placement site for routine dredging of the lower Wicomico River Channel because of potential benefits to tidal wetlands and wildlife (particularly salt marsh sparrows and black rails). USACE presented the proposed plan to beneficially place material at Deal Island WMA to the interagency Joint Evaluation meeting in Annapolis, MD in January 2020. USACE coordinated with National Marine Fisheries Service in Summer 2020 regarding how to assess potential effects to essential fish habitat (EFH). USACE undertook coordination with Maryland Historical Trust (MHT), the Pamunkey Indian Tribe, the Delaware Tribe, and the Delaware Nation regarding the proposed placement site. Coordination records are provided in Appendix D.

USACE issued a Public Notice announcing availability of the draft EA for review and soliciting agency and public input on February 19, 2021. USACE solicited comments from the U.S. Environmental Protection Agency (USEPA); U.S. Department of Interior, Fish and Wildlife Service (USFWS); U.S. Department of Commerce, National Marine Fisheries Service (NMFS); Maryland Department of the Environment (MDE); MDNR; Maryland Historical Trust (MHT) and Wicomico County, Maryland, Somerset County, Maryland, Chesapeake Bay Foundation, and Audubon Society. USACE received written responses from multiple agencies and organizations to the public notice (Appendix D). USACE subsequently coordinated with federal and state resource agencies to refine details of the proposed plan, particularly with respect to methods of placement at Deal Island WMA. USACE held a virtual public meeting in April 2021 to discuss the proposed project. USACE held multiple virtual meetings with agencies, with significant meetings held in January 2020 (in-person), July 2020, January 2021 and October 2021 to discuss the proposed project. The meetings with resource agencies and the public led to refinement of the proposed plan methods and monitoring to optimize benefits and minimize adverse effects. Revisions to the plan were incorporated directly into the text of this EA. Appendix D contains coordination records.

Wicomico County is responsible for acquisition of any and all interests in land necessary for construction and dredged material placement. Wicomico County will coordinate with USACE Real Estate staff, Somerset County, and MDNR to ensure any permissions or interest in land are acquired before construction starts, or construction contracts are solicited. The ultimate design, permitting and construction of the Route 363 culvert (see Section 2.2) is the responsibility of the non-federal sponsor.

USACE will continue coordinating with project partners after construction to monitor project success. NOAA, USFWS, Audubon Society, MDNR, US Naval Academy, and Wicomico County are on board to conduct pre and post monitoring related to biomass/vegetation coverage/elevation (NOAA), invasive species (*Phragmites*) management (Wicomico County, USFWS), submerged aquatic vegetation (SAV) monitoring (NOAA and MDNR), hydrodynamics (US Naval Academy), and bird monitoring (Audubon Society, USFWS). The monitoring team (being led by outside agencies/organizations) continues to meet regularly.

1.5 OTHER NAVIGATION PROJECTS

1.5.1 Navigation Projects

In addition to the Wicomico River Federal Navigation Channel, USACE maintains other navigation projects within the lower Eastern Shore. Table 1-1 presents an inventory of several larger nearby channel and harbor projects. USACE also has multiple harbor and navigation projects in the Nanticoke River.

Table 1-1: Select USACE navigation projects in Wicomico River vicinity.

Project Name	Project Features
Upper Thorofare	Channel, turning basin, anchorage
Lower Thorofare	Channel, mooring basin
Fishing Bay	Multiple channels, multiple anchorages

1.5.2 Tidal Wetlands Restoration Efforts

USACE previously attempted to create tidal wetlands at the mouth of Tedious Creek off Fishing Bay in the 1990s by making beneficial use of dredged and excavated material associated with constructing breakwaters to improve navigation. That effort placed material behind geotextile tubes in open water exterior to the existing tidal marsh shoreline but proved unsuccessful. Tedious Creek is a component of the USACE Fishing Bay Navigation Project.

In 2002, USACE dredged for borrow within Blackwater National Wildlife Refuge to obtain substrate to restore tidal wetlands. Dredged material was placed on failing tidal wetlands by low-density slurry through a pipeline, as well as aerially. In 2003, the substrate was planted. This effort was undertaken as a demonstration project of the USACE/MDNR/USFWS Blackwater Restoration Study. A substantial portion of these restored wetlands continue to survive.

The USFWS, The Conservation Fund and the National Audubon Society undertook restoration of 40 acres of marsh lands at Blackwater National Wildlife Refuge (NWR) in 2016 utilizing material dredged for borrow from within the refuge. These projects were undertaken within failing tidal wetlands near where USACE had restored wetlands in the early 2000s. USACE and MDE authorized (permitted) this project, but USACE was not involved in its construction.

USACE attempted to restore tidal wetlands at Ellis Bay WMA using material dredged from routine maintenance of the Wicomico River Federal Channel in 2017. The Ellis Bay effort placed material along the shoreline, exterior to the existing tidal marsh. That effort proved unsuccessful because the material was too fine-grained and containment was inadequate.

2.0 PROPOSED ACTION

The proposed action would conduct operations and maintenance (O&M) dredging on approximately seven miles of the lower Wicomico River Federal Navigation Channel from Monie Bay upstream to the vicinity of Mount Vernon Wharf. O&M dredging efforts usually are focused in the navigation channel between Shark Fin Shoal and the Whitehaven Ferry where most of the shoaling typically occurs. The channel would be hydraulically dredged, and the material pumped through a pipeline temporarily laid in the Wicomico River. The temporary pipeline would come ashore in Dames Quarter Creek. From Dames Quarter Creek, dredged material would be piped overland approximately 4 miles to reach the placement site at the southern end of Deal Island WMA. Dredged material to restore tidal wetlands would daylight from the pipe and be distributed (Appendix A, Maps 2 & 3). The pipeline would only be deployed/laid during dredging activities, which should take no more than approximately 4 months. Maximum pumping distance would be approximately 14 miles, including both under water and over land sections. On average, pipeline distance to the placement site would be 8 miles. A booster pump may be utilized. Approximately 140,000 cubic yards of mud and sand would be dredged. The pipeline route may be adjusted to minimize effects on a variety of environmental resources in the lower Wicomico River, Dames Quarter, and Deal Island WMA. These pipeline route resources include Webster Oyster Sanctuary, Unit 15 (Long Point) and possibly Unit 14 (Franks Island) of the Coastal Barrier Resources System (CBRS), and brackish marsh (tidal wetlands). The contractor would be tasked with the responsibility of finding an optimal pipeline route. The proposed placement site lies in failing tidal wetlands between the southern side of the Deal Island WMA waterfowl impoundment and the north shoreline of the Manokin River. The river contains SAV habitat and the Manokin River oyster sanctuary. At this time, it is anticipated that project construction would be undertaken in the general manner as described below. Wicomico County will need to obtain any required real estate interests for the construction and placement site(s) for the project.

During previous O&M dredging, NMFS and MDNR have required time-of-year (TOY) restrictions to minimize potential impacts to anadromous fish, oysters, and waterfowl. TOY restrictions for the currently proposed action were issued by MDNR by letter on March 16, 2021, and in the MD Department of the Environment (MDE) provisional Water Quality Certificate (WQC) jssued on July 27, 2022. Dredging is permitted between October 1 and February 15, except for the portion of the channel within Natural Oyster Bar (NOB) 29-1. (See Section 4.2.2.1 "Benthic Invertebrates and Shellfish."). Dredging is not allowed within the NOB from December 1 to 31 March[1].

During public/agency review of this EA, further coordination was undertaken with MDNR, NMFS, MD State Historic Preservation Office (MD SHPO), and other agencies and organizations to determine whether the BMPs described above would be implemented or whether additional BMPs may be required. A remaining issue is to determine whether BMPs should be implemented to minimize potential risks to the oyster sanctuary through which the pipeline is proposed to pass.

[1] (Channel Stations 38+900 to 42+000 lie within the NOB. The contractor is instructed in the specifications to dredge south to north to make sure Stations 38+900 to 42+000 are cleared before the TOY restriction window applies. See Appendix D, provisional WQC, for channel maps).

Text below provides additional detailed information on dredging within the river, the pipeline, and placement.

2.1 WICOMICO RIVER DREDGING

In the Wicomico River, pipeline sections would be moved and deployed via barge. The pipeline would be weighted down and submerged most of the time in the river such that boat traffic would easily pass over it. The pipeline would be marked in accordance with navigation regulations, lighted if above water and marked with signs where below water.

2.2 PIPELINE: DAMES QUARTER CREEK TO PLACEMENT SITE

The pipeline landing from the Wicomico River into Dames Quarter Creek is still being determined. It is anticipated that the pipeline would follow Dames Quarter Creek to its southwestern end, and then follow a tidal tributary southwestward to Messick Road. Under the pipeline landing route, from Messick Road north of Route 363 (Deal Island Road), the pipeline would then cross southward under Route 363.

If the pipeline follows the route into southwestern Dames Quarter Creek, the pipeline sections would likely be deployed where practicable utilizing small boats under highest tide conditions. Within the tidal tributary at the southwestern end of the creek, the pipeline may be deployed from Messick Road by crossing over tidal wetlands. Following this route, pipeline length in Dames Quarter Creek would be approximately 4,000 feet; pipeline length in the tidal tributary would be approximately 1,745 feet. Laying pipe on existing tidal wetlands was disallowed in 2017 operations and maintenance dredging in a Memorandum of Understanding (MOU) between Wicomico County and the MDNR (USACE was not a signatory). However, in this case because of the greater piping distance and possible restrictions over crossing private property, it may be necessary to lay pipe within existing tidal wetlands. In the event that the pipeline needs to physically cross tidal wetlands, USACE would utilize best management practices (BMPs) to minimize impacts. These may include requiring the contractor to use light load bearing (low pressure) equipment in wetland areas as to not cause extensive damage to the existing marsh soil/substrate. USACE may instruct the contractor to minimize the amount of time that sections of pipeline lay on wetland areas, particularly during the growing season. In the contract USACE would also have language stating that it is the contractor's responsibility to repair all damaged land and vegetation caused by their equipment. USACE would decide what method of restoration to use based on site-specific conditions.

A permanent culvert or conduit would be installed beneath Route 363 southeast of the Messick Road intersection to convey dredged material under Route 363. Staging, storage and stockpiling of culvert or conduit installation equipment and materials would take place on an acceptable upland site, other than for the drill rig and exit pit if a conduit is installed as described below.

If a culvert is installed, it is anticipated that Route 363 would be cut into and a trench excavated into the road bed. The culvert would be installed and the road repaired over the top of the culvert.

Work would occur from the road and its shoulder using equipment such as backhoes and excavators.

If a permanent conduit is used, it would be installed using directional drill methods. The directional drill rig would setup on either the north east or south east side of Route 363 in tidal wetlands (no uplands are present on the east side of Route 363). This would require excavating temporary entrance and receiving pits on either side Route 363 (south east and north east). A backhoe or excavator would likely be utilized to excavate the exit pit. Excavated material from the pits would likely be temporarily stored in close proximity. The directional drill would pass beneath Route 363 a minimum of approximately 5 feet beneath the road, and the conduit pipe installed. Pipe drilling slurry (waste drilling mud, plus incidental geologic materials and soil) would be captured onsite and transported offsite for proper disposal. Excavated materials from the pit (earth and soil) would likely be used as backfill onsite. The contractor shall be responsible for ensuring establishment of ground elevation and vegetative cover (by seeding or planting) prior to releasing any and all bonds. Future use of the conduit pipe would occur using the pipe openings on either side of Route 363. Installation of the conduit would impact tidal wetlands on either side of Route 363.

From Route 363, the pipeline would follow along the shoulder of roads, trails, and ditches through Deal Island WMA generally southward to the proposed placement site.

2.3 PLACEMENT SITE

Because the proposed placement site is bounded by tidal waters and wetlands and a WMA impoundment, minimal land access is available for heavy equipment from land to reach the proposed placement site. Some construction equipment and materials will need to be brought in via boat/shallow barge over Manokin Creek (Appendix A, Map 4). It is anticipated that the equipment and materials would be brought ashore using a boat ramp on Big Sound Creek adjacent to the proposed placement area. Manokin Creek is shallow in the boat ramp vicinity and around the placement site, so the contractor would need to have boats with minimal draft to get in and out of the boat ramp and work around the site as needed. It is anticipated that the contractor would primarily use small johnboats to get the work completed to ensure they can get around the placement site perimeter as well.

Straw bales would be placed and ditch plugs would be installed in the failing marsh and shallow open water as containment structures, up to several months in advance of placement. At the site during placement, the temporary pipeline outfall will be placed on the berm of the waterfowl impoundment (outside/north of the placement area) and would be moved as needed to achieve desired elevations. The pipeline outfall is only going to be placed on the impoundment berm and will not be placed in the placement site. Material would flow from the edge of the berm into the placement site to the desired elevation. This would reduce any (if not all) impact to the remaining tidal wetlands in the area in which dredged sediment would be placed.

Approximately one and a half feet of dredged material would be placed in failing marsh and open water areas. Thickness will be finalized following completion of an elevation survey of current conditions at the proposed placement site. Approximately 75 acres of tidal wetland would

be restored. Work would most likely occur round the clock seven days a week when weather is favorable (wind is limiting factor). Native vegetation would be planted and seeded to restore the wetland over the two growing seasons post dredged material placement. Vegetation plantings would be completed on the exterior edge the first growing season, the interior would be seeded the first growing season aerially. The interior may be planted if needed to establish marsh vegetation the second growing season. Seeding and planting duration efforts would take approximately two calendar years. Pipeline sections may be stored within the WMA for future dredged material placement actions.

3. ALTERNATIVES

This section presents alternatives to the Proposed Action, including the required No-Action Alternative. Alternatives considered focus on alternative placement sites, dredging techniques, dredged material transport methods, and type of tidal wetlands to restore.

3.1 NO-ACTION

The No-Action Alternative is the benchmark against which proposed Federal actions are to be evaluated. Under the No-Action Alternative, the channel would not be dredged. Shoaled conditions would impede navigation in the channel and worsen over time as additional channel deposition naturally occurs.

3.2 PLACEMENT SITE

Because channel dredging is conducted periodically, there is an ongoing need for dredged material placement sites. Potential sites are periodically identified and given consideration. The project has utilized multiple placement sites over time. Since 2013, nearly two dozen potential upland placement sites have been identified and considered by USACE, along with the non-Federal sponsor Wicomico County. Each site encountered substantial problems including but not limited to: large quantities of existing or historical wetlands, long distances from the federal channel, lack of availability from property owner, and lack of size of property for continued dredge cycle use.

Tidal wetlands are a valued and legally protected natural resource. Because of ongoing loss of tidal wetlands in the lower Eastern Shore associated with rising sea level (Section 4.1.1), placement of thin layers of material on failing tidal wetlands to restore their former elevation is now viewed to be an environmentally optimal use of dredged material. The National Wildlife Federation (2008) evaluated impacts of 40 cm (16 inches) of sea-level rise from 1990 through the year 2100 and the US Climate Change Science Program forecast coastal wetlands survival under several sea-level rise scenarios. Both forecast that a substantial portion of the tidal wetlands of Deal Island WMA and the Wicomico River vicinity would deteriorate and convert to open water.

Multiple agencies and organizations concerned with ongoing loss of tidal wetlands in the lower Eastern Shore contacted USACE and proposed that dredged material from the Wicomico River navigation channel be placed on failing tidal wetlands of Deal Island WMA to restore intertidal elevations. Agencies/organizations advocating this as an optimal use of dredged material included MDNR, USFWS, Chesapeake Bay Foundation, and the Audubon Society. Approximately 650 acres of Deal Island WMA with at-risk tidal wetlands bayward of the WMA impoundment were identified as optimal. MDNR has been concerned that the impoundment may be breached by shoreline erosion progressing northward from the Manokin River. USFWS and Audubon Society were concerned about regional ongoing loss of tidal wetlands habitat and its impact upon two bird species: Black Rail and Salt Marsh Sparrow. Thus, a portion of the WMA south of the impoundment that could contain the quantity of dredged material anticipated and

protect the impoundment, while restoring tidal wetlands, was selected as the placement site for this proposed action.

3.3 DREDGING METHOD

Mechanical dredging by clamshell or similar dredging rig could mechanically scoop up material and place it into a nearby barge and accomplish the project purpose. The material would then be disposed of in one of two ways. By one method, the material would be taken by barge to an open water placement site and deposited by opening the bottom of the barge. The other method would be to take the material to an onshore staging area, where it is partially dewatered then loaded into dump trucks for placement on land.

Mechanical dredging is undesirable for this project for a number of reasons. First, this dredging method requires the use of two vessels: the dredging barge and the transport and disposal barge. This is more costly than the operation of a single vessel. Second, this disposal method requires that placement be conducted in open water or on land after dewatering. There is no designated open-water nor on-land placement site available in the vicinity of the proposed dredging location. This method would also fail to restore brackish wetlands. For these reasons, mechanical dredging will not be considered further in this analysis.

Instead, hydraulic dredging as has been routinely conducted for past O&M dredging was selected as the preferred means to dredge the navigation channel.

3.4 DREDGED MATERIAL TRANSPORT AND PLACEMENT

Dredged material could be transported from the dredging site to the placement site by truck, barge, or pipeline. Because of shallow water depths in the proposed placement site vicinity and possible need to dewater and rewater material to move it from the barge to the placement site, transporting material by barge from the dredge site to the placement site would be difficult and costly. Transport by truck might require dewatering followed by rewatering of the material, which would be challenging. Truck transport directly to the placement area would be impracticable because of soft soil conditions. Overall, truck transport would be challenging and costly. Thus, both barging and trucking were rejected as material transport alternatives in this analysis.

Although the distance of pumping required is challenging, because of the rural character of the area and large expanse occupied by the WMA, transporting the material via pipeline is viable and was selected as the dredged material transport method.

Three alternative methods to transport dredged material via pipeline under Route 363 were considered. The pipeline could be run along the west side of Messick Road and cross under Route 363 through uplands on either side of Route 363. However, this would likely require the temporary above-ground pipeline from the dredge pumpout to cross Messick Road and cross driveways of approximately two residences. This would limit vehicle access on Messick Road, including for vehicles with trailers accessing the boat ramp as well as a facility on the east side of the road that appears to utilize trailer trucks visible in Google Earth. This would also pose

challenges for those residences. Alternatively, a greater length of conduit pipe with additional crossings under Messick Road as well as Route 363 could be utilized. However, such a conduit route would still likely require an entrance point in tidal wetlands on the east side of Messick Road, and would be more challenging and expensive to construct, and could pose engineering challenges when conveying dredged material for this and future placements. Based on these considerations, a pipeline route crossing under the west side of Messick Road through uplands would likely be impracticable. Instead, crossing under Route 363 east of Messick Road but as close to the road as practicable was selected. This would have both permanent and temporary tidal wetlands impacts, but these would be minimized to the degree practicable. Section 2 provides a description of this alternative. Positioning of the pipeline and conduit pipe would be evaluated by MDE in determining whether to authorize tidal wetland impacts from conduit installation.

The restoration of tidal wetlands requires restoration of intertidal elevation ranges. In situations where more than several inches of material is required, then pumping materially in a low density slurry onto the placement area and periodically relocating pipes is a practicable alternative. In cases where the surface is within inches of this elevation range, dredged material can be aerially broadcast onto sites. Because portions of the placement area are now shallow open water and could require up to one and a half feet worth of material, low-density slurry placement is more practicable and was selected.

3.5 TIDAL WETLAND HABITAT TYPE TO RESTORE

Tidal wetlands occur at intertidal elevations between mean water and spring high water. Over the last several decades, tidal wetlands restored in Chesapeake Bay were predominantly at the lower end of this elevation range – “low marshes”. These provide access to aquatic organisms from the Bay for extended periods each day when tides are between about mean water and mean high water. However, the lower Eastern Shore naturally consists of predominantly irregularly flooded tidal marsh. This type of tidal wetlands, commonly called “high marsh,” lies at elevation ranges between mean high water and spring high water and are less frequently flooded by the tides than "low marsh". Irregularly flooded marshes on the lower Eastern Shore are failing on a landscape scale as the rate of sea-level rise accelerates. Irregularly-flooded marshes provide habitat for two species of birds whose populations are declining – Black Rail (Federally listed as threatened) and Salt Marsh Sparrow (Cornell Lab). To aid these species of birds, it was determined that “high marsh” elevations should be targeted. Additionally, higher elevation tidal wetlands formed would likely have greater longevity than lower tidal wetlands as the rate of sea-level rise accelerates.

4. AFFECTED ENVIRONMENT

Existing conditions of the potentially affected environment represent the base from which changes discussed in this document are evaluated (in Section 5.0). Section 4 focuses on the proposed project area, which includes the Wicomico River channel to be dredged, the pipeline route from Dames Quarters Creek on the south shoreline of the river to the placement area on the south side of Deal Island WMA, and the placement area within Deal Island WMA. However, some effects of the proposed work could extend over a greater area and that larger area is then considered. Appendix A contains maps of the proposed project area.

Initially, environmental, cultural and social topics typically considered in NEPA documents were reviewed for applicability to the proposed action. Several topics were identified for which impacts are clearly not applicable. These topics were screened from further evaluation in this EA (Table 4-1).

Table 4-1: Topics screened from detailed consideration.

RESOURCE CATEGORY	REASON FOR EXCLUSION
Air Quality	Wicomico, and Somerset Counties are currently in attainment for all national ambient air quality standards (USEPA, 2020). Further, maintenance dredging is exempt from conformity regulations as identified by the 1993 General Conformity Final Rule 40 CFR 93.153, updated in 2010.
Hazardous, Toxic and Radioactive Waste, Contaminants (HTRW)	Dredged material is not considered HTRW. The contractor would be responsible for adhering to all Federal, state and local regulations and laws for management of hazardous wastes. Channel material was tested for priority pollutants in 2009. Contaminant levels did not pose a problem because they were low. Water quality certificates previously received from MD have not stated that there has been any problem with potential contamination based on testing results. Dredged material from the channel has been beneficially placed previously. The proposed placement site and route to the site are in a rural area lacking concentrated contaminant sources.

4.1 PHYSICAL ENVIRONMENT

4.1.1 Hydrology

Waterways of the study area are tidal. The navigation channel lies in the lower Wicomico River, which flows into Monie Bay. Monie Bay is an arm of Tangier Sound. The proposed placement area at Deal Island WMA lies along the shoreline of Manokin Bay, into which flows the Manokin River, both of which are tidal arms of Tangier Sound.

The closest tidal gauge to the proposed dredging and placement sites is at Roaring Point on the Nanticoke River, to the west of the lower Wicomico River. Normal tidal range at Roaring Point is about 2 feet. Spring tidal range under full/new moon conditions is about 3 ft (MDNR, 2020). Chesapeake Bay has seasonal sea levels driven by prevailing winds with generally higher water levels in summer, and lower water levels in winter (Zervas, 2001).

Waters of Tangier Sound adjacent to the Wicomico River are moderately salty and classified as mesohaline. The highest monthly salinity average of above 16 ppt occurs in fall, while the lowest monthly salinity average is below 13 ppt and occurs in spring (MDNR Eyes on the Bay; Chesapeake Bay Program).

NOAA nautical chart 12231 "Tangier Sound, Northern Part" depicts that the Wicomico River channel is naturally 15-20 deep MLW along parts of its length upstream of Mt Vernon where the river is narrow. Proceeding downstream, the lower Wicomico River widens just upstream of Monie Bay, and there is shallow water along the shoreline less than 6 feet deep MLW that extends out toward the navigation channel. Monie Bay has a broad area of shallow water less than 6 feet deep MLW along the shoreline. Water depths in Dames Quarter Creek from the Wicomico River to the boat ramp are about 4 ft, but further south into the creek are less than 2 feet MLW. Near the proposed placement area, water depths in Laws Thorofare and the Manokin River off the southern end of Deal Island WMA are shallow, with depths being only several feet deep MLW up to several hundred yards offshore.

Sea level rose at an average rate of 0.017 ft/yr at Cambridge, MD, over the period from 1980 through 2020, according to USACE sea level tracker. Cambridge lies approximately 30 miles north of the proposed placement site at Deal Island WMA. Local sea-level rise results from combined effects of global and regional rise in water levels (sea level) exacerbated by regional and local subsidence.

The Deal Island WMA contains an impoundment 2,800 acres in size whose water levels are managed (MDNR, 2020). Salt marshes of the area contain numerous ditches constructed to control mosquito populations. Additionally, many channels for local historic navigation and drainage were cut through interior areas of the salt marshes. Natural and manmade ponds occur within brackish marshes of Deal Island WMA. These include ponds forming as wetlands fail (see Section 4.2.1.2), ponds created for wildlife management and other purposes, and ponds forming in drowning Carolina Bays.

4.1.2 Water Quality

Surface waters in the proposed dredging and placement areas are assigned by MDE to Use Class II, with designated uses of Migratory Spawning & Nursery, Shallow Water SAV, Open Water Fish & Shellfish, and Shellfish Harvesting (MDE 2020). Water quality of the lower Wicomico River and adjacent Tangier Sound are impacted by high anthropogenic nutrient inputs, which produce poor water clarity, algal blooms, and limit submerged aquatic vegetation (SAV) (see Section 4.2.1.1). Nutrients derive from agriculture in the watershed, and the Chesapeake Bay itself, which is eutrophic (has excess nutrients) (MDNR, 2007).

MDE established a number of Total Maximum Daily Loads (TMDLs) in the 1990s and 2000s for the lower Wicomico River and adjacent waters of Tangier Sound because pollutants produce impairments to designated uses. MDE identified the lower Wicomico River and adjacent Tangier Sound as not meeting its designated SAV resource use because of excess total suspended solids (TSS). Portions of Tangier Sound and the lower Wicomico River are listed as impaired by fecal coliform for the designated use of Tidal Shellfishing. The lower Wicomico River is impaired for seasonal migratory fish spawning and nursery uses because of low dissolved oxygen caused by nutrient loadings and biochemical oxygen demand (MDE, 2020). Pollutants impairing tidal water quality derive from the Wicomico Watershed as well as from the Bay itself.

4.1.3 Land Use

The project area contains vast tidal waters bordering the Eastern Shore mainland of MD. The mainland contains vast tidal wetlands, limited area of nontidal wetlands, and uplands. The mainland is rural in character, with farms, widely scattered residences, and small unincorporated more densely settled areas. The Wicomico River watershed is largely agricultural.

Deal Island WMA is managed by the MDNR Wildlife and Heritage Service. The WMA maintains habitat for wildlife, and offers recreational hunting, fishing, biking, camping, and hiking opportunities. The WMA contains roads and trails, and a large impoundment managed for waterfowl.

4.1.4 Topography

The landscape along the proposed pipeline route is flat and low-lying, with the highest elevations occurring in the Dames Quarter area. The Deal Island, MD, topographic quadrangle depicts maximum elevations of 2 feet (1927 NGVD) along the proposed pipeline route in the Dames Quarter area. The Deal Island WMA (and other adjacent areas of the lower Eastern Shore) contain numerous low-relief ridges, channels, and depressions formed during geological times when sea levels, climate, and the Chesapeake Bay were substantially different from today (DeJong and others, 2015).

Elevations of the vast tidal wetlands of the area are intertidal. Healthy brackish marsh of the area naturally lie at about mean high water elevation because of the processes by which they form (see Section 4.2.1.2).

4.1.5 Geologic Materials and Soils

Tangier Sound sediments alongshore are typically sandy, while sediments in the center of large open water areas typically are muds (clays and silts) (MGS, 1988). USACE sampling has determined that sediments in the Wicomico River navigation channel include mud and sand. The mainland along the river is mapped to contain geologic materials of the Parsonburg Sand Formation in the Dames Quarter vicinity, and then upstream in the vicinity of White Haven. The Parsonburg sand deposits derive from ancient sand dunes and tend to underlie topographically higher areas in the flat lower Eastern Shore landscape of the study area. From Dames Quarter upstream to about Mount Vernon, the Kent Island Formation underlies the surface. This

formation contains sedimentary deposits ranging from sands to clays. Between Dames Quarter and Mount Vernon, tidal marsh deposits occur along the river shoreline, formed by the existing wetland systems (Denny et al., 1979). The shorelines of the Wicomico River and the Manokin River are largely in a natural (unstabilized) condition. However, the river shoreline west of Dames Quarter Creek is stabilized with groins and bulkheads (VIMS, 2004).

Tidal wetlands occur on sand and mud substrates, as well as on peaty substrates comprised of plant debris. Where tidal wetlands have sloped substrates on their shorelines, the vegetation contributes to reducing wave energy and protecting shorelines. However, most of the tidal wetlands in the region have steep slopes on their shore, and these wetlands are vulnerable to wave erosion (USACE, 2011). In interior areas away from the shoreline, tidal wetlands in the region are drowning in place as a consequence of sea-level rise. Ponds form in the interior from inadequate vertical growth of the tidal wetland to match rising sea level, then the ponds become large enough for small waves in the pond itself to cause erosion. As interior tidal wetlands fail and ponds form, numerous channels extend outward from the interior pond into the surrounding tidal wetland (Stevenson and others, 2002).

The Natural Resources Conservation Service maped eleven soil units occurring along the proposed pipeline route from Dames Quarter into Deal Island WMA (Table 4-2; Appendix A, Map 6). These soils include several farmland soils of notable importance to maintaining the nation's food supply, as well as providing fiber and forage. Mapped farmland soils in agricultural use occur in the Dames Quarter vicinity about 150 feet west of Messick Road. Several hydric soil types along the proposed pipeline route are tidally flooded and support brackish marsh. These include Transquaking and Mispillion, Tangier, and Sunken soils map units. These soils are highly organic (contain substantial plant remains), and are flooded by tides, although Sunken soils flood less frequently than the other map units. It is likely that several feet of fill materials underlie Route 363, with some presumably obtained historically from ditches in brackish marsh on either side of the road.

Table 4-2: Mapped soil units along proposed pipeline route.

Map Symbol	Soil Name	Farmland Classification	Hydric Soil Rating (other than minor components)
EQB	Endoaquepts and Sulfaquepts, 0 to 5 percent slopes	Not prime farmland	Yes
FgdA	Fallsington loams, 0 to 2 percent slopes, Northern Tidewater Area	Farmland of Statewide Importance	Yes
FhA	Fallsington-Glassboro complex, 0 to 2 percent slopes	Farmland of Statewide Importance	Fallsington - Yes; Glassboro - No;
HmA	Hammonton loamy sand, 0 to 2 percent slopes	All areas are prime farmland	No

Table 4-2: Mapped soil units along proposed pipeline route. (Continued)

Map Symbol	Soil Name	Farmland Classification	Hydric Soil Rating (other than minor components)
HvA	Hurlock sandy loam, 0 to 2 percent slopes	Farmland of Statewide Importance	Yes
KgB	Klej-Galloway complex, 0 to 5 percent slopes	Farmland of Statewide Importance	Klej - No; Galloway - No
RwB	Runclint-Cedartown complex, 2 to 5 percent slopes	Not prime farmland	Runclint - No; Cedartown - No
RxB	Runclint-Evesboro complex, 2 to 5 percent slopes	Not prime farmland	Runclint - No; Evesboro - No
SuA	Sunken mucky silt loam, 0 to 2 percent slopes, occasionally flooded, tidal	Not prime farmland	Yes
Ta	Tangier mucky peat, very frequently flooded, tidal	Not prime farmland	Yes
TP	Transquaking and Mispillion soils, very frequently flooded, tidal	Not prime farmland	Transquaking - Yes; Mispillion - Yes
W	Water	Not prime farmland	(Water)

4.2 LIVING THINGS AND HABITATS

4.2.1 Plant Communities

4.2.1.1 Submerged Aquatic Vegetation

The Virginia Institute of Marine Science (VIMS) conducts surveys of SAV in the Chesapeake Bay and all of its tidal tributaries, generally on an annual basis. Composite maps depicting SAV bed occurrence over longer periods of time are of particular value because some SAV species are highly dynamic from year to year, and bed locations and sizes vary. Because SAV is a valuable resource, physical disturbances to it from dredging and placement are regulated. Regulatory decisions are often made based on the last 5 years of record to account for bed dynamics. Areas where SAV occurs in some years is considered SAV habitat, regardless of whether it occurs there every year.

Over the period 2015 to 2019, no SAV was mapped in or in close proximity to the Wicomico River federal navigation channel or in Dames Quarter Creek. SAV was consistently mapped each year to occur at only one point location within the lower Wicomico River off Nanticoke Point on the north shoreline (not in close proximity to the navigation channel).

The waters of Manokin Bay and Lower Thorofare off the southern end of Deal Island WMA supported SAV in the years 2015-2019. SAV beds in many years occurred in the waters leading

to the boat ramp at the southern end of Deal Island WMA. Mapped bed boundary locations varied from year to year, with particularly extensive beds occurring in 2017 and 2018. Mapped SAV beds generally extended from the shoreline bayward for approximately 0.1 to 0.3 miles, depending on the year. A composite map over the period 2014-2019 depicts that the entire shoreline along the southern end of Deal Island WMA is SAV habitat (Appendix A, Map 8).

Although VIMS maps depict SAV bed locations for the study area, they do not always note which species occur in each bed. In the 1990s, VIMS-mapped SAV beds off the southern end of Deal Island WMA were consistently identified to contain widgeon grass (*Ruppia maritima*). It is likely that SAV beds in the Deal Island area have remained predominantly widgeon grass. Widgeon grass can grow under a wide range of salinities, from fresh to salty water, and is found in both tidal and non-tidal waters. Beds often vary substantially in location, size, and coverage from year to year. Widgeon grass is noted to be able to recolonize bottom that has been scarred by boats more quickly than eel grass (VIMS, 2020). MDNR (2020) notes that the man-made impoundment at Deal Island WMA also contains widgeon grass.

Drowning and eroding salt marshes support only limited SAV within newly formed open waters because peaty substrate character and turbidity from ongoing wetlands failure limits SAV. Sandy substrates appear to support greater SAV growth in the area of interest (Palinkas and Koch, 2012).

4.2.1.2 Wetlands

The National Wetlands Inventory (NWI) maps and categorizes salt marshes of the study area as "estuarine intertidal emergent persistent irregularly flooded" (code E2EM1P). The NWI depicts that Deal Island WMA contains a large expanse of salt marsh extending across much of the neck between the Wicomico and Manokin Rivers. Freshwater shrub and forested wetlands are also mapped to occur on higher ground in the Dames Quarter area, as well as on ridges in Deal Island WMA, but only locally near Dames Quarter do freshwater shrub wetlands occur along the proposed pipeline route. The NWI maps and categorizes the freshwater shrub and forested wetlands along the proposed pipeline route as palustrine scrub shrub (PSS) and palustrine forest (PFO) with seasonal tidal flooding.

The most recent imagery available on Google Earth (2013) of the Deal Island WMA area salt marshes depicts interior open water areas and associated channel networks typical of drowning tidal wetlands of the lower Eastern Shore. These salt marsh-failure features occur in the proposed placement area.

Healthy salt marsh vegetation and its remains persist above the marsh surface all year. "Low" marshes occur from about mean water to mean high water and are regularly flooded by the tides. "High" marshes occur from mean high water to spring high water and are flooded irregularly by the highest tides. Because of the processes by which they form and limited tidal range of the bay, "high" marsh naturally predominates in Chesapeake Bay. "Low" salt marsh is dominated by the tall form (3 to 6 feet high) of smooth cordgrass (*Spartina alterniflora*). High salt marshes are vegetated by the short form of smooth cordgrass (1 to 2 feet high) as well as saltmeadow cordgrass (*Spartina patens*), spike grass (*Distichlis spicata*), and black needlerush (*Juncus*

roemerianus). Salt marshes are often bordered on their landward side by shrub wetlands, including several "high tide" shrubs such as marsh elder (*Iva frutescens*) and eastern baccharis (*Baccharis halimifolia*). The invasive variety of reed grass (*Phragmites australis*) is a common resident of salt marshes where water salinities are less than about 15 ppt. Existing remnant salt marsh exterior to the impoundment at Deal Island WMA is dominated by black needlerush with small areas of short-form smooth cordgrass (Appendix D coordination records, Audubon Society).

Forested wetlands occur in fresh and slightly brackish waters with salinity up to several parts per thousand (ppt) in MD, but not typically in saltier waters. The NWI maps the forested wetlands occurring within Deal Island WMA as containing needle-leaf coniferous (such as pines) to broadleaf vegetation (hardwoods).

4.2.1.3 Upland Vegetation

Based on the Deal Island WMA map prepared by the MDNR and the most recent imagery available on Google Earth (2013), the proposed pipeline route on land in the Messick Road vicinity (near Dames Quarter Creek) include residential lawns, upland old field vegetation, highway right-of-way herbaceous plantings, and row crops managed to support wildlife. Upland old field vegetation occurs on and adjacent to the dirt and gravel roads and trails along the proposed pipeline route through Deal Island WMA.

4.2.2 Fish and Wildlife

4.2.2.1 Benthic Invertebrates and Shellfish

Based on water salinity and substrate conditions, typical benthos of the lower Wicomico River waters to about 10 feet depth likely include blue crab, grass shrimp, mud worms, sea squirt, bent mussel, and soft-shell clam (White, 1989). The regularly maintained Wicomico River navigation channel likely supports predominantly opportunistic and short-lived benthos typical of periodically disturbed mud and sand bottom, with organisms also likely limited somewhat by low oxygen levels in warm water months.

Blue crab overwinter in deep trenches of the Chesapeake Bay (Chesapeake Bay Program, 2020), thus it is unlikely that overwintering blue crab would occur in substantial numbers in the Wicomico River.

Oysters were historically abundant in the area, and more recently have been the focus of active restoration efforts, and aquaculture is being undertaken to produce a harvest. Multiple categories of oyster bottom are mapped for management purposes in the area of interest for this EA. The Maryland Shellfish Aquaculture Siting Tool provides a map of categorized bottom types. Management categories present include designated Natural Oyster Bars (NOB), (included within public shellfish fishery areas [PSFA]), oyster sanctuaries, and oyster lease areas. Approximately 2,700 feet of channel at the southern end of the Federal channel to be dredged are located within NOB 29-1, which is also a PSFA. In addition, portions of the Federal channel are also within 500 yards of this NOB and NOB 24-11. Webster Sanctuary occurs along the northern shore of the

Wicomico River at Dames Quarter Creek and could be in the path of the proposed pipeline that would convey dredged material from the channel to Deal Island WMA. The Webster Sanctuary was surveyed during the Bay Bottom Survey (1974 to 1983) and of the 224 acres surveyed, 36 acres (16%) were classified as oyster reef habitat. The Manokin River Oyster Sanctuary occupies waters bayward of the Deal Island WMA shoreline in the vicinity of the proposed placement area. During the Bay Bottom Survey, of 9,360 acres surveyed, 19% was classified as oyster habitat (MDNR, 2016). Nine shellfish aquaculture sites (WI159, WI160, WI607, WI697, WI707, WI715, SO512, SO513 and SO785) are located within 500 yards of the proposed dredging area on either side of the navigation channel (Appendix A, Maps 9 and 10).

In addition to the regulated categories of oyster bottom described above, the bottom of the study area contains numerous parcels of historic oyster bottom. These oyster bars are not the legally defined oyster bar boundaries of current Maryland law but rather the traditional oyster bar boundaries where watermen harvested oysters for centuries (Appendix A, Maps 9 and 10). Multiple historic oyster bars occur along the shoreline of the proposed placement site. Historic oyster beds are also found within the lower Wicomico River channel, including the navigation channel.

Invertebrates of the salt marshes and open waters of the proposed placement site would likely include periwinkle, ribbed mussel, and fiddler crab (White, 1989). The Deal Island WMA impoundment water levels are managed to support a variety of aquatic insects that waterfowl feed upon (MDNR, 2020).

4.2.2.2 Finfish

Based on salinity and depths, fish species likely occurring abundantly along the shoreline of the Wicomico River and in open waters and tidal wetlands of the proposed placement site off the Manokin River include bay anchovy, silversides, killifish and sheepshead minnows (White, 1989). The lower Wicomico River tidal waters are mapped by the Chesapeake Bay Program as spawning areas for several species of semi-anadromous fish species. Conversely, tidal waters of the Manokin River are not mapped as spawning habitat (Table 4-3).

Table 4-3: Anadromous and semi-anadromous fish species and quality of spawning habitat.

Species	Lower Wicomico River	Manokin River (tidal waters off Tangier Sound)
Striped Bass	Acceptable	No Occurrence
White Perch	Marginal	No Occurrence
Yellow Perch	Marginal	No Occurrence

USACE coordinated with the National Marine Fisheries Service (NMFS) regarding EFH in Summer 2020. NMFS recommended that study area waters in the Wicomico River navigation channel and proposed placement site vicinities be considered "Essential Fish Habitat" (EFH) for seven fish species (Table 4-4). In addition, SAV beds in the study area are considered to

constitute habitat areas of particular concern (HAPC) for summer flounder. Although utilizing the term "essential," the EFH designations for many species are broad in nature and cover wide geographic areas. NMFS' EFH designations evolve over time as additional information is compiled, as well as because of changes in fish species distribution.

Table 4-4: Finfish with designated EFH in study area vicinity.

Tally	Common Name	Life History Stage	HAPC?
1	Clearnose Skate	Adult, Juvenile	No
2	Little Skate	Adult	No
3	Winter Skate	Adult	No
4	Black Sea Bass	Juvenile, Adult	No
5	Bluefish	Adult, Juvenile	No
6	Summer Flounder	Juvenile, Adult	Yes
7	Windowpane Flounder	Juvenile	No

4.2.2.3 Wildlife

Diamondback terrapin occur in the tidal waterways and nest in higher sandy areas. Diamondback terrapin overwinter in sediment at the bottom of creeks and rivers, as well as in riverbanks (Chesapeake Bay Program, 2020). Terrapin were commercially harvested in Maryland until 2007 when the fishery was closed because of concerns over population declines. Principal threats to their populations include drowning in crab pots, habitat loss, pollution, overharvest, and development and maintenance of shipping channels (USFWS, 2013).

Portions of the Wicomico River plus all of Deal Island WMA (including the proposed placement site) are located within Waterfowl Concentration Areas, as designated under MD's Critical Area law (Appendix A, Map 11). Deal Island WMA supports abundant waterfowl because of natural open water and wetland habitats, as well as the presence of a manmade impoundment created with water levels managed for waterfowl. Deal Island supports one of the largest concentrations in the state of herons, egrets and ibis. One of Maryland's only breeding population of black-necked stilts thrive in the WMA. Large flocks of American wigeon winter at the WMA (MDNR, 2020). The southeastern corner of the impoundment (800 acres) is a designated waterfowl refuge and is closed to hunting (MDNR).

Bird species associated with high marsh and high marsh edge in Chesapeake Bay include Salt Marsh Sparrow. Saltmarsh Sparrows are restricted to saltmarshes through the entire year. This species is listed on the Partners in Flight Red Watch List because of recent steep population declines, although the species is not federally or state-listed as endangered or threatened at this time. The species is vulnerable to sea-level rise and other changes to high marsh habitats (Cornell Lab).

4.2.3 Threatened and Endangered Species

USACE consulted the USFWS Information for Planning and Conservation website to determine whether federally listed species under USFWS jurisdiction occur in the proposed dredging,

pipeline, or placement areas. The website generated a response identifying no federally-listed endangered or threatened species or critical habitat for such species occurring in the proposed project area (Appendix B).

Black Rail, federally-listed as threatened, formerly occurred in substantial numbers in high marsh in the lower Eastern Shore (Chesapeake Bay STAC, 2012). Black rail occurs in tidal wetlands, but also in non-tidal wetlands from the East Coast to the Rockies. Its tidal wetland populations are vulnerable to sea-level rise and other changes to high marsh habitats (Atlantic Coast Joint Venture, 2020).

USACE consulted the NMFS Section 7 Mapper website to determine whether federally-listed species under NMFS jurisdiction occur in the proposed dredging, pipeline, or placement areas. NMFS identified two species of federally-listed sturgeon that could potentially occur in the Chesapeake Bay zone, although neither breeds in the vicinity (Table 4-5). No critical habitat for either sturgeon species occurs in the study area vicinity, although Atlantic sturgeon critical habitat is identified to occur on the Eastern Shore elsewhere.

Table 4-5: Endangered/threatened sturgeon species occurrence.

Common Name	Life Stages	Behavior	From	Until
Atlantic	Juvenile	Migrating & Foraging	Jan 1	Dec 31
	Subadult	Migrating & Foraging	March 15	Nov 30
	Adult	Migrating & Foraging	March 15	Nov 30
Shortnose	Adult	Overwintering	Nov 1	Feb 28
	Adult	Migrating & Foraging	Jan 1	Dec 31

NMFS Section 7 Mapper identified four species of sea turtles potentially occurring in the project area (Table 4-6). All occur as juveniles and adults while migrating and foraging from May 1st until November 30th. None breed/nest in the project vicinity.

Table 4-6: Endangered/threatened sea turtle occurrence in Chesapeake Bay zone.

Common Name
Green
Kemp's ridley
Leatherback
Loggerhead

4.3 BUILT ENVIRONMENT AND PEOPLE

4.3.1 Transportation and Navigation

The Wicomico River Federal Navigation Channel is used by commercial and recreational vessels. The channel connects Chesapeake Bay to Salisbury, which has the second highest commercial port traffic in Maryland, principally consisting of petroleum products and grain. Barge traffic is crucial to maintaining adequate fuel supplies for the Delmarva Peninsula.

There is a boat ramp at Dames Quarters near where the proposed pipeline would cross from the Wicomico River onto the mainland. There is also a boat ramp at Deal Island WMA near the proposed placement area.

The average daily traffic for Route 363, near the intersection with Messick Road, was 1,382 vehicle trips in 2018 (the most recent data available) (MDOT SHA, 2019).

4.3.2 Noise

Noise is traditionally defined as unwanted sound that interferes with normal activities in a way that reduces the quality of the environment. Although noise data is not available, daily noise levels are expected to be typical of a rural, waterfront community (i.e., recreational boating and commercial fisheries activities and local residents). In addition, wildlife especially waterfowl and wading birds produce a substantial volume of noise at certain seasons and periods in the day. Overall, the area is fairly quiet.

4.3.3 Socioeconomics and Environmental Justice

Dames Quarter is a census-designated place in Somerset County and does not have its own municipal government. It is included in the Salisbury, Maryland-Delaware Metropolitan Statistical Area for purposes of the census. The population was 188 at the 2000 census. Deal Island WMA is uninhabited public land.

As defined for the purposes of identifying relevant populations, minority areas are census block groups with a 50 percent or greater proportion of the population consisting of racial minorities, including those of Hispanic origin. Poverty areas are defined as census block groups where 20 percent or more of the population lives in households with incomes below the poverty line. Based on 2010 census results, Dames Quarter and a surrounding 2-mile area are 28% minority. Accordingly, Dames Quarter does not constitute a minority area. In this area, approximately 39% of the population is low income, according to the US Environmental Protection Agency "EJSCREEN". The Dames Quarter area does appear to constitute a low-income area. Approximately 8% of the population is under age 5, which is similar to the state average of 6%. Accordingly, the area does not appear to have a concentration of children.

Agriculture and related industries, such as packaging, are important economic activities in the Wicomico River watershed.

Commercial fishing is also an important economic activity in the region. Although waters of the study area support commercial fishing, neither the channel nor proposed placement areas are identified by MDNR as notable fishery areas.

4.3.4 Cultural and Historic Resources

An examination of USGS historic topographic maps from 1903 to 1972 shows that the proposed placement areas have been affected by natural channelization, interior ponding, and erosion through time. There is an archaeological site (18SO126) along the southwestern shoreline of the proposed placement area. This site has not been evaluated for the National Register of Historic Places and was noted as eroded when documented in the 1980s.

5. ENVIRONMENTAL CONSEQUENCES

This section of the EA identifies and evaluates the anticipated environmental consequences or impacts associated with the Proposed Action. The terms "impact" and "effect" are used interchangeably in this section. Impacts may be described as positive, adverse, significant and minor as appropriate. Positive impacts occur when an action results in a beneficial change to the resource. An adverse impact results when an action results in a detrimental change to the resource. Significant impacts occur when an action substantially and permanently changes or affects the resource. A minor impact occurs when an action causes impact, but the resource is not permanently and/or substantially changed. Impacts are also described as short- and long-term, which are not associated with rigid time frames, but relative timeframes.

Without dredging, the channel would locally continue to shoal and become shallower. Environmental impacts of ceasing dredging would be favorable in most respects within the Wicomico River, except that would cause loss of habitat for fish dependent upon deeper channel waters. Ceasing dredging would be detrimental to air quality as the cargo moved by barge would be required to be transported via rail or truck, which generate substantially more carbon dioxide per ton-mile. In absence of USACE undertaking placement of dredged material at Deal Island WMA, shoreline erosion and interior ponding would continue to cause loss of brackish marsh. Erosion would eventually physically threaten the impoundment at the WMA. If MDNR chooses not to protect the impoundment, it would cease to be an area manageable for invertebrate forage production for waterfowl. Ongoing tidal wetlands failure at Deal Island WMA may create some areas suitable for SAV beds as open water areas expand. However, SAV beds forming would likely be ephemeral, limited by substrate conditions and high natural turbidity from ongoing tidal wetlands failure.

5.1 PHYSICAL ENVIRONMENT

5.1.1 Hydrology

The proposed maintenance dredging would increase water depths within the navigation channel to the authorized depth of 14 feet, plus up to 2 feet over-dredge.

At the pipeline landing at Dames Quarter Creek, it is anticipated that the pipeline will be laid on the bottom of Dames Quarter Creek and then follow a tidal tributary waterway at the southwestern end of the creek up to Messick Road. The bottom of Dames Quarter Creek and this tidal waterway would be temporarily disturbed by installation and presence of the pipeline. Total bottom linear disturbance would be approximately 5,750 feet (4,000 feet in Dames Quarter Creek and 1,750 feet in the tidal tributary).

Placement of dredged material at Deal Island WMA would fill in open water that has developed from tidal wetlands failure, as well as limited areas of historic open waterways that crossed through the marsh. Approximately 75 acres of a complex mix of remnant failing tidal wetlands with substantial open water would be filled and restored to healthier tidal wetlands with reduced open water. A range of elevations would be produced by material placement, with intertidal elevations predominant. Restoration of the failing tidal wetlands would reduce tidal exchange

through the parcel. Tidal exchange would continue around the restored parcels such that there would likely be no effect to exchange outside of the filled parcels.

5.1.2 Water Quality

Dredging activities and placement of the dredge material could result in temporary increases in turbidity, due to the dredge stirring up the bottom, the pipeline disturbing the bottom during deployment, material escaping from pipes, boats hitting bottom, and escape of material from the placement site. Coarser suspended sediment would settle rapidly to the bottom, although finer-grained material could disperse over a broader area by water movement from tides and winds. Research cited in previous NEPA documents for O&M dredging has determined that dredging and placement operations would release a minor quantity of nutrients from the dredged sediments. The released nutrients would be expected to nominally increase algal growth and nominally reduce dissolved oxygen in the water during any dredging in warmer water months but have no effect during colder water months. In accordance with Section 404(b)(1) of the Clean Water Act, a 404(b)(1) analysis for placement of material at Deal Island WMA was performed (Appendix B). Discharges into the waters of the United States were found to have only minor and temporary impacts.

To minimize post-placement erosion and sediment movement of mud from the completed project, material would be contained by straw bales and tidal ditch plugs. However, under conditions of high water levels with moderate to strong wind and wave action, re- suspended sediments could be transported substantial distances away from the restoration site. Adverse water quality impacts would be temporary, and any extra sediment delivered landward into tidal wetlands would be beneficial in light of ongoing landscape-scale drowning.

USACE received a provisional WQC for this project from MDE on July 27, 2022; USACE received a revised WQC for this project on August 19, 2022. This navigation project has been maintained for decades and has not been identified as degrading water quality in the Wicomico River.

5.1.3 Land Use

No impacts to land use would occur as a result of dredging in the navigation channel or pipeline placement in the Wicomico River.

The physical presence of the pipeline from Dames Quarter to Deal Island WMA would temporarily limit use of land in the pipeline footprint over the period of project construction. Once the pipe is removed, landuse would return to pre-project conditions. The temporary pipeline would likely have negligible effects on landuse in adjacent areas (see Section 5.3.1, Transportation and Navigation). Following project completion, the proposed action would serve to maintain existing land use at Deal Island WMA at the placement site and the impoundment. Use of the WMA is dependent upon continued presence of large expanses of brackish marsh and the impoundment.

5.1.4 Topography

The project would have negligible impacts to topography along the pipeline route, and no impacts to topography along the navigation channel to be dredged. The project would restore intertidal elevations at the placement site. Locally, higher elevation areas that support bayside dune plants might be restored by material placement. Material would be allowed to naturally create microtopography while settling and condensing to allow a wider range of habitats to form. Material outfall from the pipe location on the WMA waterfowl impoundment berm would induce a gradient of higher elevation near the berm and lower elevations further away from the berm toward the Manokin River shoreline.

5.1.5 Geologic Materials and Soils

Proposed maintenance dredging would remove sediments that have accumulated in the Wicomico River navigation channel since the most recent maintenance dredging. Exposed underlying substrate would be equivalent in character, consisting of mud and sand. The navigation channel would then gradually fill in with mud and sand comparable to the material removed, necessitating future dredging to maintain navigability.

Based on Google Earth imagery, farmland soils in agricultural use lie about 150 feet to the west of Messick Road, well to the west of the proposed pipeline route that would follow along the road. Deal Island WMA maintains some areas as fields for wildlife on the south side of Route 363. However, in Google Earth imagery these areas also appear to be hundreds of feet west of the proposed pipeline route. Accordingly, the project would have no effect on important farmland soils in agricultural use.

The proposed action would cause local disturbance of soils along the pipeline route. In any environmentally sensitive or economically important areas, the contractor would be required to restore the soils to pre-project conditions. Accordingly, no to minimal change in soil character is anticipated along the pipeline route.

Culvert installation could disturb geologic materials underlying road fill material. These impacts would be localized to the area of the culvert trench. Conduit installation would disturb geologic and soil materials in excavation pits and along the directional drilling route under Route 363. Some of these materials would be flushed out with drilling muds and be captured and disposed of with drilling muds. Excavated materials would be utilized for backfill and thus cause minimal long-term change at the excavation pits.

At the placement site, the project would convert the existing substrate from organic subtidal and intertidal soils to intertidal soils with a higher mineral content from the mud and sand deposits. This would change soil character but the placed material would be anticipated to support plant growth equivalently to or better than the pre-project organic soils. Any local high spots created by dredged material mud deposition might become somewhat acidic for a period of years from natural chemical processes occurring in the dredged material. Soil acid would be flushed from any high spots by precipitation over a period of years.

5.2 LIVING THINGS AND HABITATS

5.2.1 Plant Communities

5.2.1.1 Submerged Aquatic Vegetation

No SAV habitat is mapped within or close to the navigation channel in the Wicomico River or in Dames Quarter Creek. Accordingly, no direct or indirect impacts to SAV would be expected from dredging the channel or from deploying the pipeline in these waters.

No SAV is mapped to occur within the proposed placement site at the southern end of Deal Island WMA. However, it is possible that small unmapped ephemeral SAV beds comprised of widgeon grass may occur within the proposed placement area. Placement of dredged material on open water and failing tidal wetlands at Deal Island WMA would cause loss of any SAV that may have developed or that would have developed at the placement site. Because salt marsh in the lower Eastern Shore is failing on a landscape scale, it is anticipated that equivalent opportunities for SAV to become establish are abundant in the vicinity.

SAV habitat occurs in the Manokin River around the margin of the proposed placement area and in the Deal Island WMA boat ramp vicinity. Boats used during construction would cause bottom disturbance that could potentially preclude growth of SAV in the next growing season. However, this disturbance would be temporary, and widgeon grass would be expected to reoccupy the disturbed bottom within a matter of years at most.

Indirect impacts to SAV habitat at Deal Island WMA would likely occur from some escape of dredged material pumped into the placement site, particularly under high water conditions in the Bay. Material pumped into the placement site during cooler water months if it escaped would not likely impact widgeon grass as it would have minimal if any above substrate growth. Deposition of escaped material though could potentially limit growth of SAV in the subsequent growing season. It is anticipated that SAV would quickly colonize any new deposits from escaped material within several years of placement.

USACE would conduct dredging in accordance with TOY restrictions imposed by environmental agencies to protect SAV. Dredging and placement will occur outside of the growing season to reduce impacts to SAV. Dredging is only permitted to occur between 15 October and 15 April.

5.2.1.2 Wetlands

There are no wetland areas within the channel itself, so dredging would cause no impacts to wetlands.

Up to approximately 2,000 linear feet of pipeline may cross tidal wetlands where it comes ashore at Dames Quarter Creek if access through private property and the boat ramp area directly to Messick Road cannot be arranged. In that event, the pipeline would cause temporary impacts to approximately 0.5 acres of brackish marsh for a period of several months in the pipeline footprint north of Route 363. South of Route 363, the pipeline may have multiple minor temporary

crossings of tidal wetlands, impacting up to approximately an additional 0.1 acres. Upon pipeline removal, the contractor would be required to restore any disturbed brackish marsh soils and vegetation. The contractor would be required to use light load bearing (low pressure) equipment in wetland areas to minimize damage to the existing marsh.

If a conduit is installed to transport dredged material under Route 363, a total of approximately 0.2 acres of tidal wetlands would be temporarily disturbed during construction on the north and south sides of Route 363. Limits of disturbance would be established to limit effects to tidal wetlands. Following conduit installation, tidal wetlands would be restored, other than for an area of approximately 0.05 acres of permanent loss where the conduit pipe would daylight on either side of Route 363.

Placement of dredged material at Deal Island WMA would cause temporary disturbance of up to approximately 75 acres of a complex mix of open water (primarily formerly tidal wetlands), and remnant tidal wetlands. However, the proposed action would restore substrate for tidal wetlands that has otherwise been lost via conversion to open water, as well as serve to maintain existing substrate that would eventually convert to open water. Seeding/planting with native salt marsh plant species would reestablish native tidal wetlands vegetation.

The proposed placement of dredged material would serve to extend the life span of tidal wetlands in the impact area, which would otherwise convert to open water. Thus, the proposed action would produce a beneficial long-term impact to tidal wetlands. The project would restore approximately 75 acres of brackish marsh at Deal Island WMA. These wetlands are anticipated to persist for decades, depending on the rate of sea-level rise.

5.2.1.3 Upland Vegetation

There is no upland vegetation in the vicinity of the navigation channel to be dredged. There are limited areas of upland vegetation in the vicinity of Dames Quarter Creek vicinity roadways, and along ditch spoils, and in the trails and roads in Deal Island WMA. The pipeline would likely cross areas of this vegetation, and cause disturbance to what is growing. The contractor would be required to establish cover vegetation and or restore vegetation to pre-project conditions. It is anticipated that less than 1 acre of upland vegetation would be disturbed. Accordingly, impacts to upland vegetation would be negligible.

5.2.2 Fish and Wildlife

5.2.2.1 Benthic Invertebrates and Shellfish

Sedentary benthic organisms in the areas of the dredged channel would be destroyed. Comparable benthic invertebrates would recolonize within about two years of dredging activities. Mobile epibenthic organisms, such as blue crabs, would be able to avoid any dredging that occurs while water temperatures are still relatively warm. Dredging during cold water months could destroy overwintering blue crabs. However, the relatively shallow channel is not likely an important overwintering area for blue crabs and impacts to the blue crab population are expected to be negligible.

It is anticipated that dredging within the portion of the navigation channel within the NOB would be completed outside of the oyster TOY restriction periods which restrict dredging from 16 December through 14 March and 1 June through 30 September. Dredging proposed within a 500 yard buffer to the NOBs and any dredging within 500 yards of the leased aquaculture sites in the lower Wicomico River would only include a 1 June through 30 September TOY restriction. These TOY restrictions would minimize impacts of turbidity. It is anticipated that placement of the pipeline conveying dredged material to the placement area would be covered by the TOY restriction on the dredging within the NOB/PSFA and the 500 yard buffer. USACE will also conduct the order of work to begin dredging in areas nearest the NOB first to avoid the TOY restriction window once it comes into effect. This would allow any dredging in and around the area of the NOB to be completed before any TOY impacts could occur. With these anticipated TOY restrictions in place, it is anticipated that impacts to oysters would be negligible.

Proposed project specifications state that the contractor shall avoid existing aquaculture leases to the greatest extent possible while placing pipeline through those areas. 24-hour monitoring of the pipeline for leaks and breakage will also occur to avoid issues.

Benthos at the placement site associated with shallow open water would be buried and destroyed in the approximately 75-acre placement site. Benthos typical of tidal wetlands would colonize the sites. The change in substrate from peaty to muddy would favor organisms that prefer mineral substrates.

5.2.2.2 Finfish

Finfish in the dredging area may be temporarily displaced during dredging but are expected to move back into the area quickly after the dredging activities cease. Some minor impacts to other lifestages of finfish may result from the displacement or destruction of benthic food sources, but this is expected to be temporary (because comparable benthos are available abundantly in the vicinity). Therefore, there will be a short-term, minor impact to finfish in the channel. Minor or negligible temporary adverse impacts to marginal anadromous/semi-anadromous fish spawning habitat are expected from dredging the navigation channel. Placement of material at Deal Island WMA would not impact anadromous fish. Passage of anadromous fish through the project area to spawning habitats upstream would not be impeded.

At the proposed placement area at Deal Island WMA, finfish will be permanently displaced as a result of the permanent loss of shallow water habitat restored to tidal wetland habitat. However, many of the fish species of these shallow open waters also utilize tidal wetlands as habitat and tidal wetlands would support the foodweb. Thus, there would be a minor short-term adverse impact but long-term beneficial impact.

Managed fish species for which project waters constitute EFH would be temporarily adversely affected by loss of benthic forage organisms following dredging until those organisms recover, likely within two years. Habitat within the channel would otherwise be maintained within the condition that it has for decades, thus resulting in no long-term change in habitat conditions. Time-of-year restrictions and other BMPs required by MDE, MDNR, and NMFS to minimize

detrimental impacts to water quality and SAV habitat would minimize negative impacts to summer flounder HAPC. At Deal Island WMA, the proposed action would cause a long-term resource trade-off where failing tidal wetlands and associated open water are restored/maintained as tidal wetlands. As brackish marsh constitutes EFH, this trade-off is inherently mitigational. Habitat impacts would not reduce the carrying capacity of the projected area for managed fish species. Overall, no substantial long-term impacts to EFH are expected. Appendix C provides a more detailed evaluation of impacts to EFH.

5.2.2.3 Wildlife

Dredging conducted during the winter would destroy any diamondback terrapin overwintering in the channel bottom. This would not be anticipated to have substantial impact on regional terrapin populations in light of the numerous other channels and waterways that would not be impacted.

To minimize potential impacts to nesting waterfowl, previous dredging or placement activities have been restricted (not occurred) during the period from 15 April through 30 September of any year. Placement of dredged material at Deal Island WMA during winter could disturb wintering waterfowl. In that event, it is anticipated that waterfowl may choose to relocate to other areas lacking construction activity. However, impacts to overwintering waterfowl would be limited to the immediate vicinity of the placement site and that the majority of the existing impoundment would continue to be used by waterfowl that typically use it during the winter.

A short-term, minor adverse impact is anticipated at the dredging and placement sites as a result of the Proposed Action. However, long-term beneficial impacts are expected to wildlife dependent upon tidal wetlands at Deal Island WMA, particularly waterfowl. The project was designed to meet habitat needs of salt marsh sparrow and is anticipated to provide nesting habitat for this species.

The level of activity of the Proposed Action is similar to or less than the noise and activity of the everyday boat traffic in the Wicomico River. Thus, regardless of time of year, channel dredging would be anticipated to have minimal disturbance impact on wildlife of adjacent areas.

5.2.3 Threatened and Endangered Species

USACE undertook coordination with USFWS regarding potential impacts to USFWS trust resources during preparation of the draft EA and public/agency review. Coordination with USFWS determined that no significant impacts to USFWS-trust threatened or endangered species are expected as a result of maintenance dredging of the lower Wicomico River or placement at Deal Island WMA. It is hoped that Black Rail would utilize the restored tidal wetlands for foraging or nesting.

USACE undertook coordination with NMFS regarding potential impacts to NMFS trust resources during preparation of this EA and public/agency review. USACE made a determination that the proposed action would have no adverse effect on NMFS trust resource listed species

5.3 BUILT ENVIRONMENT AND PEOPLE

5.3.1 Transportation and Navigation

The Proposed Action may result in minor boat traffic interruptions at the dredging sites as the tugs and barges maneuver within the work zone. However, boat traffic in this area will not be substantially impacted during dredging. The pipeline would be weighted down in the river channel during dredging and not be an obstacle to navigation other than where it crosses onto land at Dames Quarters Creek. The pipeline would be marked to warn navigators. Use of the boat ramps at Dames Quarter Creek and Deal Island WMA will likely be limited or restricted for periods of time during construction when equipment and materials are being brought ashore.

The Proposed Action will not hamper emergency or medical services. The primary activity of the Proposed Action will occur within the existing Federal Navigation Channel and placement site, which are not used for fire, rescue or police services. The presence of the contracting crew in the area during the construction does not constitute a significant population increase in this area and no additional emergency or medical services will be required. For these reasons, the Proposed Action will have no significant effect on emergency or medical services.

5.3.2 Noise

The Proposed Action will result in temporary increases in noise at the dredging sites and pipeline route in the river. The noise will be consistent with noise levels commonly experienced due to commercial use of the channel; therefore, no significant impacts are expected.

Residences along Messick Road would have temporary noise impacts from construction activities. Construction would follow local noise ordinances. The nearest residence lies approximately 250 feet from the proposed culvert or conduit pipe location.

At Deal Island WMA, bringing construction equipment and workers, setting up straw bale containment, deploying and moving pipelines, and placement of dredged material at Deal Island WMA would create localized areas with notable noises from the construction equipment involved. While pumping is underway, noise impacts would be minimal except for times when the pipeline outlet is moved at the placement site.

5.3.3 Socioeconomics and Environmental Justice

The project is expected to reduce the incidence of shoaling and sand migration in the Wicomico River. This will alleviate the existing shoaling of the navigation channel in the river. The probability of shoal-induced grounding of residential and recreational boaters will be reduced. The Proposed Action will have a beneficial impact by making navigation easier but is not expected to induce an increase in boat traffic or provide additional recreational opportunities for boaters. The Proposed Action (to maintain the authorized depth of a Federal channel) is not expected or intended to stimulate additional private channels or new construction.

The dredging activities associated with the Proposed Action will occur in the Wicomico River. Various types of boats use the channel and the presence of the associated support vessels will not be incongruous with the normal boat traffic in the area. The Proposed Action is not expected to cause a physical impact on any along-shore communities and will only cause a temporary aesthetic impact. Therefore, there will be no adverse impacts to the surrounding communities and placement site. Furthermore, there are no minority or low-income communities that will be affected by the Proposed Action. Also, there would be no impact on children's health or safety.

5.3.4 Cultural and Historic Resources

Cultural resources in the proposed placement areas would likely have been affected by natural channel cuts, interior flooding, shoreline erosion, and possible Deal Island WMA waterfowl habitat enhancement actions. The MD SHPO determined that the proposed action would have no adverse effect on historic properties in correspondence dated February 4, 2021 (Appendix D).

5.4 CUMULATIVE IMPACTS

Because the lower Eastern Shore has a distinct environmental and social character, it is appropriate to consider cumulative impacts over this region. The periodic dredging of the Federal navigation channels by USACE in the lower Eastern Shore results in periodic minor turbidity, destruction of benthos, and disturbance of fish and wildlife. Environmental and social impacts from ongoing operations and maintenance dredging of this and other regional waterways (Section 1.5) has not been identified to be a particular concern. Evidence from decades of dredging and dredged material placement of multiple projects in the lower Eastern Shore supports the determination that these actions have been conducted in such a manner as to produce minimal cumulative environmental and social impacts.

After this proposed action, additional future brackish marsh restoration efforts by USACE are anticipated. Approximately 650 acres of failing tidal wetlands within Deal Island WMA south of the impoundment are anticipated to eventually be restored by making beneficial use of dredged material over the next 20 years from the Wicomico River navigation channel. These efforts, in conjunction with other ongoing regional wetlands restoration efforts, are expected to maintain wetlands acreage that would otherwise be lost to accelerating sea-level rise over the next several decades. These efforts would benefit aquatic and terrestrial plant and animal life dependent upon these habitats. In future dredging and beneficial placement (tidal wetlands restoration) efforts, tidal wetlands vegetation in the pipeline corridor would be temporarily disturbed every several years. Following completion of dredging and placement, the disturbed tidal wetlands area would be graded and seeded/re-planted to restore tidal wetlands to pre-disturbance conditions.

The Chesapeake Bay is increasing in size by hundreds of acres per year through shoreline erosion and drowning of tidal wetlands and upland areas (USACE, 2011). No forecast inventory of existing or proposed change in shallow water habitat availability was identified in preparation of this EA. However, it is likely that bay expansion would also cause an increase in area of shallow water habitat that could support SAV. Thus, any losses of SAV habitat caused by beneficial placement of dredged material on drowning tidal wetlands are unlikely to detrimentally impact availability of SAV habitat in the lower Eastern Shore.

6. COMPLIANCE

In addition to the environmental impacts discussed in this EA, a review of the proposed action has been made with regard to potentially applicable Federal statutes and executive orders. Tables 6-1 and 6-2 present a summary of the proposed action's current compliance status. The proposed action would be conducted in compliance with BMP requirements of environmental agencies under the statutes described in this section. TOY restrictions have been previously required that would minimize impacts to several categories of sensitive environmental resources that would be impacted. These TOY restrictions ensured that previous comparable dredging and placement actions were in accordance with applicable environmental laws. However, this proposed action differs somewhat from previous maintenance dredging and placement in that the proposed action may also affect an oyster sanctuary, bottom leased for aquaculture, and a unit of the Coastal Barrier Resources System. Accordingly, details of BMPs to minimize impacts for the full array of sensitive resources were worked out during public/agency review of this document, and during the process of USACE obtaining permits and making determinations of consistency. A narrative summary of environmental compliance for several pertinent Federal statutes is provided below. Coordination records undertaken with respect to these acts during preparation of this EA are provided in Appendix D.

Anadromous Fish Conservation Act
In previous maintenance dredging operations, TOY restrictions to minimize impacts to spawning anadromous fish were incorporated into BMPs required by environmental agencies. With incorporation of these BMPs, USACE is in compliance with the act.

Clean Water Act.
USACE has prepared a Section 404(b)(1) Analysis (Appendix B) as required for the discharge of fill material to the dredged material placement site. USACE found that the proposed action, with the inclusion of appropriate and practical conditions to minimize contamination or adverse effects to the aquatic ecosystem, complies with the act.

MDE and USACE leadership met in March and April 2022 regarding how to proceed with WQC. MDE issued a public notice (PN) for WQC on July 1, 2022, requesting public comment within 15 days. MDE issued a provisional WQC for the proposed action on July 27, 2022, and then a revised WQC for the proposed action on August 19, 2022. The revised WQC listed Wicomico County as a co-certificate holder, and included modified special conditions from the provisional WQC

Coastal Barrier Resources Act
Coastal Barrier Resources System (CBRS) Unit MD-15 (Long Point) occupies a 39-acre area of shoreline and open water along the northwest shoreline of Dames Quarter Creek. Unit 14 (Franks Point) occupies a 357-acre area adjacent to the west side Deal Island WMA (USFWS, 2020). USACE's contractor might temporarily place the pipeline through Unit 15 waters. It is also possible that the pipeline might run along the edge of Unit 14 (Franks Point). Having the pipeline pass through the unit(s) would not violate the act because it would be conducted to maintain the

existing federal navigation channel (explicitly allowed) and would incur no federal expenses that might increase development of flood-prone structures (explicitly disallowed).

Coastal Zone Management Act

Multiple sensitive environmental resources in the project area are protected under MD's Coastal Zone Management Program. These include oyster resources (NOBs, sanctuary, and aquaculture leases) and waterfowl concentration areas, in addition to resources protected under Federal acts described above/below. NOBs and waterfowl concentration areas have been adequately protected during previous maintenance dredging through TOY restrictions required by MDNR. In the event the pipeline needs to be placed over a leased aquaculture site, consent of the leaseholder would be required by MD. Aquaculture leaseholders are informed by MDNR during the permit process to be cognizant of USACE Navigation dredging needs. All updates on maintenance dredging projects are listed with a public notice online available for leaseholders to review. Public notices for this project and a public meeting were held to alert lease owners of potential impacts to nearby aquaculture impacts. Under Nationwide Permit 48 the leaseholder also understands that they may be required to remove, relocate, or alter the structural work or obstructions to avoid impacts to USACE Navigation dredging operations. USACE identifies contingency plans to minimize impacts in the event of unlikely pipeline ruptures in the contract specifications. USACE finds that with inclusion of the BMPs determined during public/agency review that it will be consistent with the tenets of the act. USACE anticipates MD concurrence with this finding.

Farmland Protection Policy Act

The pipeline may pass within 150 feet of important farmland soils in agricultural use in the Dames Quarter vicinity. The proposed action is not expected to have any impact to farmland and would not permanently convert any farm soils to non-agricultural use. The act is not applicable.

Fish and Wildlife Coordination Act (FWCA)

USACE coordinated with USFWS and NMFS during initial planning of the proposed action. With application of appropriate BMPs determined during USFWS and NMFS review of the draft EA, USACE determined that it is in full compliance with the FWCA.

Magnuson Stevens Fishery Conservation and Management Act

The proposed action would temporarily adversely impact open water EFH at the proposed dredging site and along the pipeline route (open water and tidal wetlands). The project would permanently convert EFH at the proposed placement site from failing tidal wetlands and associated open water to tidal wetlands (thus converting one type of EFH to another). The proposed restoration of tidal wetlands via beneficial use of dredged material from a regularly maintained navigation channel is environmentally optimal in that the dredging is necessary to maintain the channel, and the habitats restored are inherently mitigational for impacts of placement. Impacts to summer flounder HAPC (SAV beds) are anticipated to be minimal and temporary or negligible. Accordingly, USACE finds that the proposed action would comply with provisions of the act. USACE coordinated details of the proposed action with NMFS during 2021 and 2022 to ensure compliance with the act. NMFS is involved in ongoing development of specific objectives and an adaptive management plan for the proposed action. Adaptive management and monitoring is being led by outside agencies and organizations (Section 1.4).

National Historic Preservation Act.
The proposed action is in compliance with the act. USACE provided information on the proposed action to the MD SHPO, and the SHPO determined that the undertaking as described would have no effect on historic properties.

Wild and Scenic Rivers Act
There are no federally designated wild and scenic rivers on the Eastern Shore. The Wild and Scenic Rivers Act is not applicable to the proposed action. There are no state-designated scenic and wild rivers in the Wicomico River Watershed. The Pocomoke River is a state-designated scenic and wild river but lies approximately 20 miles from the study area.

Table 6-1: USACE Finding of Compliance of the Proposed Action with Statutes.

Federal Statutes	Level of Compliance[1]
Anadromous Fish Conservation Act	Full
Archeological and Historic Preservation Act	Full
Clean Air Act	Full
Clean Water Act	Full
Coastal Barrier Resources Act	Full
Coastal Zone Management Act	Full
Comprehensive Environmental Response, Compensation and Liability Act	Not applicable
Endangered Species Act	Full
Estuary Protection Act	Full
Federal Water Project Recreation Act	Full
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	Full
Magnuson-Stevens Fishery Conservation and Management Act	Full
Marine Protection, Research and Sanctuaries Act	Full
Marine Mammal Protection Act	Full
Migratory Bird Treaty Act	Full
National Environmental Policy Act	Full
National Historic Preservation Act	Full
Noise Control Act	Full
Resource Conservation and Recovery Act	Full
Rivers and Harbors Act	Full
Water Resources Planning Act	Full
Watershed Protection and Flood Prevention Act	Full
Wetlands Conservation Act	Full
Wild and Scenic Rivers Act	Not applicable

Table 6-2: Compliance of the Proposed Action with Executive Orders and Other Rules.

Executive Order (EO) or Rule	Level of Compliance[1]
Protection and Enhancement of Environmental Quality (E.O. 11514, 1977)	Full
Protection and Enhancement of Cultural Environment (E.O. 11593)	Partial
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	Full
Recreational Fisheries (E.O. 12962)	Full
Environmental Justice (E.O. 12898)	Full
Recreational Fisheries (E.O. 12962)	Full
Indian Sacred Sites (E.O. 13007)	Partial
Invasive Species (E.O. 13112)	Full
Protection of Children from Environmental Health Risks and Safety Risks (E.O.13045)	Full
Migratory Bird (E.O. 13186)	Full
Chesapeake Bay Protection and Restoration (E.O. 13508)	Full
Stewardship of the Oceans, Our Coasts and the Great Lakes (E.O. 13547)	Full
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug 1980)	Full

1 Levels of Compliance

a. Full Compliance: having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.

b. Partial Compliance: not having met some of the requirements. This results from certain pre-requisite tasks needing to be completed in the future, and consequent need for future coordination with agencies.

7.0 CONCLUSIONS

The environmental and social consequences associated with the proposed action have been assessed by USACE. The alternative of taking no action was compared to the proposed action. Maintenance dredging would occur within the Wicomico River navigational channel that has been periodically maintained for decades and evaluated in prior NEPA documents. Piping of the material overland for placement at Deal Island WMA is an impact not previously evaluated. However, it is similar to previous placement in 2017 at Ellis Island WMA and is in accordance with similar ongoing regional efforts by resource agencies and conservation organizations to maintain tidal wetlands as sea-level rise accelerates.

Coordination with NMFS, USFWS, MDNR, and MDE conducted for prior maintenance dredging in 2017 and previous years determined that dredging and placement should be conducted in accordance with a variety of BMPs to ensure that no significant environmental impacts occur. Coordination conducted during public and agency review of the proposed action during 2021 and 2022 refined the proposed action to incorporate appropriate BMPs to ensure compliance with applicable environmental laws.

The proposed dredging of the lower portion of the Wicomico River Federal Navigation Channel Project and placement of dredged material at Deal Island WMA would be expected to have short-term minor adverse environmental impacts to water quality, benthos, oyster resources, fish and wildlife, wetlands and EFH. Additionally, minor short term adverse social effects would occur through air pollutant emissions, noise, and navigation and traffic interruption. The majority of these minor and temporary adverse detrimental impacts would cease immediately with the completion of dredging and placement of material. Recovery of benthic organisms within the dredged channel would take up to two years.

Tidal wetlands failure driven by accelerating sea-level rise is occurring at a landscape-scale in the lower Eastern Shore. The proposed action is an optimal means to engineer tidal wetlands continuation at Deal Island WMA, as it would make beneficial use of material that must be dredged to maintain channel navigability. The proposed action would temporarily offset a portion of tidal wetlands losses occurring in the vicinity and would serve to maintain the impoundment within the WMA utilized to provide food to waterfowl and waterbirds. Of particular note, the proposed action is anticipated to provide nesting habitat for salt marsh sparrow. Placement at Deal Island WMA this dredging cycle would convert open water (primarily formerly tidal wetlands) and temporarily disturb failing remnant tidal wetlands over an approximately 75-acre area, while restoring approximately 75 acres of healthier tidal wetlands with some open water at the same location. Full performance of the restored tidal wetlands from this dredging cycle would take up to several years. Additionally, along its route, the proposed pipeline would cause a permanent loss of approximately 0.05 acres of tidal wetlands, and temporary impacts to approximately 0.8 acres of additional tidal wetlands.

Assessment of the proposed project indicates that there would be no significant adverse effects to the natural or human environment and the Proposed Action has greater benefits than the No-Action Alternative. Based on this assessment, a FONSI has been prepared.

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